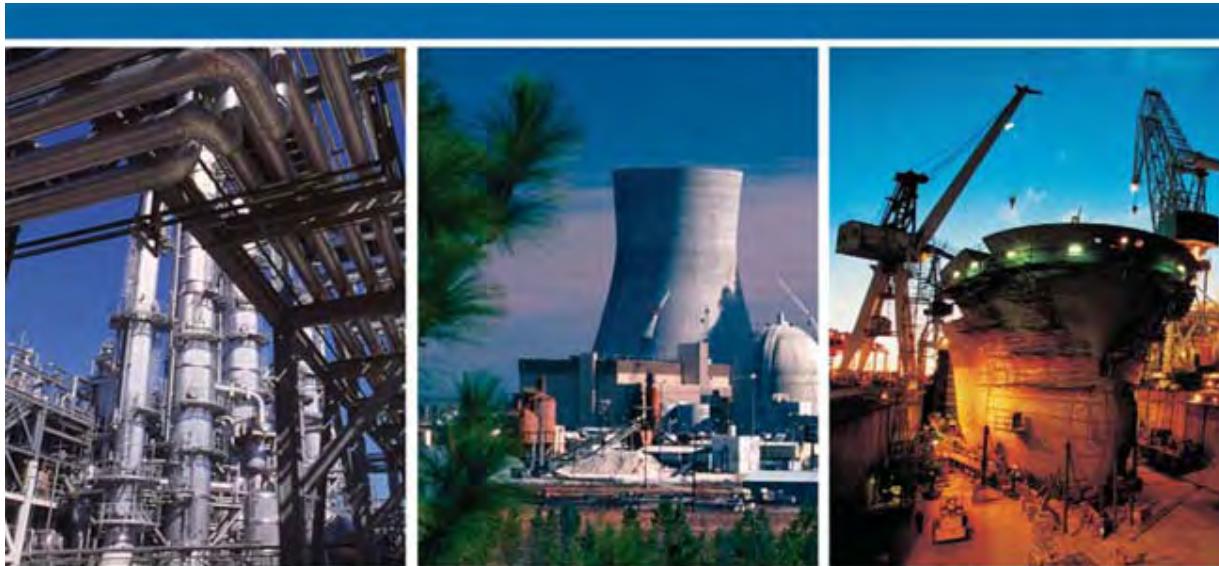


# SmartPlant Foundation 2008 (4.2) Introduction and Administration I *Course Guide Volume 1*

---



Process, Power & Marine



Version 4.2.1	November 2008	DSPF-TP-100012A
---------------	---------------	-----------------



# SmartPlant Foundation 2008 (4.2)

## Introduction and Administration I

### *Course Guide Volume 1*

November 2008

Version 4.2.1

## **Copyright**

Copyright © 2002 - 2008 Intergraph Corporation. All Rights Reserved.

Including software, file formats, and audiovisual displays; may be used pursuant to applicable software license agreement; contains confidential and proprietary information of Intergraph and/or third parties which is protected by copyright law, trade secret law, and international treaty, and may not be provided or otherwise made available without proper authorization.

## **Restricted Rights Legend**

Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subparagraph (c) of the *Contractor Rights in Technical Data* clause at DFARS 252.227-7013, subparagraph (b) of the *Rights in Computer Software or Computer Software Documentation* clause at DFARS 252.227-7014, subparagraphs (b)(1) and (2) of the *License* clause at DFARS 252.227-7015, or subparagraphs (c) (1) and (2) of *Commercial Computer Software--Restricted Rights* at 48 CFR 52.227-19, as applicable.

Unpublished---rights reserved under the copyright laws of the United States.

Intergraph Corporation  
Huntsville, Alabama 35894-0001

## **Warranties and Liabilities**

All warranties given by Intergraph Corporation about equipment or software are set forth in your purchase contract, and nothing stated in, or implied by, this document or its contents shall be considered or deemed a modification or amendment of such warranties. Intergraph believes the information in this publication is accurate as of its publication date.

The information and the software discussed in this document are subject to change without notice and are subject to applicable technical product descriptions. Intergraph Corporation is not responsible for any error that may appear in this document.

The software discussed in this document is furnished under a license and may be used or copied only in accordance with the terms of this license.

No responsibility is assumed by Intergraph for the use or reliability of software on equipment that is not supplied by Intergraph or its affiliated companies. THE USER OF THE SOFTWARE IS EXPECTED TO MAKE THE FINAL EVALUATION AS TO THE USEFULNESS OF THE SOFTWARE IN HIS OWN ENVIRONMENT.

## **Trademarks**

Intergraph, the Intergraph logo, SmartSketch, FrameWorks, SmartPlant, SmartPlant Foundation, SmartPlant P&ID, SmartPlant Instrumentation and INtools are registered trademarks of Intergraph Corporation. Microsoft and Windows are registered trademarks of Microsoft Corporation. Other brands and product names are trademarks of their respective owners.

This courseware was developed by Roni Carpenter, Rodney Grady and Mitch Harbin, PPM-PIM Training, Huntsville, Alabama.

---

# Table of Contents



<b>1. SmartPlant Architecture Overview</b>	<b>1-3</b>
<b>1.1 SmartPlant Components Overview</b>	<b>1-11</b>
1.1.1 SmartPlant Desktop Client	1-12
1.1.2 SmartPlant Client	1-13
1.1.3 Common User Interface	1-14
1.1.4 SmartPlant Foundation Server	1-15
<b>1.2 Publish and Retrieve Overview</b>	<b>1-16</b>
1.2.1 Registering a Plant	1-18
1.2.2 Publishing Documents and Data	1-19
<b>1.3 Retrieving Documents</b>	<b>1-21</b>
<b>1.4 SmartPlant Schema Overview</b>	<b>1-22</b>
<b>1.5 Schema Mapping Overview</b>	<b>1-23</b>
<b>1.6 SmartPlant Foundation Structure</b>	<b>1-25</b>
<b>1.7 SmartPlant Foundation Databases</b>	<b>1-27</b>
1.7.1 SmartPlant Foundation Authoring - Stand-Alone Mode	1-28
1.7.2 SmartPlant Foundation - Data Warehouse Mode	1-30
1.7.3 Combined Mode	1-31
<b>1.8 SPF Containers</b>	<b>1-32</b>
<b>1.9 Using the Class VM Session (VMWare Player)</b>	<b>1-34</b>
<b>2. Using the SmartPlant Foundation Desktop Client</b>	<b>2-3</b>
<b>2.1 SmartPlant versus SPF Standalone Mode</b>	<b>2-4</b>
<b>2.2 Starting The Desktop Client</b>	<b>2-6</b>
<b>2.3 Exploring the Desktop Client User Interface</b>	<b>2-10</b>
2.3.1 Using the Tree View	2-14
2.3.2 Reset the Tree View	2-15
2.3.3 Using the New Items Window	2-16
2.3.4 Using the Properties Window	2-17
<b>2.4 Setting User Options</b>	<b>2-19</b>
2.4.1 Changing User Preferences	2-20
2.4.2 Setting the Active Scope	2-29
2.4.3 Change User Password	2-34
2.4.4 Enabling Look Ahead	2-35
2.4.5 Configuring the Effective Date	2-37
<b>2.5 Using the List View Window</b>	<b>2-39</b>
<b>2.6 Open in a New Window</b>	<b>2-44</b>
<b>2.7 Activity – Using the SPF Desktop Client</b>	<b>2-46</b>

<b>3. Finding and Manipulating Objects</b>	<b>3-3</b>
<b>3.1 Searching for Objects</b>	<b>3-5</b>
3.1.1 Saved Queries	3-11
<b>3.2 Extracting/Exporting to Excel</b>	<b>3-15</b>
<b>3.3 Creating New Objects</b>	<b>3-19</b>
<b>3.4 Object Manipulations</b>	<b>3-25</b>
3.4.1 Copying an Object	3-26
3.4.2 Updating Objects	3-29
3.4.3 Change Owning Group	3-31
3.4.4 Deleting Objects	3-33
3.4.5 Object Termination	3-35
3.4.6 Object Details	3-36
3.4.7 Object History	3-38
<b>3.5 Creating and Showing Relationships</b>	<b>3-40</b>
3.5.1 Creating Relationships	3-41
3.5.2 Showing Relationships	3-43
3.5.3 Terminating Relationships	3-45
<b>3.6 Activity – Finding and Manipulating Objects</b>	<b>3-47</b>
<b>3.7 Document Management</b>	<b>3-49</b>
3.7.1 Creating Design Documents	3-51
3.7.2 Creating Vendor Documents	3-55
3.7.3 Reserving Vendor Documents	3-60
3.7.4 Activating a Vendor Document	3-63
3.7.5 Creating Template Documents	3-66
3.7.6 Updating Template Documents	3-71
3.7.7 Other Documents	3-72
<b>3.8 Integrated Windows User Authentication</b>	<b>3-78</b>
3.8.1 Changing the Integrated Windows Authentication	3-79
3.8.2 SPF Users that are not in the domain	3-84
<b>3.9 Activity – Document Management</b>	<b>3-85</b>
<b>4. SmartPlant Foundation Workflows</b>	<b>4-3</b>
<b>4.1 Using Workflows</b>	<b>4-4</b>
4.1.1 Attaching a Workflow	4-9
4.1.2 Viewing an Active Workflow	4-11
<b>4.2 Workflow Email Notification</b>	<b>4-16</b>
4.2.1 The To Do List	4-18
4.2.2 Completed/Unable to Complete	4-20
4.2.3 Rejecting a Workflow Step	4-23
<b>4.3 Reassigning a Workflow Participant</b>	<b>4-24</b>
4.3.1 Approving a Workflow Step	4-28
<b>4.4 Show Graphical Workflow</b>	<b>4-30</b>

<b>4.5 Workflow Details and History</b>	<b>4-32</b>
4.5.1 Workflow History	4-35
<b>4.6 Activity – Using a Workflow in SmartPlant Foundation</b>	<b>4-37</b>

## **5. SPF User Functionality** **5-3**

<b>5.1 Viewing and Marking up Files</b>	<b>5-4</b>
5.1.1 Viewing Object Properties	5-7
5.1.2 Adding Markups	5-11
5.1.3 Viewing Off Page Connector Drawings	5-14
<b>5.2 Activity – File Viewing and Markup</b>	<b>5-18</b>
<b>5.3 Creating a Report</b>	<b>5-19</b>
5.3.1 Report Options	5-23
5.3.2 Saving a Report	5-27
<b>5.4 Activity – Creating Reports</b>	<b>5-34</b>
<b>5.5 Subscribing to Change Notifications</b>	<b>5-35</b>
<b>5.6 Subscriptions and Notifications</b>	<b>5-36</b>
5.6.1 User Defined Subscriptions	5-38
5.6.2 Administrative Object Subscriptions	5-46
<b>5.7 Activity – Subscriptions and Notifications</b>	<b>5-51</b>

## **6. Document Management** **6-3**

<b>6.1 Working with Reference Files</b>	<b>6-4</b>
6.1.1 File Type Matrix for Reference Files	6-8
6.1.2 Update Maintain Relations Attribute on Reference Files	6-9
6.1.3 Nested Reference Files Commands	6-12
6.1.4 Update Reference Relationships Dialog Box	6-14
<b>6.2 Activity – Working with Reference Files</b>	<b>6-15</b>
<b>6.3 Document Check in and Check out</b>	<b>6-16</b>
6.3.1 Check Out a Document	6-18
6.3.2 Check Out Dialog	6-20
6.3.3 Undo Check Out	6-22
6.3.4 Check In a Document	6-25
<b>6.4 Activity – Document Check in and Check out</b>	<b>6-30</b>
<b>6.5 Document Sign-off</b>	<b>6-31</b>
6.5.1 Sign Off a Document	6-32
6.5.2 Sign Off a Document with Comments	6-36
<b>6.6 Revisions and Versions</b>	<b>6-37</b>
6.6.1 Revise a Document	6-39
6.6.2 Revision Object Properties	6-42

6.6.3	Revision States	6-45
6.6.4	Revision State Rules for Documents in Project/As-Built Configurations	6-47
<b>6.7</b>	<b>Activity – Revising Objects</b>	<b>6-49</b>

## **7. Concurrent Engineering Overview** 7-3

<b>7.1</b>	<b>Claiming a Tag into a Project</b>	<b>7-7</b>
<b>7.2</b>	<b>Reporting and Conflict Resolution</b>	<b>7-11</b>
7.2.1	View Configuration Reports	7-13
7.2.2	Future Changes Reports	7-15
7.2.3	Invalid Mergable Items Report	7-18
<b>7.3</b>	<b>Resolving Conflicts</b>	<b>7-20</b>
<b>7.4</b>	<b>Merging Data into the Design Basis</b>	<b>7-22</b>
<b>7.5</b>	<b>Claiming Documents</b>	<b>7-24</b>
<b>7.6</b>	<b>Activity – Concurrent Engineering</b>	<b>7-32</b>

## **8. Introduction to the Progress Model** 8-3

<b>8.1</b>	<b>Setting Key Progress Components</b>	<b>8-6</b>
8.1.1	Setting the Progress Hierarchy	8-7
8.1.2	Setting Progress Options	8-9
8.1.3	Setting Cut-Off Dates	8-12
<b>8.2</b>	<b>Creating Design Workpacks</b>	<b>8-13</b>
<b>8.3</b>	<b>Creating Design Workpack Templates</b>	<b>8-21</b>
<b>8.4</b>	<b>Creating Workpacks from Templates</b>	<b>8-24</b>
<b>8.5</b>	<b>Registering Deliverables for Progress</b>	<b>8-27</b>
<b>8.6</b>	<b>Updating Progress</b>	<b>8-32</b>
<b>8.7</b>	<b>Using Activity Workpacks</b>	<b>8-38</b>
<b>8.8</b>	<b>Using Replan</b>	<b>8-50</b>
<b>8.9</b>	<b>Using Rollups and Reports</b>	<b>8-56</b>
<b>8.10</b>	<b>Activity - Progress Model</b>	<b>8-62</b>

## **9. Introduction to SPF Security** 9-3

<b>9.1</b>	<b>Components of the Security Model</b>	<b>9-5</b>
9.1.1	Domains and Data Segregation	9-6
9.1.2	Configurations	9-10
9.1.3	Access Groups	9-12
9.1.4	Owning Groups	9-16
9.1.5	Roles and Role Assignments	9-19

<b>9.2 User Creation and Role Assignments</b>	<b>9-26</b>
9.2.1 Creating Users	9-28
9.2.2 Configuring Role Assignments	9-31
<b>9.3 Creating Access Groups</b>	<b>9-39</b>
9.3.1 Configuring Method Access	9-42
<b>9.4 Creating Owning Groups</b>	<b>9-50</b>
<b>9.5 Creating New Roles</b>	<b>9-52</b>
9.5.1 Managing Roles	9-56
9.5.2 Testing New Users and Role Assignments	9-61
<b>9.6 Activity 1 – Configuring Basic SPF Security</b>	<b>9-65</b>
<b>9.7 Organizations</b>	<b>9-67</b>
<b>9.8 Printing and Printer Configuration</b>	<b>9-72</b>
<b>9.9 Activity 2 – Organizations and Printing</b>	<b>9-81</b>
<b>9.10 SmartPlant Foundation Options</b>	<b>9-83</b>
<b>9.11 Plant Objects</b>	<b>9-87</b>
<b>9.12 Projects</b>	<b>9-90</b>
<b>9.13 Creating Hosts</b>	<b>9-93</b>
<b>9.14 Vault Creation and Configuration</b>	<b>9-95</b>
9.14.1 Creating a New Vault	9-96
9.14.2 Configuring a Vault	9-98
9.14.3 Creating Subfolders for Published Documents	9-104
<b>9.15 Activity 3 – Vaults</b>	<b>9-105</b>

<b>10. SmartPlant Foundation License Management Overview</b>	<b>10-3</b>
<b>10.1 Perpetual Tokens</b>	<b>10-7</b>
<b>10.2 Daily Tokens</b>	<b>10-8</b>
<b>10.3 Token Pool</b>	<b>10-10</b>
10.3.1 License Option File	10-11
<b>10.4 Obtaining SmartPlant Foundation User Licenses</b>	<b>10-12</b>
<b>10.5 Setting Up the License Server</b>	<b>10-18</b>
10.5.1 Token Exhaustion	10-21
10.5.2 Activate the License Files	10-24
10.5.3 Editing License Files	10-28
<b>10.6 Starting the SmartPlant Foundation License Server</b>	<b>10-31</b>
10.6.1 Stopping the SmartPlant Foundation License Server	10-34
<b>10.7 Registering the License Server as a Service</b>	<b>10-35</b>
<b>10.8 License Manager Termination</b>	<b>10-37</b>
<b>10.9 Reporting</b>	<b>10-38</b>
10.9.1 Token Report File	10-39

10.9.2	Daily Token License Usage History _____	10-40
10.9.3	Licenses In Use _____	10-41
<b>10.10</b>	<b>Clearing Token IN USE Status_____</b>	<b>10-42</b>
<b>10.11</b>	<b>Using the License Server Remotely _____</b>	<b>10-43</b>
<b>10.12</b>	<b>License Management with SmartPlant Basic Integrator _____</b>	<b>10-45</b>

## **11. *SmartPlant Foundation/SmartPlant Installation* \_\_\_\_\_ 11-3**

<b>11.1</b>	<b>SmartPlant Foundation System Requirements _____</b>	<b>11-4</b>
<b>11.2</b>	<b>Reference Documentation _____</b>	<b>11-8</b>
<b>11.3</b>	<b>Installing Database and Prerequisite Software _____</b>	<b>11-9</b>
<b>11.4</b>	<b>Installing SmartPlant Foundation _____</b>	<b>11-10</b>
11.4.1	Schema Component Installation _____	11-13
11.4.2	SmartPlant Foundation Installation Steps _____	11-18
<b>11.5</b>	<b>Installing SmartPlant Components _____</b>	<b>11-31</b>
11.5.1	SmartPlant Client Installation _____	11-32
<b>11.6</b>	<b>Configuring the SPF Installation _____</b>	<b>11-37</b>
11.6.1	Create a New Site _____	11-40
11.6.2	Review and Update System Settings _____	11-44
11.6.3	Review or Update License Manager Settings _____	11-45
11.6.4	Additional Considerations _____	11-47
<b>11.7</b>	<b>Exporting the Configuration _____</b>	<b>11-48</b>
11.7.1	Choosing the Active Site _____	11-50

## **12. *Web Portal Overview* \_\_\_\_\_ 12-3**

<b>12.1</b>	<b>Web Portal User Interface _____</b>	<b>12-7</b>
12.1.1	Web Portal Interface Windows _____	12-9
12.1.2	Effectivity Date _____	12-15
12.1.3	User Preferences _____	12-16
12.1.4	Active Scope _____	12-18
12.1.5	Other Commands Supported in the Web Portal _____	12-20
<b>12.2</b>	<b>Customizing the Web Portal _____</b>	<b>12-21</b>
12.2.1	Themes and Skins _____	12-22
12.2.2	Cascading Style Sheets (CSS) _____	12-25
12.2.3	Personalizing the Web Portal _____	12-26
12.2.4	Advanced Customization Options _____	12-39
<b>12.3</b>	<b>Activity – Web Portal _____</b>	<b>12-43</b>

**13. SmartPlant Foundation 2008 Data Warehouse and Authoring 13-3**

<b>13.1</b>	<b>Introduction to SPF Authoring</b>	<b>13-4</b>
<b>13.2</b>	<b>Publishing from SmartPlant P&amp;ID</b>	<b>13-13</b>
<b>13.3</b>	<b>Activity 1 – Authoring Data in SmartPlant Foundation</b>	<b>13-17</b>
<b>13.4</b>	<b>Finding and Viewing Published Data</b>	<b>13-19</b>
<b>13.5</b>	<b>Retrieving Data into an Authoring Domain</b>	<b>13-24</b>
13.5.1	Registering an Authoring Tool	13-29
13.5.2	Configuring Authoring Roles	13-35
13.5.3	Retrieving a Published Instrument	13-42
13.5.4	Loading Retrieved Data	13-46
13.5.5	Defining Process Cases	13-49
13.5.6	Authoring Data Changes	13-54
13.5.7	Verifying Authoring Changes	13-61
<b>13.6</b>	<b>Publishing Data from SPF</b>	<b>13-66</b>
13.6.1	Verifying the Published Data	13-70
<b>13.7</b>	<b>Activity 2 – Authoring Data in SmartPlant Foundation</b>	<b>13-73</b>
<b>13.8</b>	<b>Managing Data Inconsistencies</b>	<b>13-75</b>
<b>13.9</b>	<b>Retrieving a Change into SmartPlant Instrumentation</b>	<b>13-80</b>
<b>13.10</b>	<b>Activity 3 – Authoring Data in SmartPlant Foundation</b>	<b>13-89</b>

**14. Creating a Plant Breakdown Structure (PBS) in SmartPlant Foundation 14-3**

<b>14.1</b>	<b>Creating a Plant Breakdown Structure in SPF</b>	<b>14-4</b>
14.1.1	Creating a New Plant	14-5
14.1.2	Setting the Active Scope	14-7
14.1.3	Creating a New Area	14-9
14.1.4	Creating a New Unit	14-11
14.1.5	Relate the Plant to a Vault	14-13
14.1.6	Register the Plant Breakdown Structure (PBS) Document	14-14
14.1.7	Publish the Plant Breakdown Structure (PBS) Document	14-17
<b>14.2</b>	<b>Registering Authoring Tools</b>	<b>14-20</b>
14.2.1	Creating a New SmartPlant P&ID Plant	14-21
14.2.2	Registering SmartPlant P&ID with SmartPlant Foundation	14-31
14.2.3	Retrieve the PBS Document from SmartPlant Foundation	14-36
14.2.4	Reviewing the Results of the Retrieve	14-39
14.2.5	Creating a New SmartPlant Instrumentation Plant	14-42
14.2.6	Registering SmartPlant Instrumentation with SmartPlant Foundation	14-50
14.2.7	Retrieve the PBS Document into SmartPlant Instrumentation	14-55
14.2.8	Run Tasks in the SmartPlant Instrumentation To Do List	14-60
14.2.9	Set the Naming Convention for the New Plant	14-62
<b>14.3</b>	<b>Activity – Creating a Plant Breakdown Structure</b>	<b>14-65</b>

***Appendix A: Glossary*** \_\_\_\_\_ **A-3**

***Appendix B: Using VMWare Workstation*** \_\_\_\_\_ **B-3**

C H A P T E R

---

# 1

# Introduction to SmartPlant Foundation and SmartPlant Enterprise



# 1. SmartPlant Architecture Overview

SmartPlant Enterprise supports the integration of engineering tools, such as SmartPlant® P&ID, SmartPlant 3D, SmartPlant Instrumentation, and Aspen Zygad. This integration addresses the flow of data as it moves from one engineering application to another through its lifecycle.

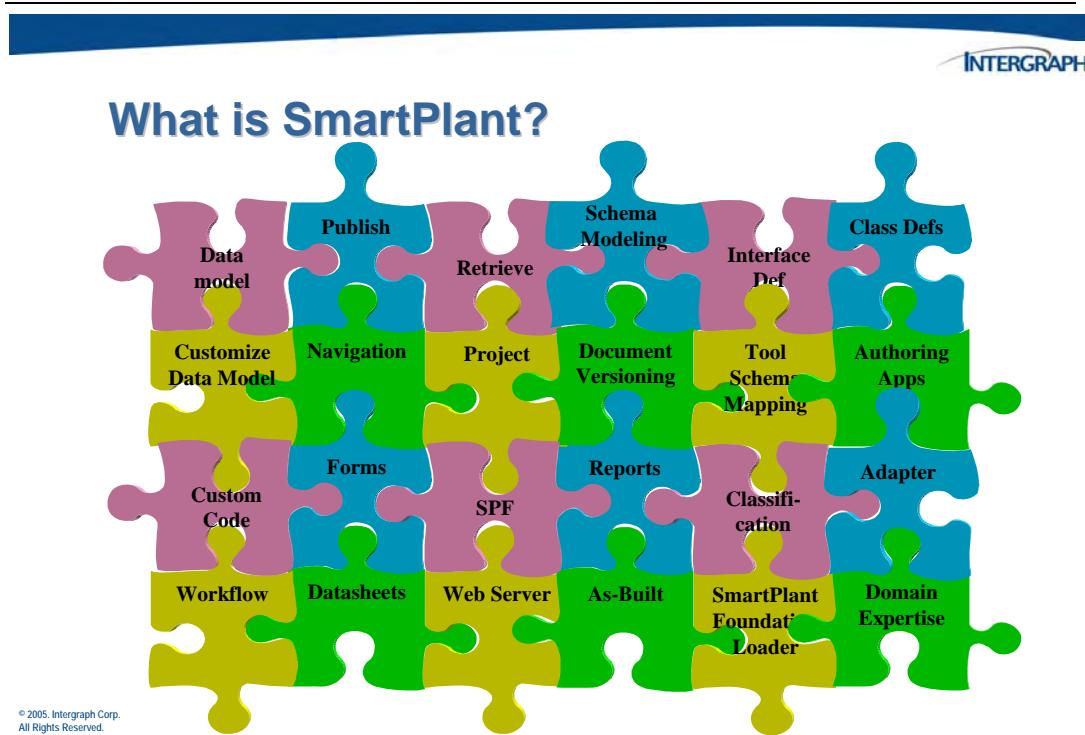
At the center of SmartPlant Enterprise is SmartPlant Foundation, which provides the repository for data published by the authoring tools. SmartPlant components make the exchange of data from the authoring tools to SmartPlant Foundation and back possible.



## Introduction to SmartPlant

### SmartPlant features:

- Transfer of engineering data from one tool to another, eliminating the manual reentry of data.**
- Management of changes resulting from ongoing engineering in upstream applications.**
- Accessibility of engineering information to other collaborators without requiring the original engineering tools.**
- Recording of change in data as it moves through the plant lifecycle.**
- Correlation of shared objects from multiple authoring tools.** For example, the full definition of a pump may come from multiple disciplines (electrical, mechanical, and so on), and the data comes from different authoring tools.
- Support for engineering workflows, especially versioning, approval/release, and configuration control.**



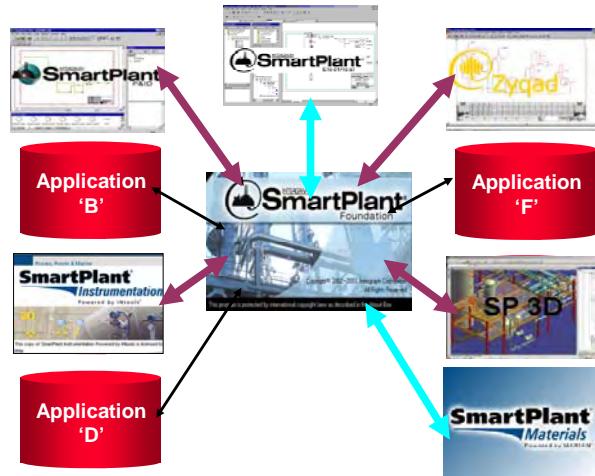
---

**Note:**

- Integrated project/as-built mode has some known issues and should be used only on pilot implementations until proven against customers' specific business processes. This functionality will be enhanced in a future release.



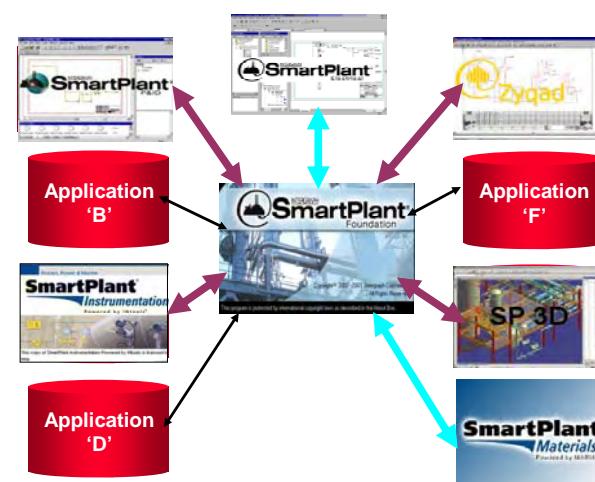
## SmartPlant as the Data Repository



© 2005, Intergraph Corp.  
All Rights Reserved.



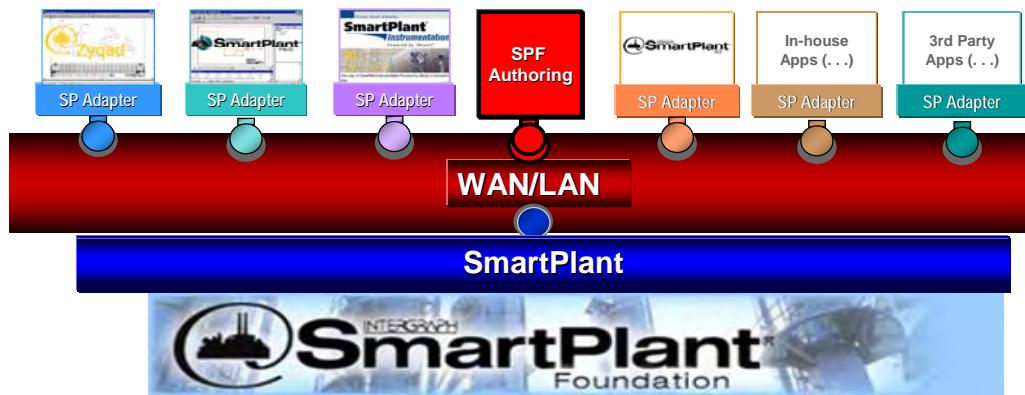
## SmartPlant as the Integration Point



© 2005, Intergraph Corp.  
All Rights Reserved.



## SmartPlant as the Communication Hub

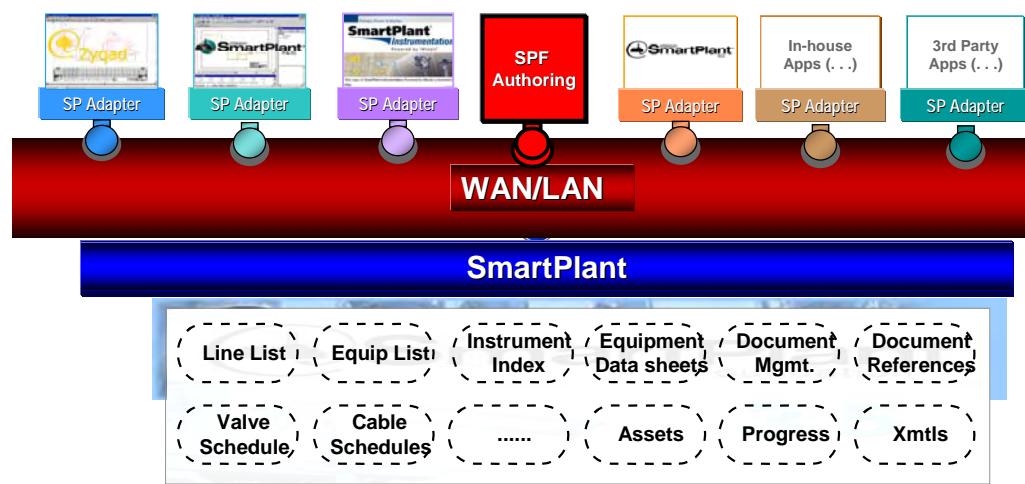


*Integration, Data and Document Information Storage,  
Change Management, and Workflow*

© 2005, Intergraph Corp.  
All Rights Reserved.

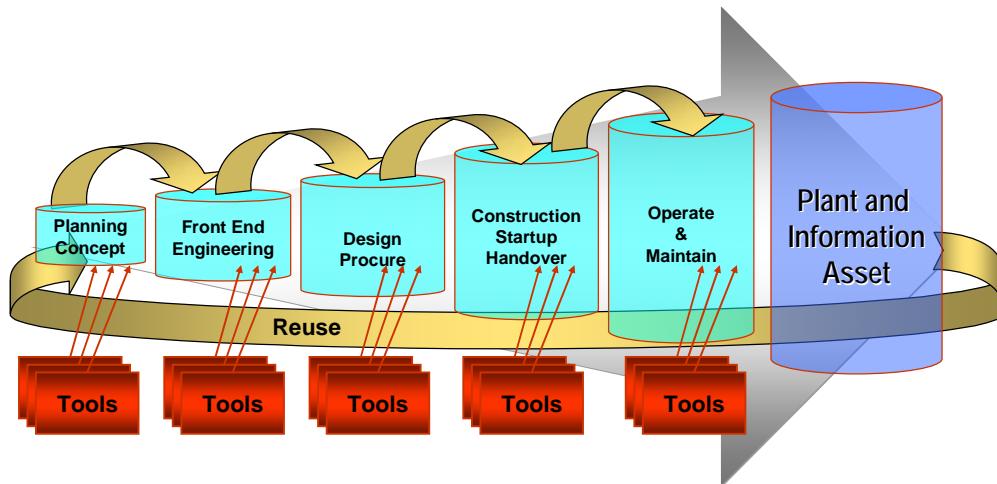


## SmartPlant as the Reporting Engine

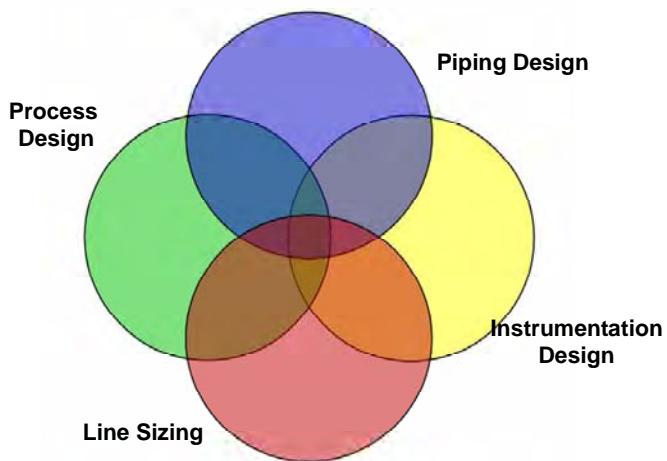


© 2005, Intergraph Corp.  
All Rights Reserved.

## The Flow of Information



## Engineering Discipline Information Overlaps





## The World of Information Management

**Plant Information Management and IT expertise**

**Project execution methodology and skills**

- Requirements definition
- Design Definition
- Test procedures
- Build
- Delivery

© 2005, Intergraph Corp.  
All Rights Reserved.

---



## The World of Information Management

**Highly configurable software product for a wide range of disciplines.**

**Applied in areas such as:**

- Document Management
- As-Built Plant Information Management
- Combustion Turbine Parts Maintenance
- Regulated Pharmaceutical document management
- Computer System Configuration Management (internal)

© 2005, Intergraph Corp.  
All Rights Reserved.

---



## SmartPlant Architecture

SmartPlant is functionality built on top of the **SmartPlant Foundation** database. Each tool that integrates with SmartPlant supports:

- The SmartPlant schema:** A standard data definition designed to facilitate the flow of engineering information through its lifecycle. Each tool works with XML files that are representations of this schema.
- Commands to publish, retrieve, subscribe, unsubscribe and compare between the engineering tool and SmartPlant Foundation database.**
- An adapter that allows communication with SmartPlant.** Engineering tools Zyzqad, SmartPlant P&ID, SmartPlant Instrumentation, and SmartPlant 3D (with others to follow) integrate with SmartPlant by providing an adapter.

© 2005, Intergraph Corp.  
All Rights Reserved.

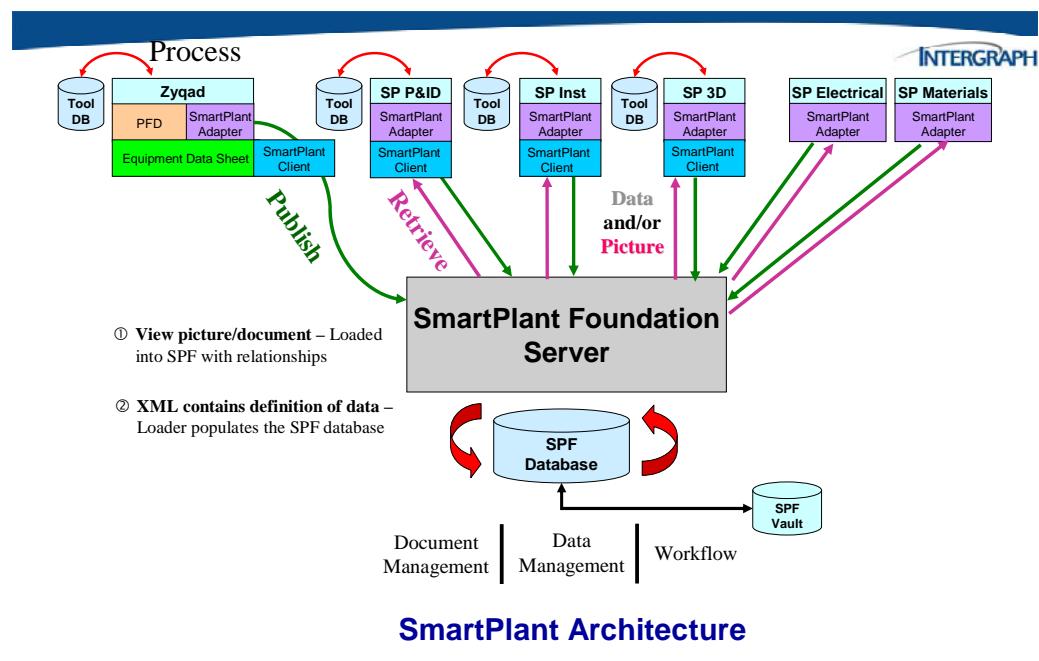
---

The following graphic shows the architecture for SmartPlant. At the heart of the system is SmartPlant Foundation Server (SPF Server).

Each tool has an adapter (SmartPlant adapter) that allows for communication between the tool and the underlying SmartPlant Foundation database and vault. The SmartPlant Client facilitates communication between the tool adapter and the SmartPlant Server. Common tools – such as Zyzqad, SmartPlant P&ID, SmartPlant Instrumentation, SmartPlant 3D, SmartPlant Electrical, and SmartPlant Materials – have the tool adapter and default configuration included in order to communicate with SmartPlant Foundation. Modifications to the included adapters and the authoring of custom adapters are both possible with SmartPlant.

Data created in one tool can be **published** in the form of an XML file via the adapter and the SmartPlant Server to the SmartPlant Foundation database. A different tool can then retrieve that same data for the next phase of design in the engineering workflow. More information on publish and retrieve will be covered later in this chapter.

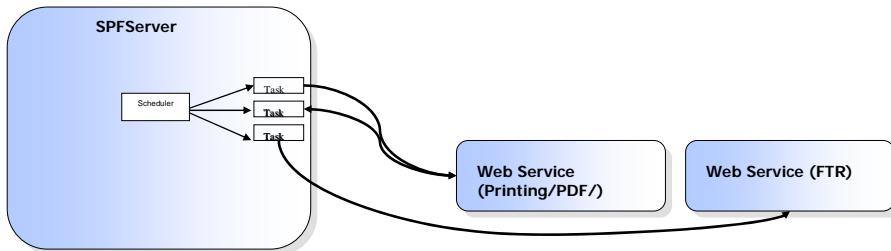
Data published by a tool consists of a view file (picture), which is read-only, and XML files, which are used to populate the SmartPlant Foundation database. Additionally, the XML file is stored permanently in the SmartPlant Foundation vault.



In SPF 4.2, the scheduler is not a separate client. It runs as a thread in the server.

## Introduction to SPF 4.2 Architecture

### SPF 4.2 Scheduler



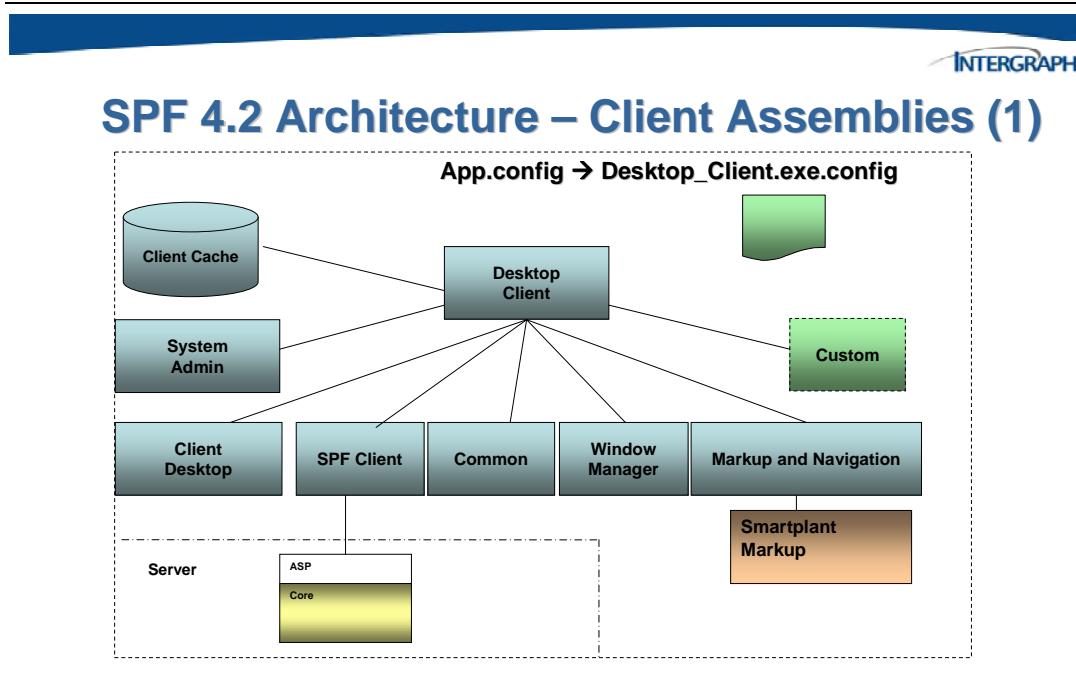
## 1.1 SmartPlant Components Overview

SmartPlant is comprised of the following components:

- ❑ **SmartPlant Client** – An ActiveX .dll that allows the authoring tools to register with SmartPlant, connect to SmartPlant, and publish and retrieve data. After you install the SmartPlant Client on the client computer with an authoring tool and register the authoring tool project with SmartPlant, the SmartPlant Client is transparent to the user.
- ❑ **SmartPlant Server** – Communicates with the SmartPlant Client, the SmartPlant Foundation ActiveX component, and the SmartPlant Loader to make publishing, retrieving, and comparing possible. The SmartPlant Server component is installed on the SmartPlant Foundation server.
- ❑ **Schema Component** – A suite of ActiveX components that provide functionality surrounding the creation, parsing, validation, and comparison of the SmartPlant schema and data.

### 1.1.1 SmartPlant Desktop Client

When a client starts, a set of assemblies are loaded. These assemblies are *Desktop Client*, *SPF Client*, *Common*, *Window Manager* and *Markup and Navigation*.



© 2008. Intergraph Corp.  
All Rights Reserved.

The *Common* assembly contains a common set of things such as exception handling and tracing.

The *App.config* file becomes the **Desktop\_Client.exe.config** file (on the client) when it is compiled. If a custom assembly needs to be loaded at client start, then it has to first be added to the *Desktop\_Client.exe.config*.

## 1.1.2 SmartPlant Client

The SmartPlant Client is a set of components that provide the client-side services of SmartPlant. The SmartPlant common user interface is one part of the SmartPlant Client along with the data services that manage the communications between an application and the SmartPlant Server.



### SmartPlant Client

**The SmartPlant Client provides the methods for communication between the tool adapter and the SmartPlant Server.**

**The SmartPlant Client serves three roles:**

- Communicates with the SmartPlant Foundation Server and returns the results of that communication back to the tool adapter.**
- Calls interface methods on the tool adapter to perform functions associated with the integration process.**
- Provides common user interface components that tools may use to present a consistent UI across all SmartPlant-enabled applications.**

### 1.1.3 Common User Interface

The SmartPlant common user interface (UI) is an ActiveX control that is called by the authoring tool software. The authoring tools provide a command in their user interfaces, typically the **Tools > SmartPlant Browser** command, that calls the common UI's connect command. This connect command starts the SmartPlant Foundation ActiveX component, which, in turn, starts the SmartPlant Foundation Web Client in an Internet browser control.



#### Common User Interface

**The SmartPlant common user interface (UI) is an ActiveX control that allows the authoring tools to communicate with SmartPlant.**

**The common UI does the following:**

- Provides a common user interface across authoring tools for publish, retrieve, and register operations.**
- Responds to events raised by the SmartPlant Foundation ActiveX component.**
- Interacts with the tool adapters.**
- Interacts with the SmartPlant Client component.**

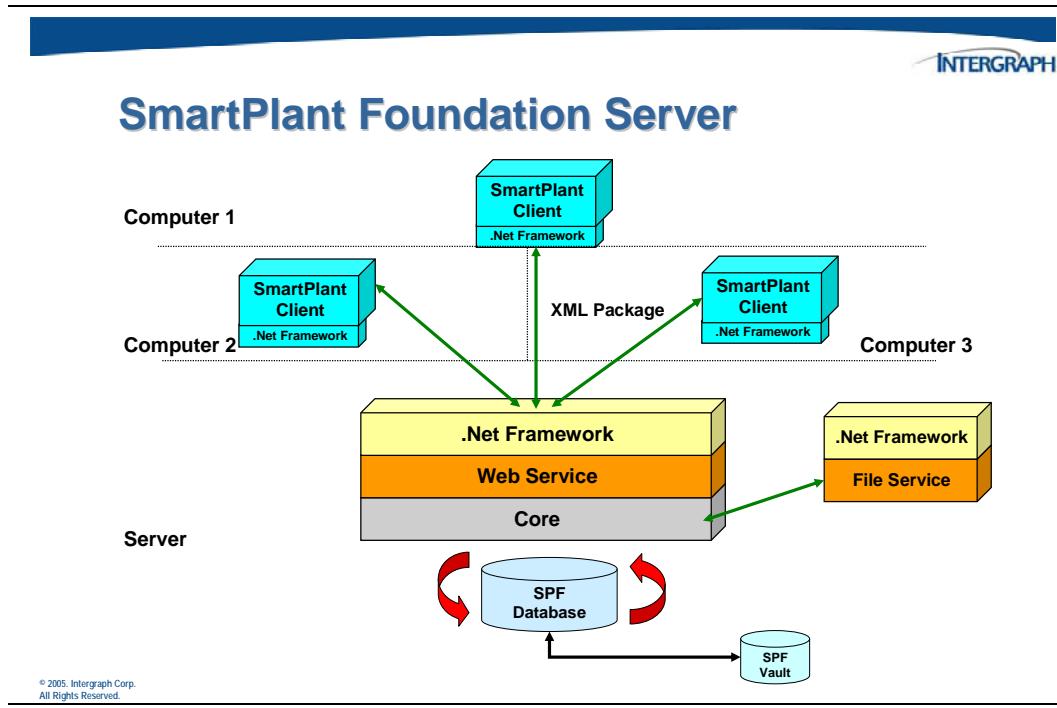
© 2005, Intergraph Corp.  
All Rights Reserved.

---

The SmartPlant common UI is part of the SmartPlant Client. It provides user interface components that may optionally be used by applications to ensure a consistent look and feel to SmartPlant operations across tools. The application calls methods on this component to kick off operations such as register, publish, and retrieve.

## 1.1.4 SmartPlant Foundation Server

The SmartPlant Server component is a software layer on the SmartPlant Foundation server. The SmartPlant Server takes requests from the SmartPlant Client component and communicates with SmartPlant Foundation.

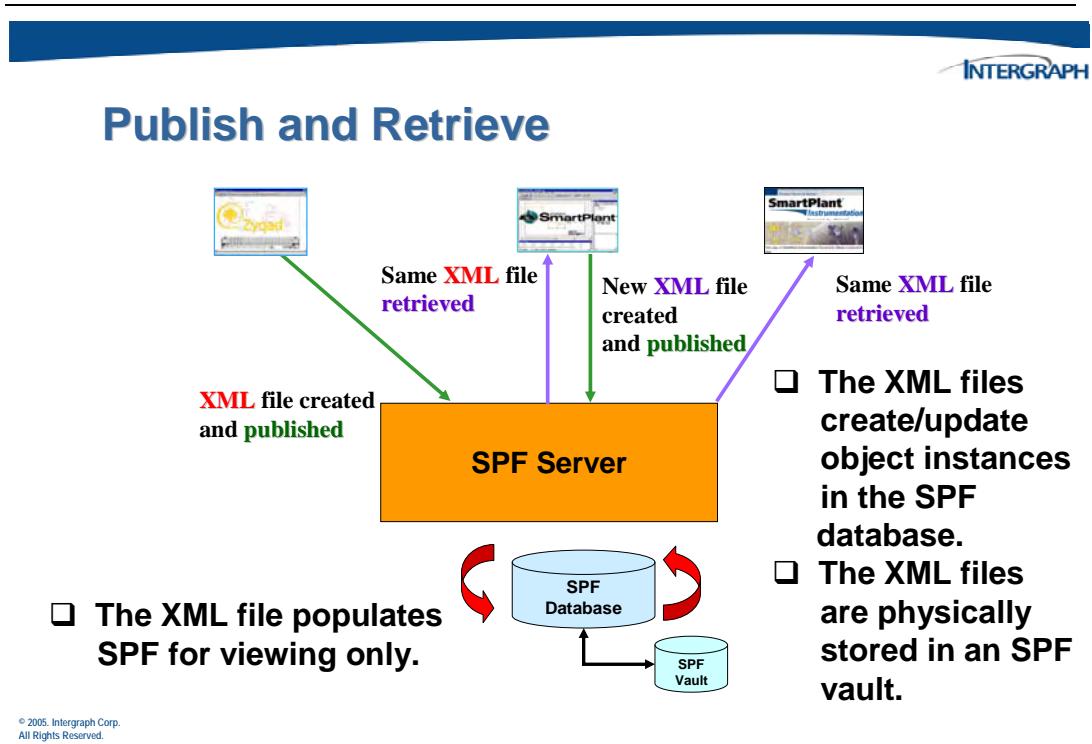


The SmartPlant Foundation Server resides on a server computer, processing requests from various SmartPlant Clients and returning the results of those requests to the SmartPlant Clients. The SmartPlant Foundation Server issues database requests to retrieve and update the information within the SmartPlant Foundation database.

## 1.2 Publish and Retrieve Overview

SmartPlant facilitates automated engineering workflows using design tools that mimic manual workflows in use today. These multi-step workflows take preliminary documents and engineering deliverables through a design process involving designers, engineers, and management. This is called publish and retrieve.

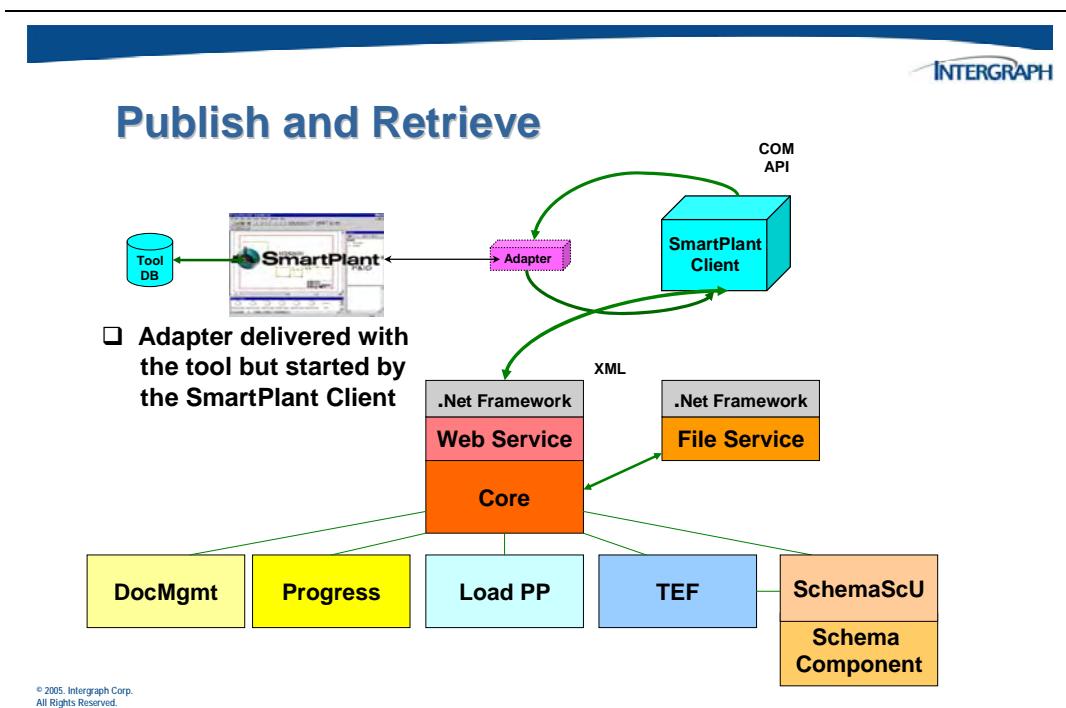
The following graphic shows the typical publish and retrieve process. A document, such as a PFD, is published from Zygad and is then retrieved into SmartPlant P&ID. It is important to understand that by default the XML document published by Zygad is retrieved into SmartPlant P&ID, not the data that was stored in the SmartPlant Foundation database.



From there, a P&ID is published by SmartPlant P&ID and subsequently retrieved into SmartPlant Instrumentation.

The SmartPlant Client starts an adapter, which is used to communicate between the tool and SmartPlant Foundation via the Connection Manager. The Client-Adapter-Connection Manager communication is how documents are published and retrieved by the tools.

On the SPF server side, a different set of assemblies get loaded. These assemblies are *DocMgmt*, *Progress*, *Load PP* (pre-processor for publish and retrieve), *TEF* (SP Integration), *SchemaScU* (SchemaCompProvider) and *SchemaComponent*. The SchemaCompProvider is a way of wrapping the Schema Component, which is a COM assembly. Schema Component gets wrapped in SchemaCompProvider, which is a .Net assembly in order to call it.



## 1.2.1 Registering a Plant

The first step in being able to publish and retrieve documents is to associate, or **register**, a plant in the tool with a SmartPlant Foundation database.

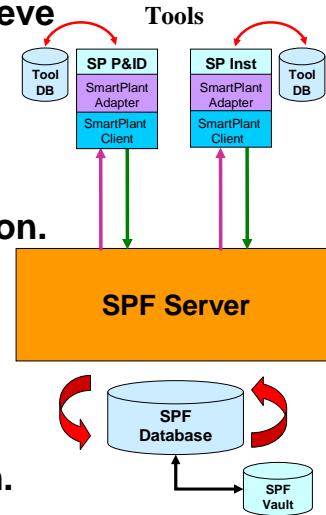


### Registering a Plant

**Before you can publish and retrieve from an authoring tool, each plant in the tool must be associated with a SmartPlant Foundation plant database.**

**This process is called Registration. The tool calls a method called **Register** from the Common UI component.**

**This determines which SPF database the users of the tool publish and retrieve data to/from.**



© 2005, Intergraph Corp.  
All Rights Reserved.

During registration, the software maps a tool plant and its projects to a single SmartPlant Foundation URL, which points to one SmartPlant Foundation plant database and its projects.

The SmartPlant Test Tool, which is delivered with the SmartPlant client, allows you to connect and register with SmartPlant Foundation through the SmartPlant Common UI. This tool can be used as a stand-in for SmartPlant P&ID, SmartPlant Instrumentation, or other authoring tools, and will test many of the parts of SmartPlant that communicate with the design tool. The SmartPlant Test Tool will be used in a later chapter to demonstrate the concept of publish and retrieve.

## 1.2.2 Publishing Documents and Data

Each registered authoring tool can publish documents and associated data to the SmartPlant Foundation database. During a publish, an object is created in SmartPlant Foundation with a view file and associated data.



### Publishing Application Data

**Applications publish documents and associated data into SmartPlant Foundation for several reasons:**

- Data exchange, allowing collaborative enhancement of the data and reducing the need for redundant input of data between tools.**
- Workflow management.**
- Reporting on common data originating in multiple tools.**
- Enterprise-wide accessibility to the documents.**
- Management of change, including workflow history and revision management.**

© 2005. Intergraph Corp.  
All Rights Reserved.

---

The publishing process involves selecting a document to publish, assigning it to a workflow (if necessary), and specifying a revision and version of the document if specified in SmartPlant Foundation. For most documents, the software also publishes the data that is associated with the document when a user publishes the document.

The authoring tools publish data to SmartPlant in .xml format. The software then loads the data from the .xml files to the SmartPlant Foundation database. After the document is published to SmartPlant Foundation, users can retrieve the data from SmartPlant into other authoring tools.

When users publish documents, the software does the following things:

- Creates a new master document and the first revision in SmartPlant Foundation the first time you publish a particular document. From that point on, the software creates new versions and revisions when users publish the document. The software relates revisions to the master document. Users can publish subsequent revisions into a workflow, which can be a different workflow than the original publish. Changes in the document status of a related revision change the status of the subsequently published versions and revisions of the document.

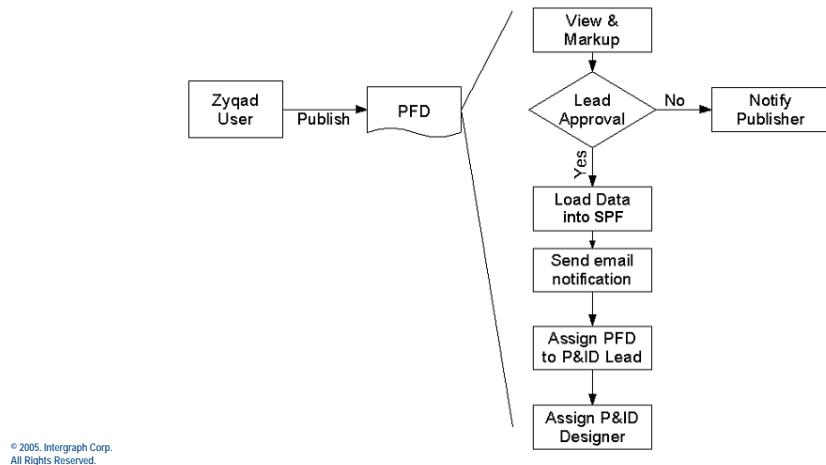
- ❑ Publishes a visual representation of the document that you can view without the authoring tool. For many applications, this is an Intergraph proprietary file, called a RAD file. The viewable file can also be an Excel spreadsheet or another viewable file type, such as .pdf or .doc. Users can review and mark up the visual representation of the document, which is attached to the document revision, using SmartPlant Markup.
- ❑ Publishes associated data into SmartPlant, depending on workflow approval. If the data is approved and loaded, it is used for reporting and subsequent retrieval by downstream applications. The software publishes only meaningful engineering data to SmartPlant. The published data is not enough to recreate the document in the originating tool.

The software publishes some document types without the associated data, such as reports from authoring tools (for example, line lists in SmartPlant P&ID). Users can submit documents published without data to workflows just like documents with data. The document types and data that you can publish depend on the authoring tool you are using.



## Publishing Documents

The **SmartPlant Common UI** allows users to publish a document into a workflow in the SmartPlant Foundation database.



## 1.3 Retrieving Documents

When you retrieve documents from SmartPlant into an authoring tool from another authoring tool, you are retrieving the document's data that was published to SmartPlant. For example, in SmartPlant Instrumentation, you can retrieve engineering information from a published P&ID into the SPI database.

The authoring tools provide commands that let you select a document and retrieve it into that tool. You can use the *SmartPlant > Retrieve* command to open a dialog box that assists you in retrieving applicable documents.



### Retrieving Documents

**You can retrieve a document in two ways:**

- As published (default) – Retrieves only the data the authoring tool originally published with the selected revision and version of the document.**
- With the latest data – Retrieves the latest data associated with the selected document in the SmartPlant Foundation database. If another, more-recently published document contains updates to objects in the selected document, the software retrieves the most current data in the SmartPlant Foundation database for those shared objects.**

© 2005, Intergraph Corp.  
All Rights Reserved.

---

When a document is retrieved, the authoring tool determines how the system deals with changes. SmartPlant P&ID and SmartPlant Instrumentation analyze the impact of the newly retrieved data on the existing database, then place tasks on the authoring tool's **To Do List** that allow you to create, delete, or modify items at the appropriate time in the design process. The To Do List gives you the opportunity to view and understand potential changes before accepting, deleting, or modifying those changes.

Zyqad, on the other hand, automatically overwrites the existing database information when you retrieve data. In SmartPlant 3D, you can view the P&ID using the *View > P&ID* command to pull in the data and correlate items.

## 1.4 SmartPlant Schema Overview

The SmartPlant schema describes the structure of data passed through SmartPlant along with its rules. The SmartPlant schema can be hard to understand; to make it easier to interpret, the **Schema Component** exists. The Schema Component is a set of .DLLs that assists the tools with the generation and subsequent parsing of the XML data. The tool adapter interfaces with the Schema Component (the main interface point) to read the SmartPlant schema. The SmartPlant schema is covered in more detail in the Schema Editor class.



### SmartPlant Schema

**Because SmartPlant is intended to facilitate heterogeneous data exchange, the following rules apply:**

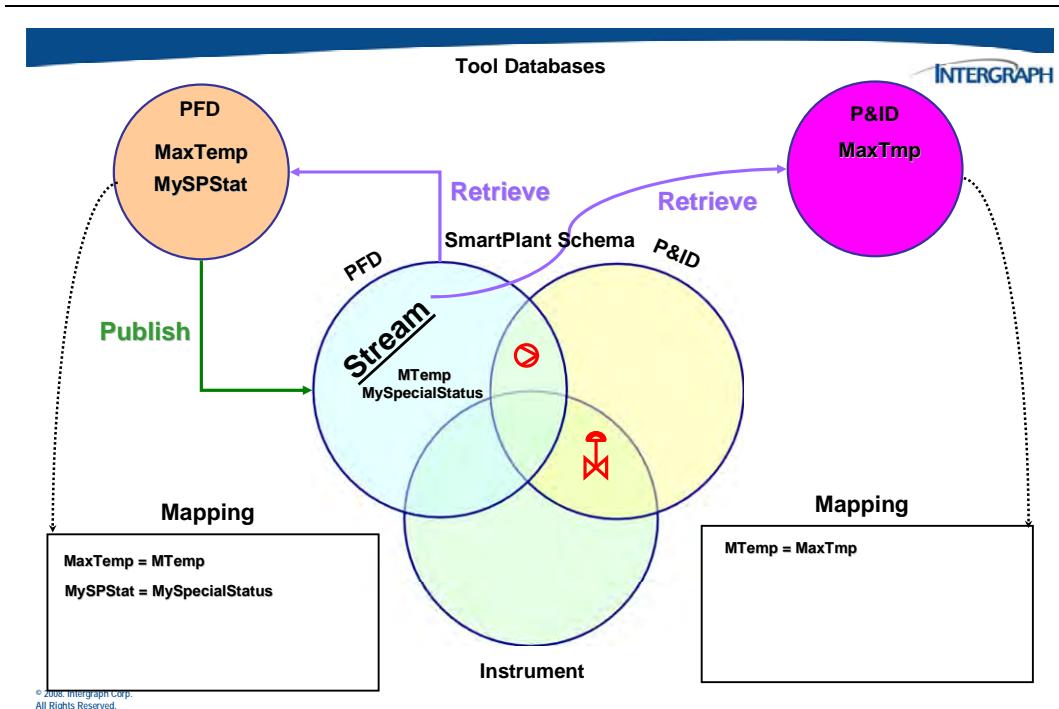
- All schema data is defined as part of the SmartPlant schema.**
- The SmartPlant schema describes everything that goes on in SmartPlant.**
- A copy of the SmartPlant schema (XML file) will reside on the server and every client.**
- Component schemas are selective extracts from the SmartPlant schema.**
- All changes are made to the SmartPlant schema and then propagated to the component schemas.**

## 1.5 Schema Mapping Overview

Each authoring tool that uses configurable mapping has its own schema called a tool schema. In order to make data publishing and retrieval easier, mapping is done between the SmartPlant schema and the tool schema.

Integration with SmartPlant is done in a modular fashion with minimal impact to the application itself. Each authoring tool delivers an adapter that supports the key functionality to publish and retrieve data to SmartPlant. For tools that support configurable mapping, a **map** must be defined between the applications internal data structures and the SmartPlant schema. The Schema Component can be used to help generate the necessary XML files to exchange data and assist with many of the integration operations.

Mapping is not required because there is some hard coding done in the tool adapter so that the adapter can publish default data. However, without mapping, data retrieval can be a big problem. If mapping is done correctly, a tool will be able to retrieve data from other tools.



If a new property is added, it needs to be mapped. Each document/container that is published has an associated component schema that describes the contents that are being published. Therefore, each document type corresponds to a component schema.

A particular tool may publish documents of one type or of multiple types. Therefore, a particular tool may use a single component or multiple components.

SmartPlant only cares about components and not about tools. No correlation exists as to what tool publishes which document types.

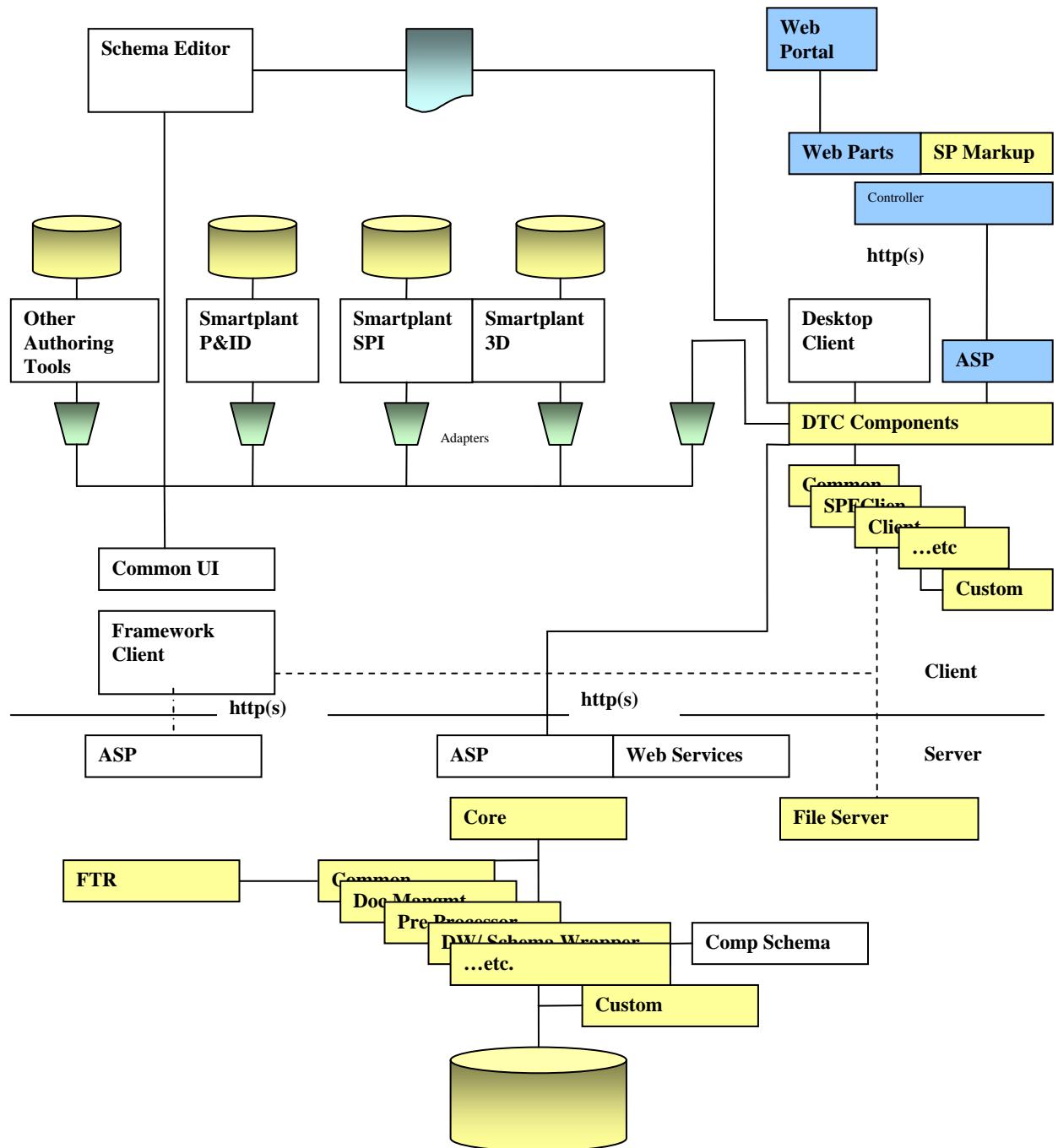
While tools will typically span the different components associated with a particular discipline (for example an instrumentation tool will span the various instrument and wiring document types), no rules exist that require this. As long as a tool can publish documents of the document type for at least one component, it can be a contributor to SmartPlant.

## 1.6 SmartPlant Foundation Structure

SmartPlant Foundation is a single data source, ensuring data accuracy, integrity, and security; improving accessibility and control of work processes; and making plant data readily available to everyone in the enterprise and beyond. All plant/project information is consolidated into one consistent, managed data repository.

In SPF data objects are not deleted when updated in the database. They are terminated so the data stays in the database so a history for the data can be viewed.

## SPF Architecture



## 1.7 SmartPlant Foundation Databases

SmartPlant Foundation core model is delivered with two databases: the authoring database, and the data warehouse database.

---



### Introduction to SPF 4.2 Architecture

**The SPF 4.2 core model is delivered with two databases:**

- SPF42 - The authoring database**
- SPF42adw - The data warehouse database**

---

© 2005, Intergraph Corp.  
All Rights Reserved.

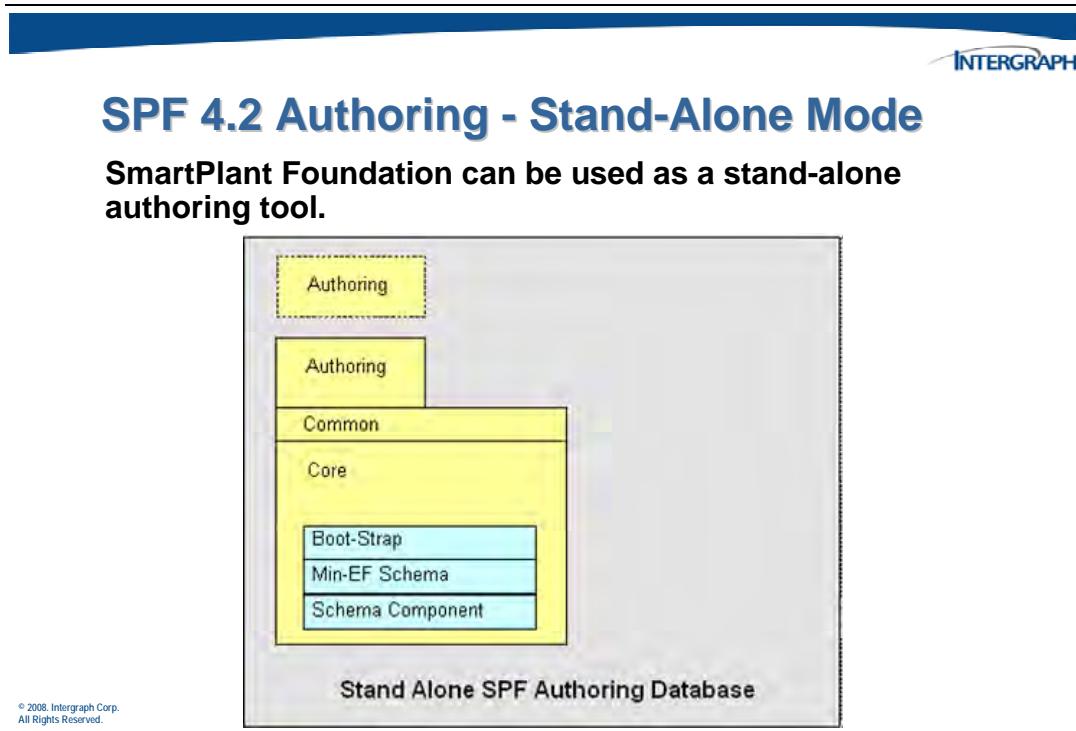
---

Depending on which mode is specified during installation will determine which of these databases will be used.

## 1.7.1 SmartPlant Foundation Authoring - Stand-Alone Mode

In this mode, SmartPlant Foundation is used as a stand-alone authoring tool in which data and document meta data is created, modified and managed indigenously. This means that data is created and managed interactively using the *Desktop Client*, through the *Desktop Client Loader*, or from *Excel* using data sheets.

SmartPlant Foundation may publish data created in SmartPlant Foundation to other tools. However, it will not receive any data published from other authoring tools; that is, it would not operate in a data warehouse mode. The following block diagram depicts this model, including the various layers that are needed for SmartPlant Foundation to operate in this mode.



In this example, the block *Min EF Schema* refers to the minimum set of SmartPlant schema definitions on which the **Core** layer depends on. This block is mandatory for SmartPlant Foundation to work in stand-alone mode.

The **Boot-Strap** layer defines the minimum SmartPlant Foundation configuration to enable a user to launch the Desktop Client.

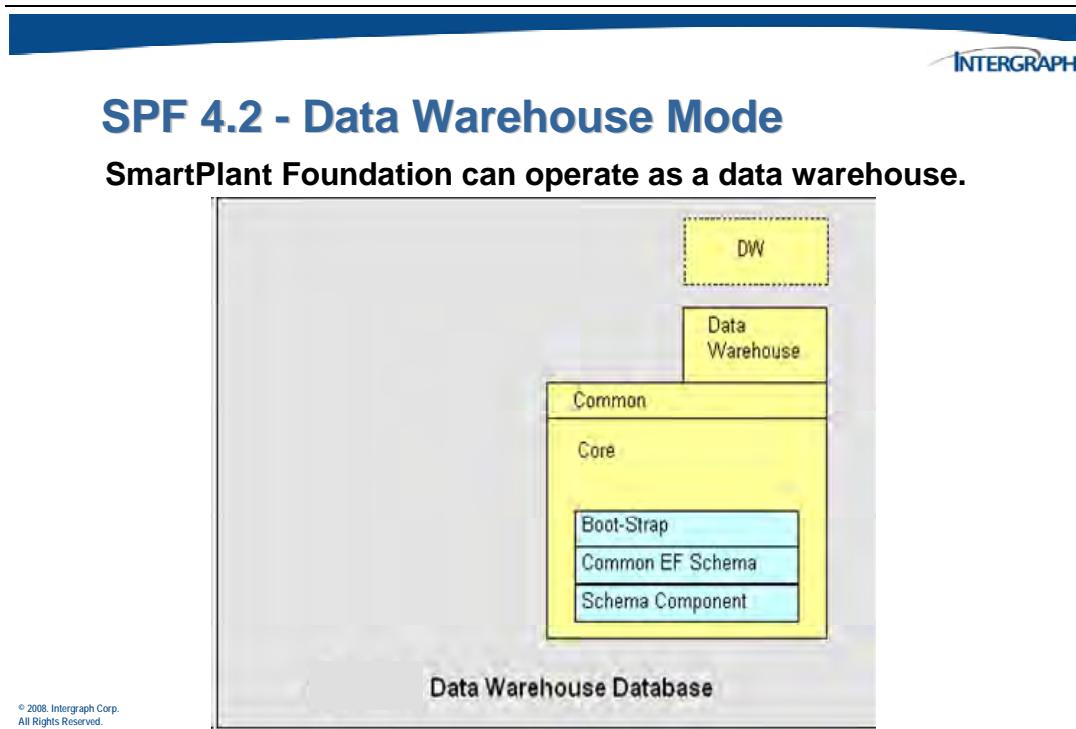
The **Core** adds the majority of the SmartPlant Foundation configuration, including all the administration classes and menus, template and design documents and support items like folders and organizations.

The **Common** layer defines the WBS structure, transmittals and vendor documents. These are not in the core because not all systems will use the same WBS or transmittal structure for example.

The **Authoring** layer defines all of the configuration to support using SmartPlant Foundation as a tool that can be integrated with the data warehouse. This includes functionality such as data sheets and data lists, etc.

## 1.7.2 SmartPlant Foundation - Data Warehouse Mode

In this mode, SmartPlant Foundation operates as a data warehouse. It operates as a repository to store and view published data coming from various authoring tools. In this scenario, the complete SmartPlant schema would be delivered in order to support the data warehouse layer.



---

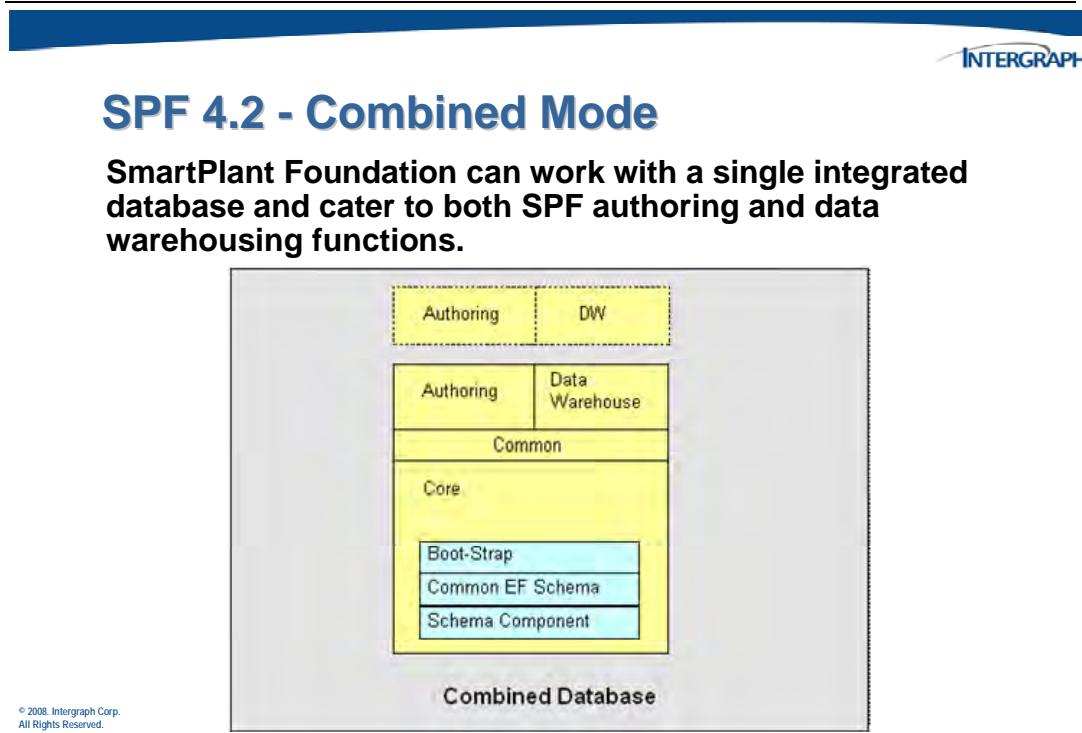
In this diagram, the majority of the configuration is common to the authoring mode.

The **Data Warehouse** layer defines the configuration for supporting the storage, loading, correlation and navigation of data published by the design tools, including SmartPlant Foundation.

Configurations can use a separate SmartPlant Foundation server and database, if SmartPlant Foundation is to be also used in *Authoring* mode.

### 1.7.3 Combined Mode

In this mode, SmartPlant Foundation works with a single integrated database and caters to both SmartPlant Foundation **authoring and data warehousing** functions. The following block diagram depicts this mode.



## 1.8 SPF Containers

Part of the re-design of SPF 2008 (SPF 4.2) is a new feature where each object will have a *containerID* that will allow data definitions to be divided into sub-groups.



### Containers

**Containers segment components of the SPF configuration.**

**SPF is built from sets of files.**

**Each object and relationship *can* have a **containerID**, and is used to separate the data into sub-groups.**

**Usually, the following objects have containerIDs**

- ADMIN and SCHEMA (domains)**
- Reference Data (for example, classification trees)**

**Note:** ContainerIDs can cross domains, thus Authoring appears in both the ADMIN and SCHEMA domains.

© 2008, Intergraph Corp.  
All Rights Reserved.

A containerID should be set in order to specify the sub-grouping for these new definitions prior to creating new security objects. This topic is addressed further later in this chapter.



### Container ID Naming Convention

**ContainerIDs are made up of the following:**

**Layer.Container**

**where**

**Layer = directory**

**Container = prefix\_filename**

**(prefix = Admin, Schema or Domain)**

© 2008, Intergraph Corp.  
All Rights Reserved.

Examples of containerIDs are provided below

- Bootstrap
- Core
  - Core.Forms
  - Core.Reports
  - Core.Workflow
- Common
  - Common.Documents
  - Common.Transmittals
- Authoring

## 1.9 Using the Class VM Session (VMWare Player)

Your class will be using an application called VMWare to enable you to login and run the SmartPlant Foundation application and the class hands on activities. This software is a virtual installation of an entire PC machine complete with the Windows 2003 Server operating system and all other necessary applications. You will find an icon on the desktop of your native class machine called *VMWare Player* (*vmplayer.exe*).



Double click on this icon to start the VMWare application.

The *VMWare Player* window will display.

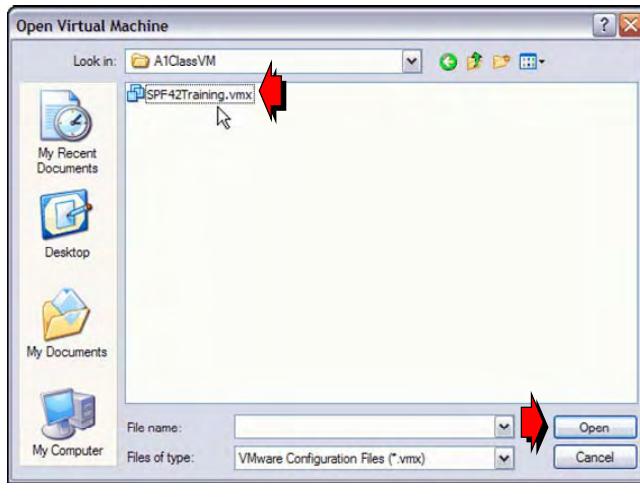


Set your open browser to the folder path specified by your instructor. Write down the path here \_\_\_\_\_.



## Starting the class VM Session

- Choose the class VMWare configuration file as shown.



After selecting the configuration file, the virtual machine boots up.



## Starting the class VM Session

- The virtual machine boots up.



You may or may not see the following dialog box.

---

## Starting the class VM Session

- If you get this informational dialog, click **OK**.

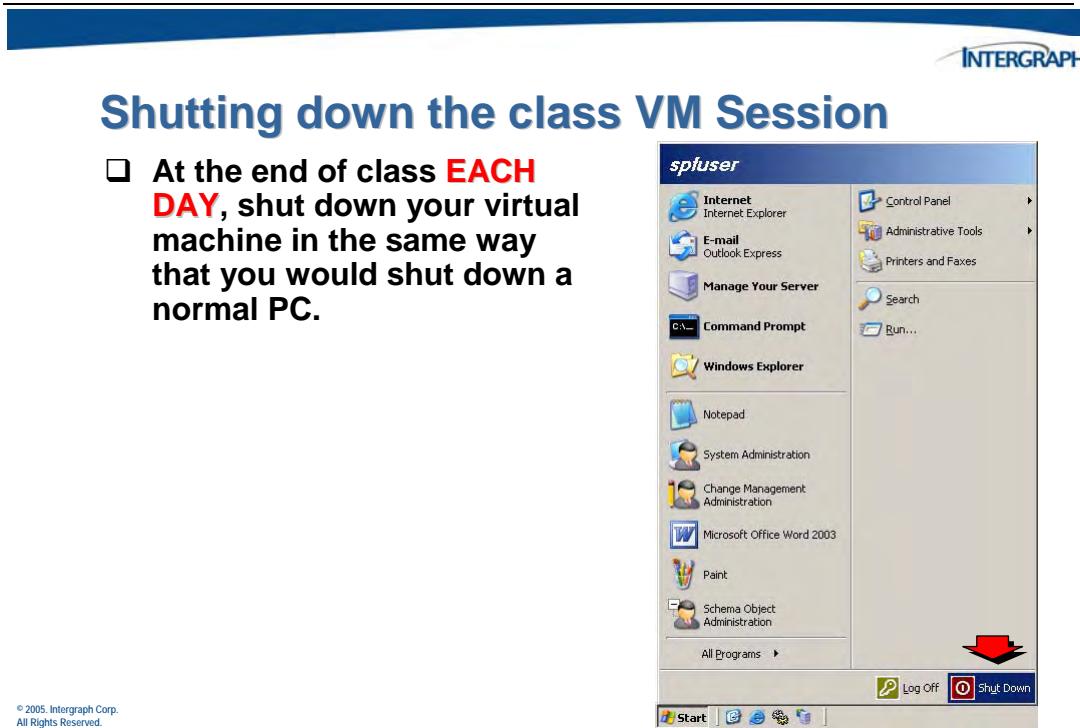


---

© 2008, Intergraph Corp.  
All Rights Reserved.

Once you are in your VM Session, be sure to use **CNTL + ALT +INS**, rather than CNTL + ALT +DEL. The latter command controls action on the base system, where CNTL + ALT +INS performs within the VM session.

When you have finished with your hands-on exercises at the end of each day, please shut down your VM session. This will free up memory in your native machine in preparation for the next day. In the illustration below, you are using the Shut Down command within the VM session.



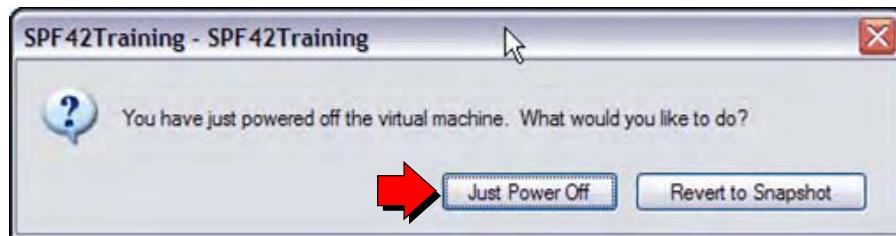
---

You will be prompted for an option when powering off the virtual machine.



## Shutting down the class VM Session

- On class days that are **NOT** the last day, select the **Just Power Off** option.



© 2008, Intergraph Corp.  
All Rights Reserved.

---

This will keep all of your work just as you left it from that day.

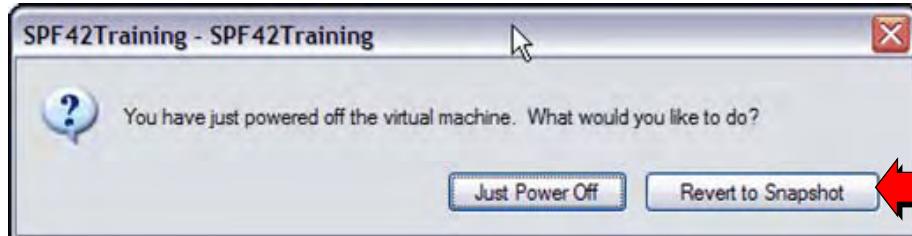
You will revert to the snapshot only on the last day of class when you shut down for the last time. Using the revert option will cause you to lose all of your work from the week.

---



## Shutting down the class VM Session

- On the last class day **ONLY**, select the **Revert to Snapshot** option.



© 2008, Intergraph Corp.  
All Rights Reserved.

---

C H A P T E R

---

# 2

## Introduction to the SPF Desktop Client



## 2. Using the SmartPlant Foundation Desktop Client

The SmartPlant Foundation Desktop Client provides the functionality of the SmartPlant Foundation client system through a windows-based client.

---



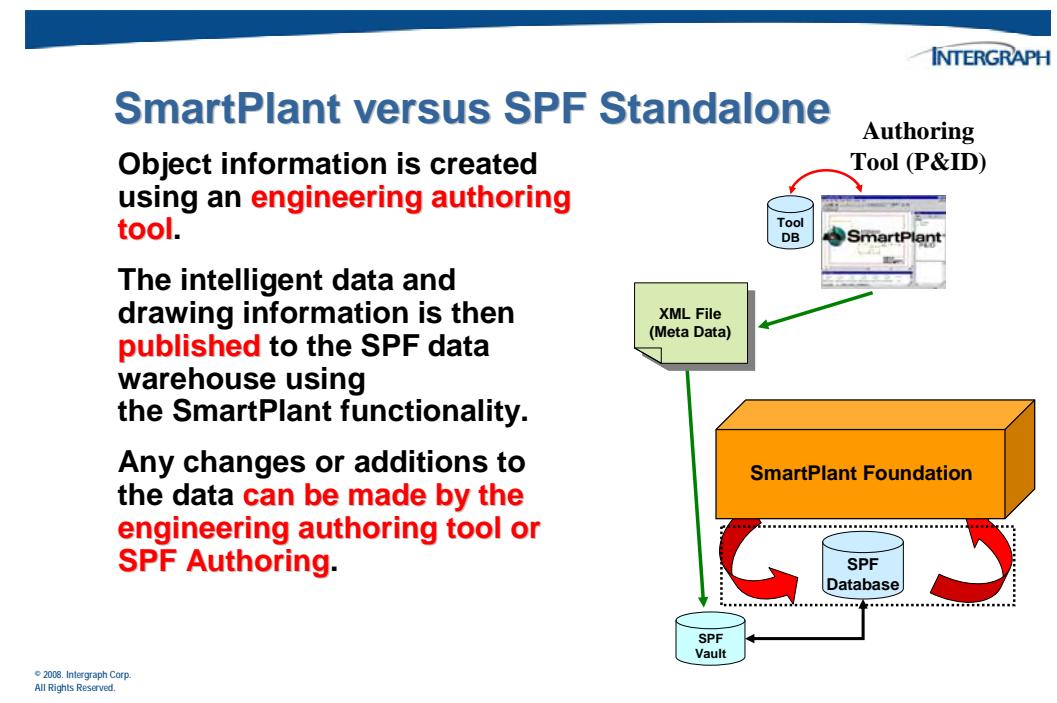
### Desktop Client User Interface:

**Based on the software configuration and authorization of the System Administrator, users can perform the following tasks using the Desktop Client:**

- View information from the database about specific objects
- View a datasheet or history for a particular object
- Update existing objects
- View relationships between objects
- Remove objects or object relationships
- Create new objects and revisions
- Complete steps in workflows
- Interact with SmartPlant

## 2.1 SmartPlant versus SPF Standalone Mode

SmartPlant Foundation (SPF) can be used in two different modes. One mode uses SPF along with the functionality provided by SmartPlant. In this mode, SPF is used as a data repository only, with all data creation and manipulation handled by one of the engineering authoring tools.



The first part of this course covers using SPF in standalone mode. Later chapters will discuss the SmartPlant functionality.

When using SPF in standalone mode, all data creation and manipulation is performed using the interactive client interface or by using the provided loader utility (which is discussed in Chapter 6 of this course and again in the SPF Configuration and Administration II training course). In this chapter, the client interface used for data manipulation, the **SPF Desktop Client**, is introduced and discussed.



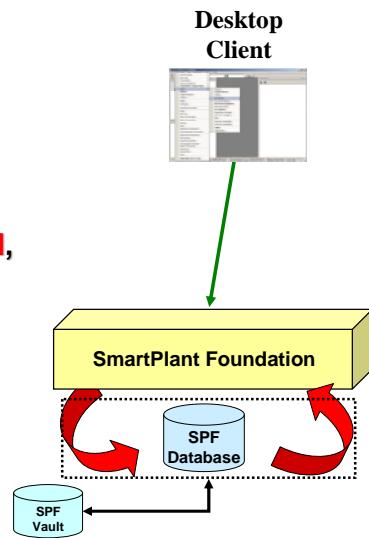
## SmartPlant versus SPF Standalone

In **standalone mode**, object information is created interactively using forms and methods and the Desktop Client GUI.

Data and file information are written to the Data Database.

Data can then be **reviewed, changed, and new information added interactively** using the Desktop Client.

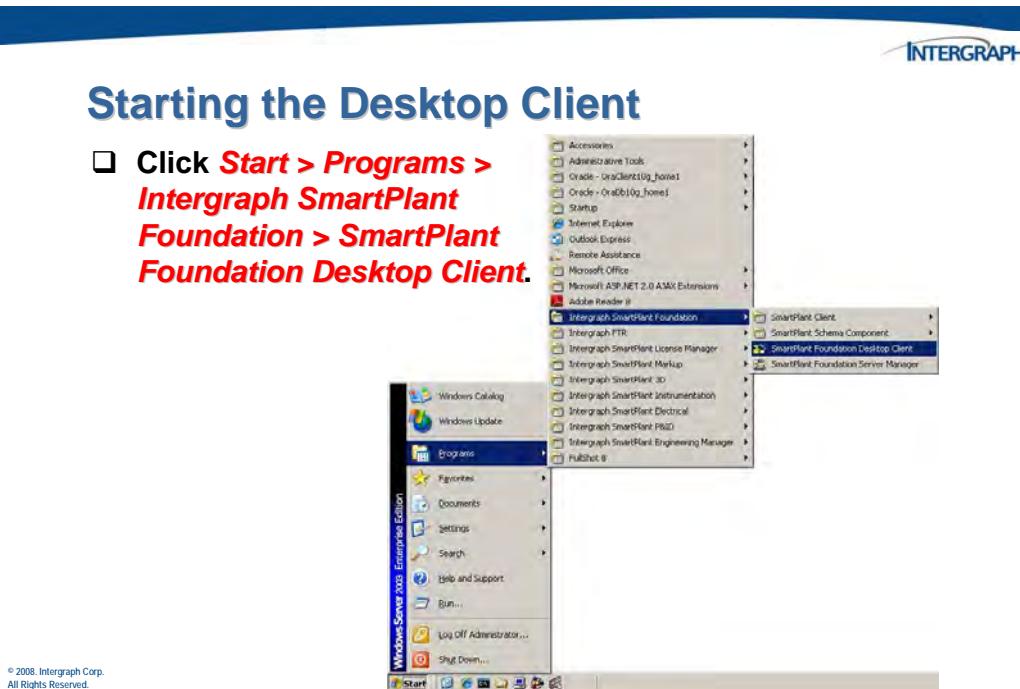
This kind of data is called **non-SmartPlant**, or non-published, documents.



## 2.2 Starting The Desktop Client

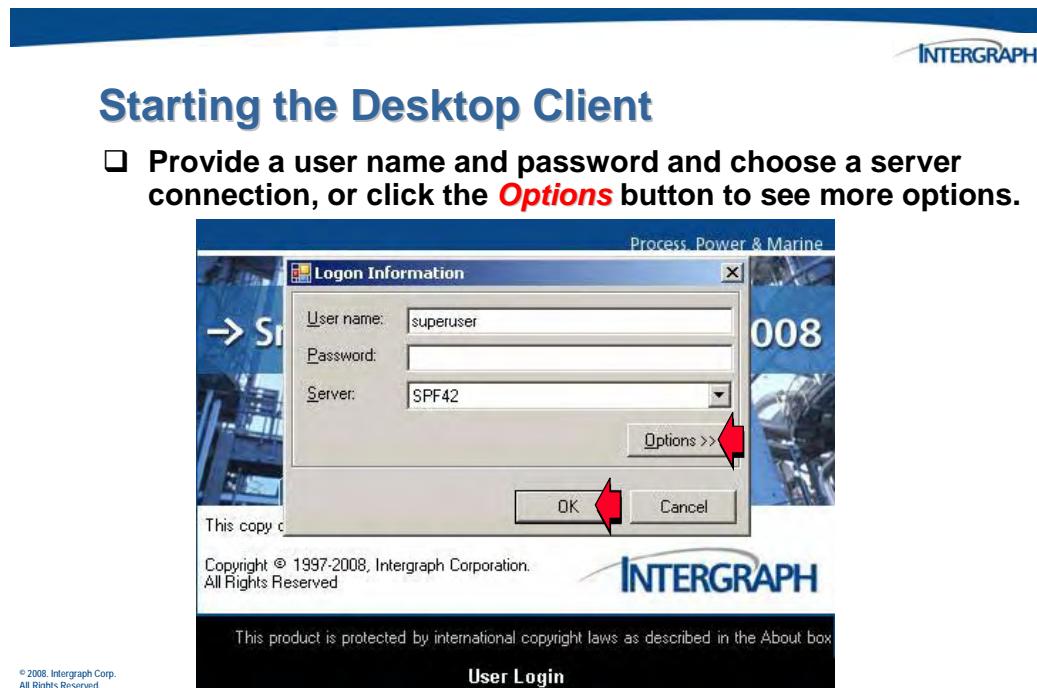
You can use the **Desktop Client** to create, view, and modify different kinds of objects in the SPF database. You can also attach workflows to objects and view and navigate graphical files. All of these functions will be covered in later chapters.

---



The *Logon Information* dialog will appear. This dialog allows you to logon to SPF and select to which database to connect. Click the *Options* button for more options.

---



The *Logon Information* dialog contains the following fields:

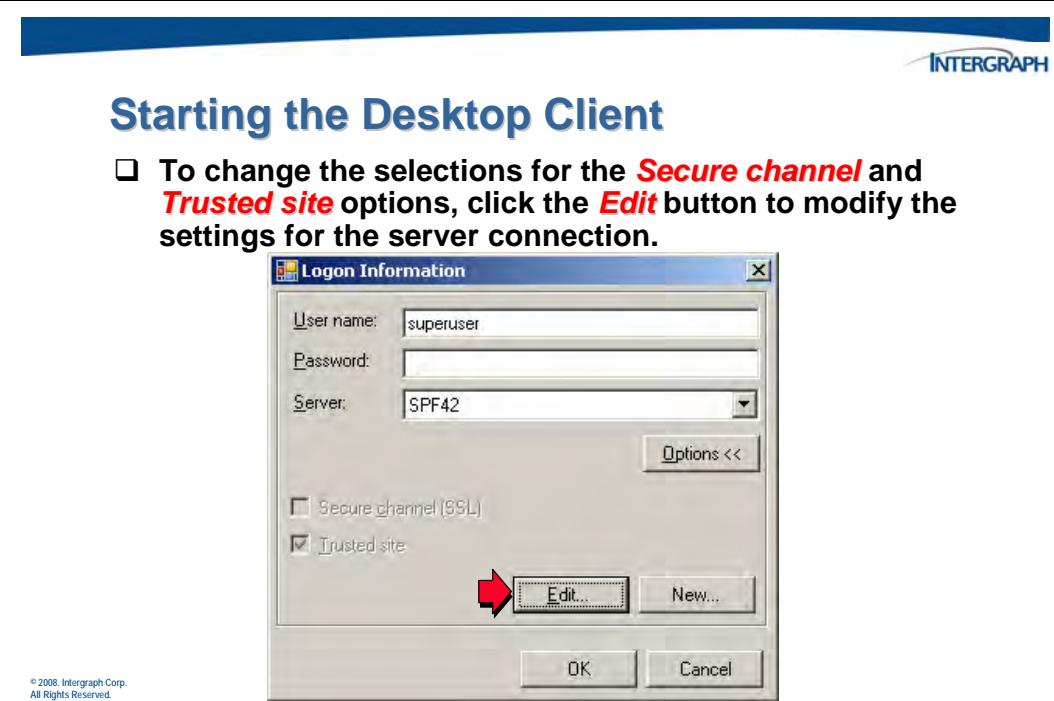
- User name** - Enter your user account name.
  - Password** - Enter your password for your user account.
  - Server** - Select the name of the server from which to access the software. You can also add a new server or edit an existing one.
- 

**Note:** If Windows authentication is enabled on your server and your Windows NT user name is valid in the server configuration, your user name and password will be grayed out on the *Logon Information* dialog box. Click **OK** to log in using your Windows user name and password.

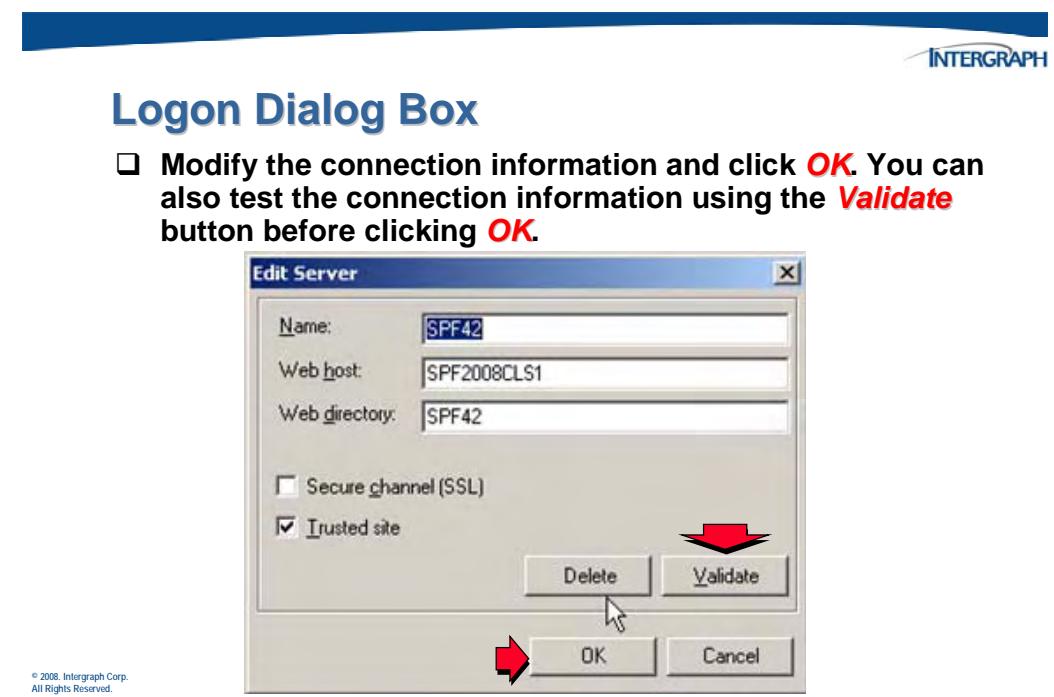
If you have only one server in your Server list and Windows authentication is enabled on that server, you will be logged in automatically if your Windows user name is valid for the SmartPlant Foundation server configuration. Windows Authentication is addressed later in this course.

---

Click **Edit** to modify the connection information or **New** to create a new Server connection.



Test the connection using the **Validate** button.



To create a new connection, provide a name, the web host, and the web directory of the new site.

---



## Logon Dialog Box

- ❑ Clicking the **New** button on the **Login Information** screen allows you to create a new server connection. You can check the connection information using the **Validate** button before clicking **OK**.

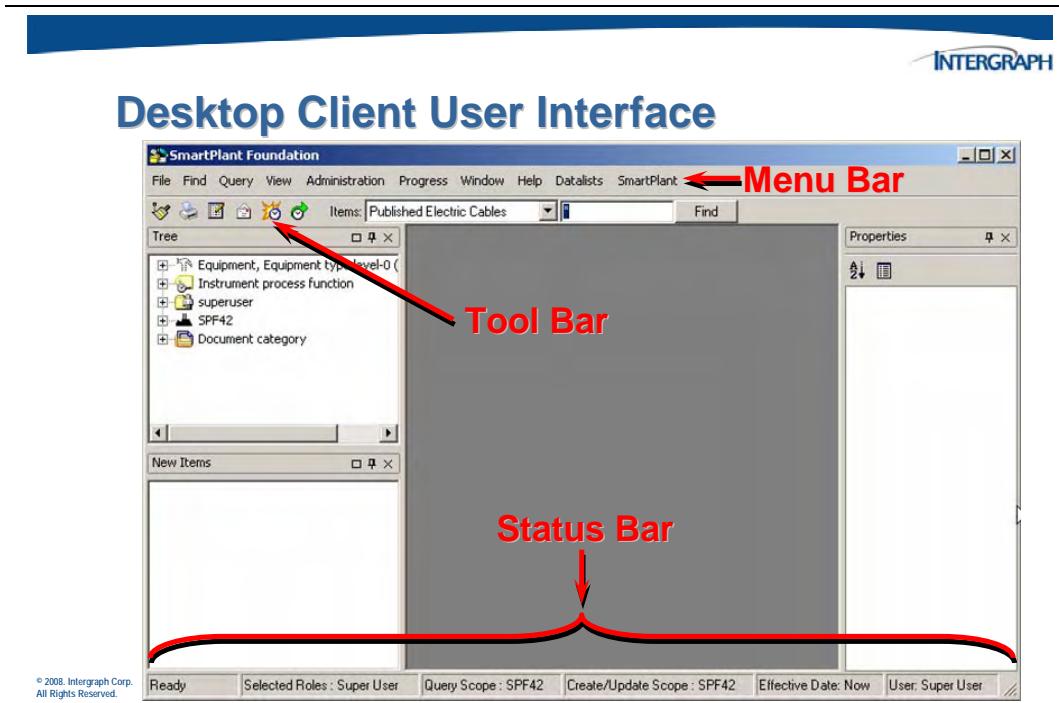


---

Click **OK** or press *Enter* to complete the logon process.

## 2.3 Exploring the Desktop Client User Interface

The first time that you open the SmartPlant Foundation Desktop Client, the software displays the standard Desktop Client controls, including a tree view that contains the hierarchy used to navigate data. This tree view is based on your role and configuration settings defined in System Administration.



When you exit the Desktop Client, the Desktop Client saves a user profile that contains information about the windows, configuration, and other user interface settings. The user profile saves positional information for the tree view, the new items window, and the properties grid, as well as the display settings for the windows, such as whether the windows are docked or floating. If the To Do List is displayed, the user profile also saves the To Do List location. When you open the software again, the Desktop Client user interface displays these windows in the same locations as when you exited. The user profile does not save list view windows.

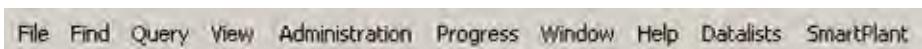
The displayed menu bar is determined by your role in the system, but may look similar to the following.



## Menu Bar

**The SPF Desktop Client menus are configurable and depend on the security configuration.**

**Click the name of a menu to display the menu commands.**



© 2008, Intergraph Corp.  
All Rights Reserved.

---

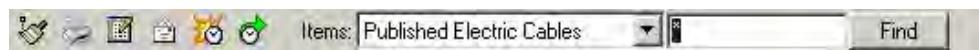
The following is an example of the tool bar in the Desktop Client.



## Tool Bar

**The toolbar displays icons for commonly used commands, so that you can click the icons instead of using the commands on the menus.**

**The SPF toolbar includes a **Quick** find tool that lists all the Quick find methods that you have access to through your user group permissions in System Administration.**



© 2008, Intergraph Corp.  
All Rights Reserved.

---



## Status Bar

The status bar displays the current settings for the **role**, **query configuration**, **create configuration**, **effective date**, and **user**.

You can change any of these settings, except the user, by clicking the current entry.



© 2008, Intergraph Corp.  
All Rights Reserved.

---

You can change the plant and projects to which you have query access by changing the query configuration. You can change the plant and projects to which you have access for creating and updating data by changing the create configuration. When you change the configuration, you select the appropriate plant and project or projects in the configuration tree.

You can change the effective date, which defines a time period for viewing historical data. By changing the effective setting to a date in the past, you can examine the data that was valid at that point in history.

You can change the role



## Desktop Client Windows

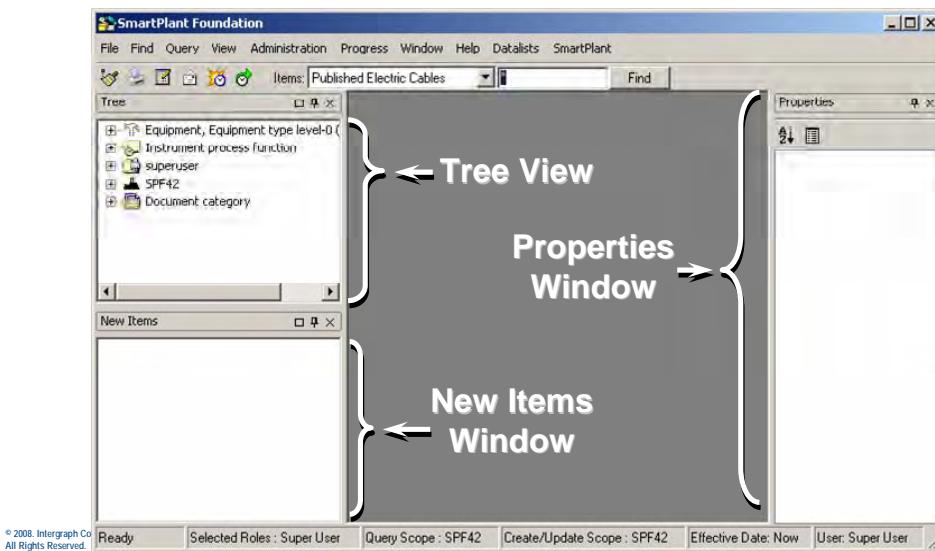
The SPF Desktop Client contains several key windows that you will use to view and modify data, including the following:

- Tree View
- New Items window
- Properties window
- List View
- To Do List (Discussed in Chapter 4)

© 2005, Intergraph Corp.  
All Rights Reserved.



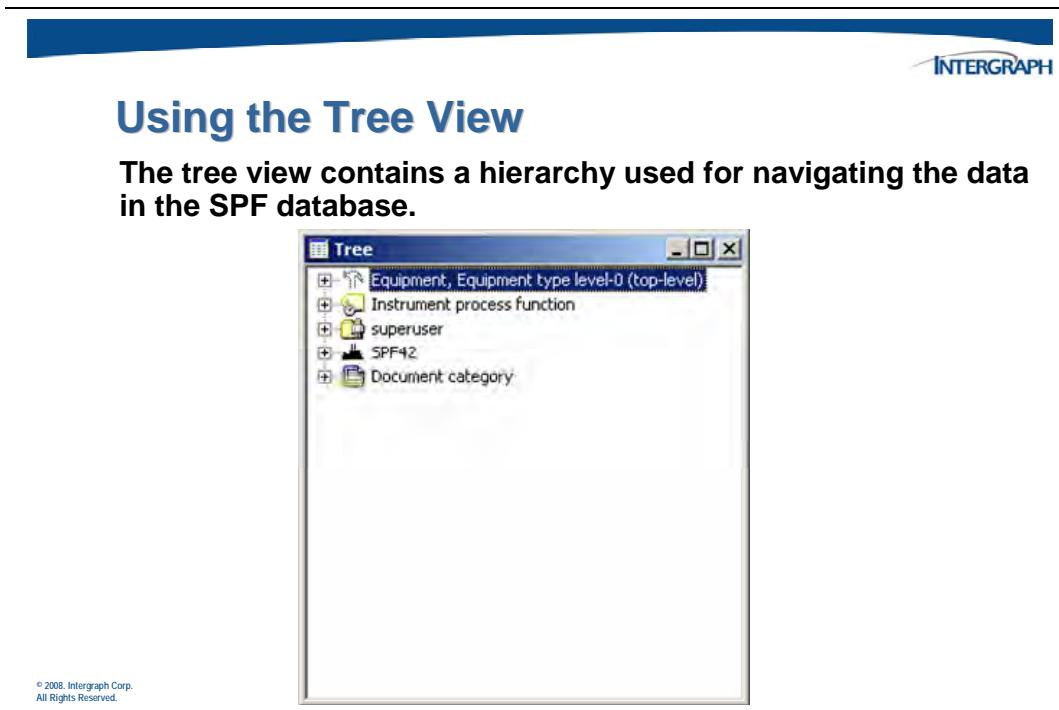
## Desktop Client User Interface



© 2008, Intergraph Co.  
All Rights Reserved.

### 2.3.1 Using the Tree View

When you open the SmartPlant Foundation Desktop Client, the tree view appears on the upper left side of the Desktop Client window.



The default tree is based on your user access and configuration settings defined in System Administration.

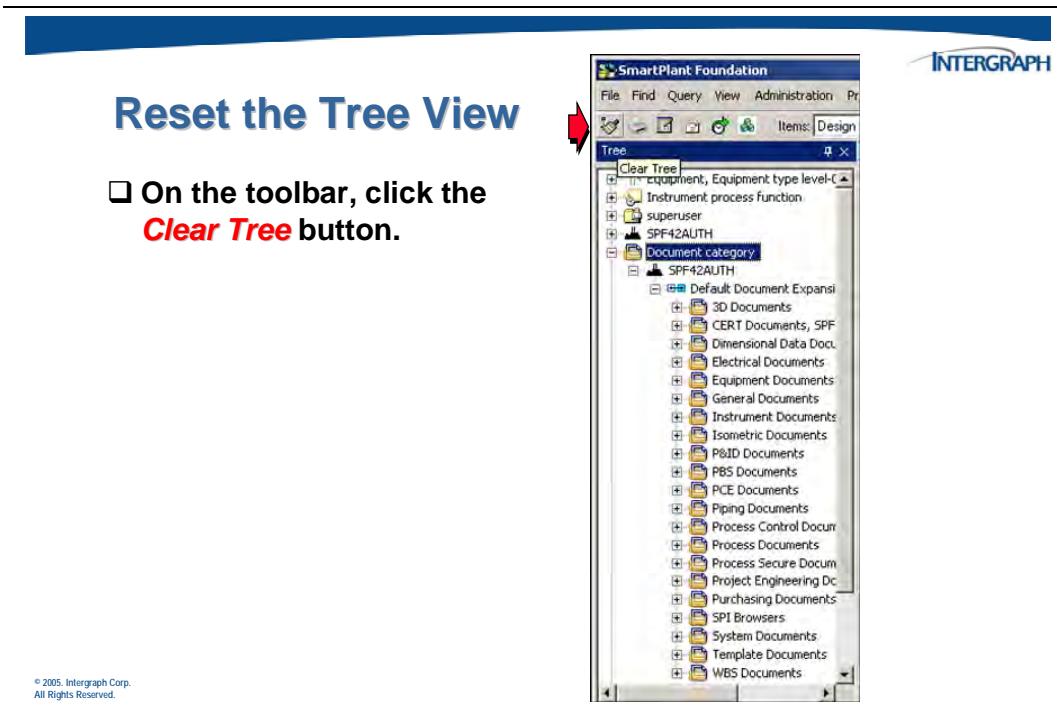
After the Desktop Client is activated, verify that the create scope and query scope are set. If the query scope is not set, you will not be able to expand branches in the tree view.

When you expand a node in the tree view, the software expands the default relationship for the object. For example, expanding the **Document category** node in the tree view might display the existing document types. The default relationship for each object is defined in System Administration.

To display other, non-default relationships for an object, right-click the object in the tree view, and then click the type of relationship that you want to display on the Relationships submenu.

### 2.3.2 Reset the Tree View

To clear all expansions and reset the tree view to its original state, click  **Clear Tree** on the toolbar.

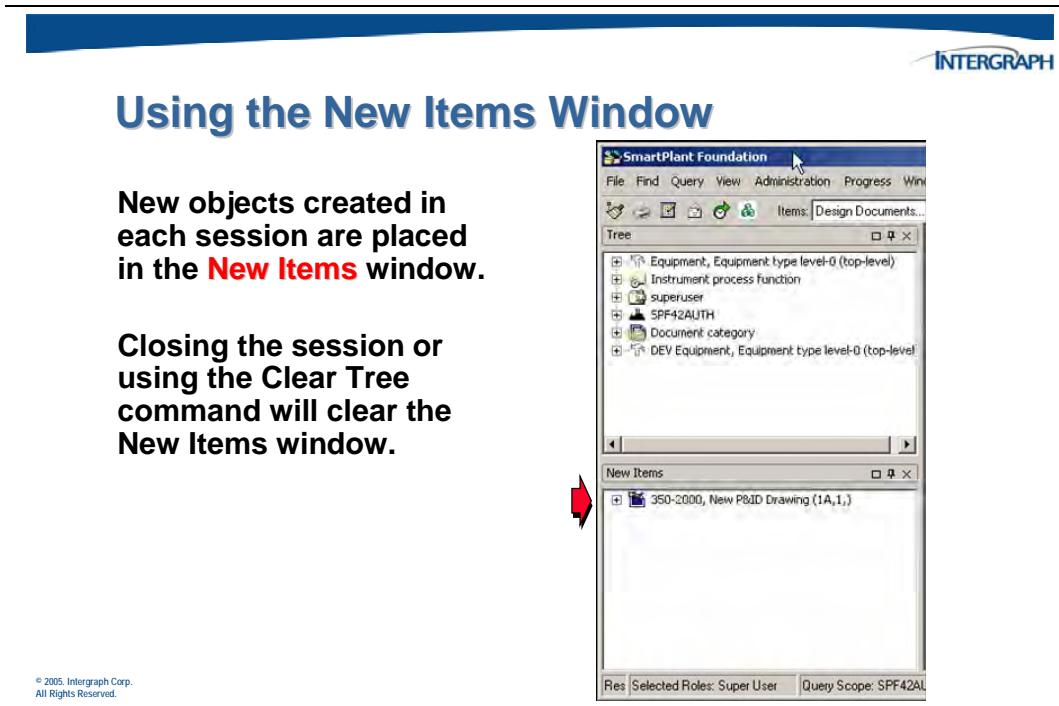


Clearing the tree view resets the tree view to its original state by clearing any expansions that are displayed. This command also clears any items from the *New Items* window.

### 2.3.3 Using the New Items Window

By default, the **New Items** window appears directly below the tree view in the SmartPlant Foundation Desktop Client. As you create objects in the Desktop Client, they are added to the *New Items* window to give you easy access to the objects. If the classification to which new objects belong is part of your default tree view, you can also see these new objects in the tree view when you expand the appropriate relationships.

---



You can also add items to the *New Items* window to traverse relationships from an object in a tree structure. If you select an item in the list view and then drag and drop it into the *New Items* window while holding the CTRL key, the object is added to the window. You can then expand its relationships.

The *New Items* window displays a running list of new objects that you create during the current Desktop Client session. The software clears the *New Items* window when you close the Desktop Client.

As with other windows in the user interface, you can move or resize the *New Items* window and have your user profile store the window location when you exit SmartPlant Foundation.

You can turn off and on the display of the *New Items* window, as well as the *Tree View* and the *Properties* window, by clicking **Window > New Items**.

When the *New Items* window is displayed, a check mark ✓ appears beside the *New Items* command on the *Window* menu.

## 2.3.4 Using the Properties Window

When you select an object in a list view that has data associated with it, the Properties window displays the names and values of the properties associated with the object. To show or hide the Properties window, click **Window > Properties**.

The Properties window displays information only about a selected object. A data sheet, on the other hand, may show information about the selected object and other related objects. The Properties window shows only those properties to which you have access, as defined in System Administration.

You can change the display of properties in the Properties window by clicking any of the buttons shown in the following examples.

In the Properties window, you can toggle between an alphabetic and categorized view of the data by clicking or . By default, the alphabetic view of data appears in the Properties window.



## Using the Properties Window

**Alphabetic** - displays an alphabetical list of properties for the selected object.

This image displays the Alphabetical display. Click the Categorize button in the top Left corner to switch to the Categorized display.



ApprovalStatus	
CleaningResponsibility	
CoatingColor	
CoatingRequirement	
CoatingType	
ConstructionRequirement	Existing
ConstructionType	Existing
DateCreated	
DateLastModified	
Description	Desc_MP-181A
DesignResponsibility	
DryCGX	
DryCGY	
DryCGZ	
DryWeight	
FabricationRequirement	
FabricationResponsibility	
FabricationType	
HeatTracingMediumTemperature	
HeatTracingRequirement	
InstallationResponsibility	
InsulationSurfaceArea	
Material	
OperatingTemperature	
PaintingResponsibility	

© 2005, Intergraph Corp.  
All Rights Reserved.



## Using the Properties Window

**Categorized** - displays a categorical list of properties for the selected object.

This image displays the Categorized display. Click the Alphabetic button in the top Left corner to switch to the Alphabetical display.



<b>Identification</b>	
ApprovalStatus	
ConstructionRequirement	Existing
ConstructionType	Existing
DateCreated	
DateLastModified	
Description	Desc_MP-181A
<b>Insulation &amp; Tracing</b>	
HeatTracingMediumTemperature	
HeatTracingRequirement	
InsulationSurfaceArea	
Material	
OperatingTemperature	
Purpose	
Thickness	
<b>Manufacturing Fabrication Construction</b>	
FabricationRequirement	
FabricationResponsibility	
FabricationType	
InstallationResponsibility	
RequisitionResponsibility	
SupplyResponsibility	
<b>Miscellaneous</b>	
DesignResponsibility	
DescriptionRequirements	

© 2005, Intergraph Corp.  
All Rights Reserved.

## 2.4 Setting User Options

In the SmartPlant Foundation Desktop Client, you can set various user options to customize the Desktop Client. Some of these options include the following:



### Setting User Options

The Desktop Client may be configured by setting various user options.

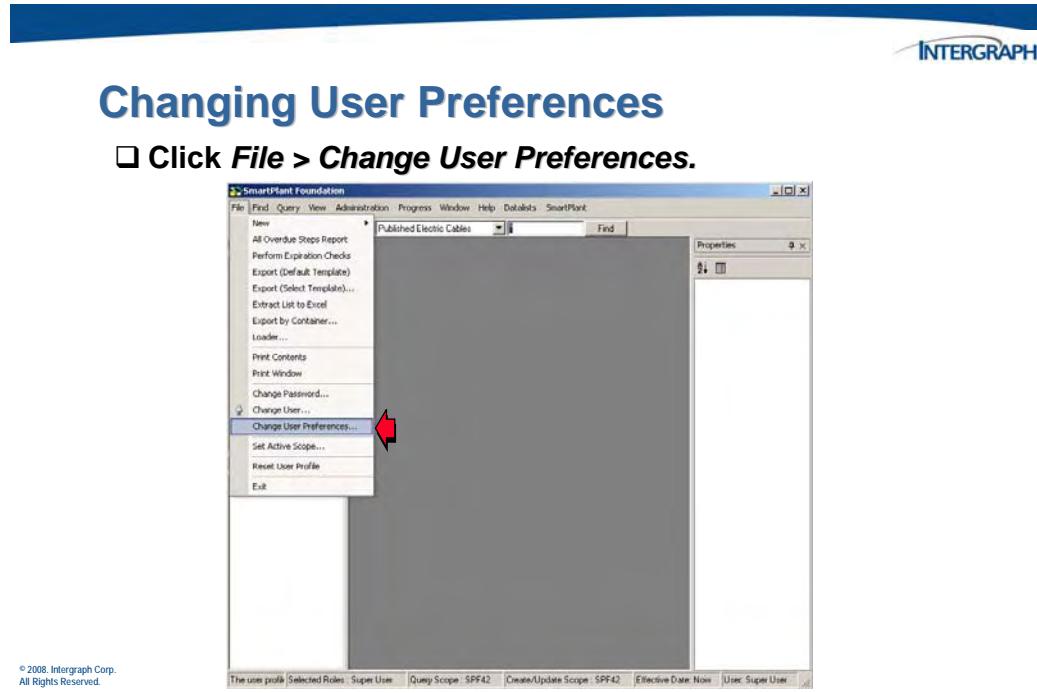
- Set your **preferences view behavior** windows.
- Change preferences for the number of **query results** returned and the number of results at which you want the software to display a warning message.
- Set the refresh rate for the **To Do List**.
- Set the **Active Scope** for object creation and query.
- Change your user **password**.
- Activate or deactivate the **look ahead** feature.
- Change **effective dates**.

## 2.4.1 Changing User Preferences

The Change User Preferences command allows you to set various preferences for the Desktop Client, including expansion and menu options, window management options, and configuration setup options.

The *Change User Preferences* dialog box is available by clicking *File > Change User Preferences*.

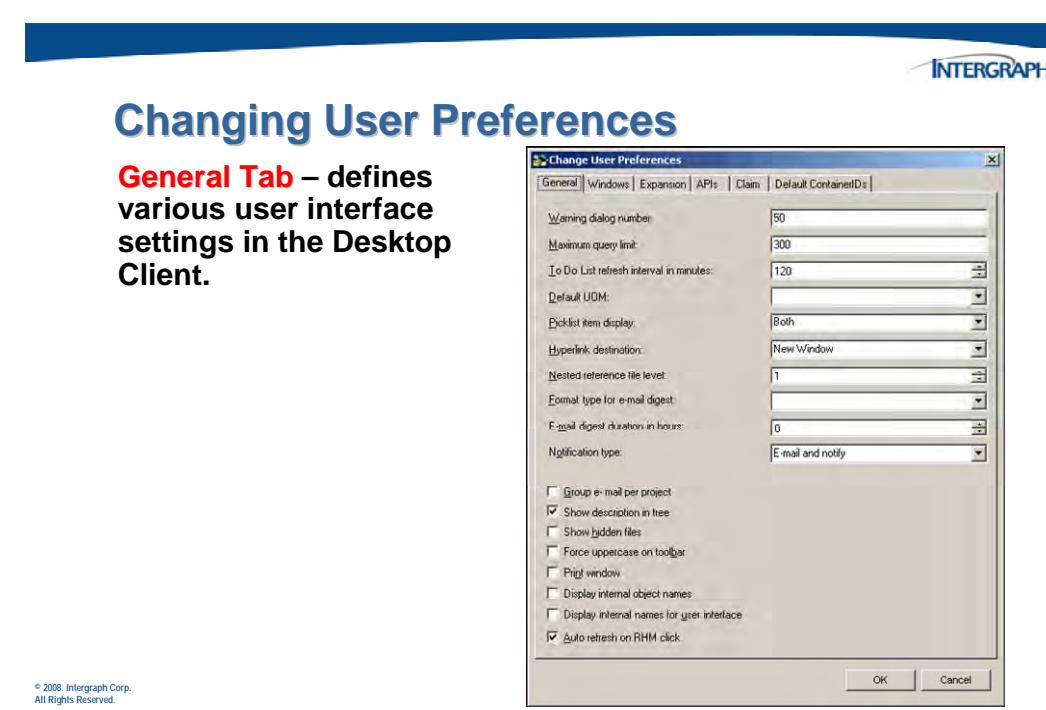
---



The *Change User Preferences* dialog will appear. Use the four tabs of this dialog box to configure how information is displayed to you in the Desktop Client.

## General Tab

The first tab of the dialog box is the **General** tab, which contains generic settings for how the system will behave for the user.



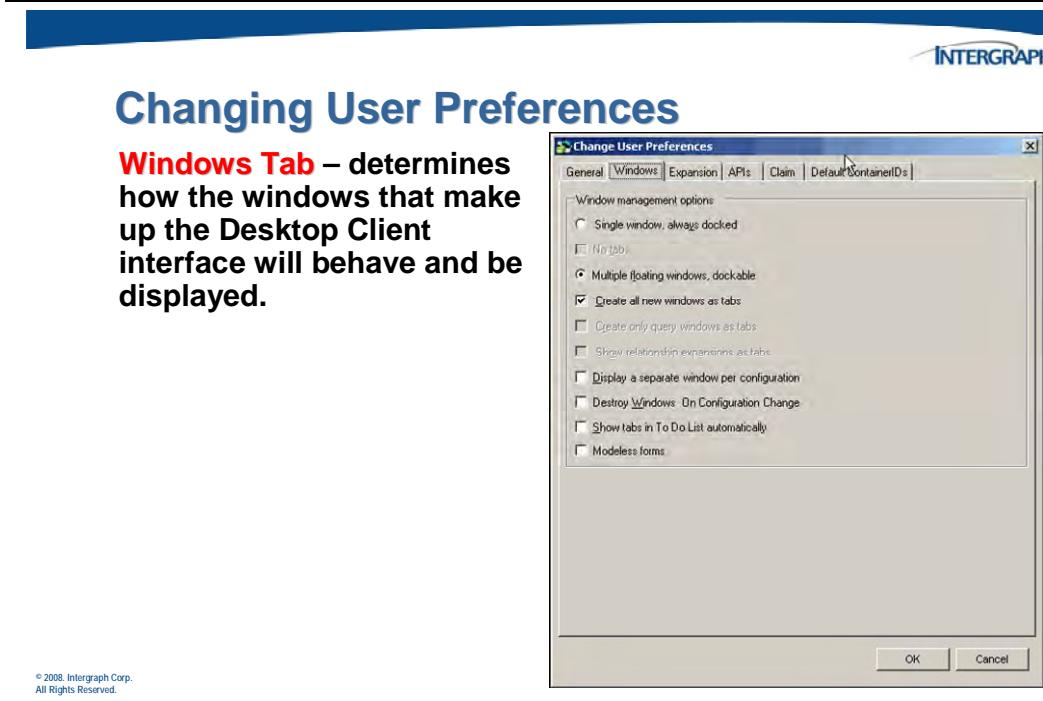
The following fields can be configured on the *General* tab:

- ❑ **Warning dialog number** - Sets the number of results to find in a query before it displays a warning. Example, if this value is set at 20. You will receive a warning message if 20 or more items will be returned by a query.
- ❑ **Maximum query limit** - Sets the upper limit for the number of items found in a query that will be returned. Example, if this value is set at 100. You will receive in your list of returned items only the first 100 items found by the query. If there are 150 items in the database that match that query, only the first 100 encountered will appear in your list.
- ❑ **To Do List refresh interval in minutes** - Sets the number of seconds the computer waits before it refreshes the To Do List. Note that while the field labels says “minutes” the value is actually in seconds.
- ❑ **Default UOM** - Sets the default unit of measurement set. Select a unit of measurement set from the list.
- ❑ **Picklist item display** - Specifies whether item names, descriptions, or both display when picklist values are available in the user interface.

- Hyperlink destination** - Specifies whether hyperlink targets display in a new window, in the tree view, or in the New Items window.
- Nested Reference File Level** - Specifies the maximum number of levels of nested reference files that can be linked to a master file.
- Format type for email digest** - Specifies the format to be used for the email digest, either **Text** or **HTML**.
- Email digest duration in hours** - Specifies how often to receive an email digest email.
- Notification type** - Specifies the type of notification you want to receive from SPF. You can receive notification in the form of email messages, notifications in the To Do List, or both.
- Group Email per Project** - Toggle to specify whether or not to group emails by project when using an email digest.
- Show description in tree** - Specifies whether item descriptions display in the tree view.
- Show hidden files** – Toggle on or off the display of hidden files.
- Force Uppercase in Toolbar** – Automatically types information you enter into the *Quick Find* field in the uppercase format.
- Print Window** – Specifies if you want to print the entire displayed form or just the information on the form.
- Display internal object names** – Specifies the display of objects by their internal name rather than the default display name taken from the object definition or the internationalization resource file.
- Display internal name for user interfaces** – Sets the application to display internal name when displaying interfaces. Internal names are usually more user friendly.
- Auto refresh on RHM click** – Automatically refreshes an object on right mouse click so any updates made to the object are reflected in the selected action.

## Windows Tab

You can manage windows by using the Change User Preferences command. The available windows management options are described here:



- ❑ **Single window, always docked** - Document windows are fixed and new windows are opened as tabbed items in the single window. Tabbed items may be closed by clicking the X in the top right corner. This action does not close the window, only the tabbed item. Alternately, you can right-click on a tab, and click **Close**. Tool windows (Tree view, New Items window, Properties window, To Do List) are independent of this mode and can be moved, docked, and undocked.
- ❑ **No tabs** - Sets view to one single, non-tabbed window. When operating in this mode, any new selection will overwrite the current display in the list view.
- ❑ **Multiple floating windows, dockable** - Sets new windows to display as floating dialog boxes. You can dock these windows against any edge of the main window.
- ❑ **Create all new windows as tabs** - Turns on or off the displaying of all finds, queries, and expansions in new windows. Each new window is placed inside one main window as a tab. You can select the tabs to move between windows, and if you right-click on a tab, it will close that tab. This option is available only if the **Multiple floating windows, dockable** option is selected.
- ❑ **Create only query windows as tabs** - Turns on or off the displaying of all finds and queries, which are grouped inside one main window as tabs. This option is available only if the **Multiple floating windows, dockable** option is selected.

- Show relationship expansions as tabs** - Turns on or off the displaying of all expansions, which are grouped inside one main window as tabs. This option is available only if the **Multiple floating windows, dockable** option is selected.
- Display a separate window per configuration** – Opens separate windows for each configuration in use.
- Destroy Windows On Configuration Change** – Closes active windows, such as list views, when the configuration changes. This prevents attempting to access objects that are out of scope due to the configuration change.
- Show tabs in the To Do List automatically** – Indicates if you want to display multiple To Do Lists as tabs.
- Modeless forms** – Indicates if you want a form to behave modeless. When not activated, forms will behave as Modal dialog boxes. With Modal dialog boxes, you cannot access a parent dialog box until you have dismissed the child. With Modeless dialog boxes, you can switch between the parent and child.

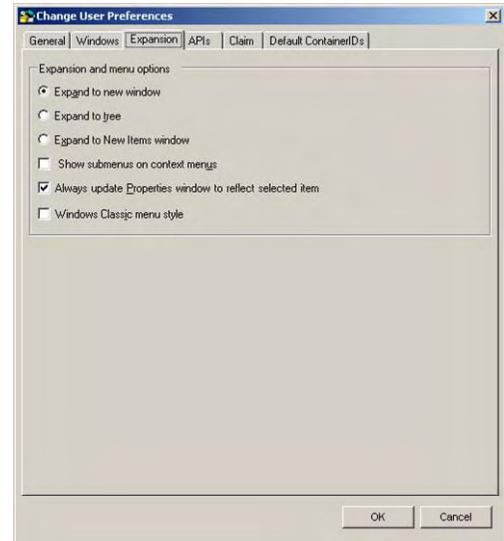
## Expansion Tab

The following fields can be configured on the *Expansion* tab:

### Changing User Preferences

**Expansion Tab – defines how relationships expand in the Desktop Client.**

**The Expansion has not changed in SPF version 2008.**

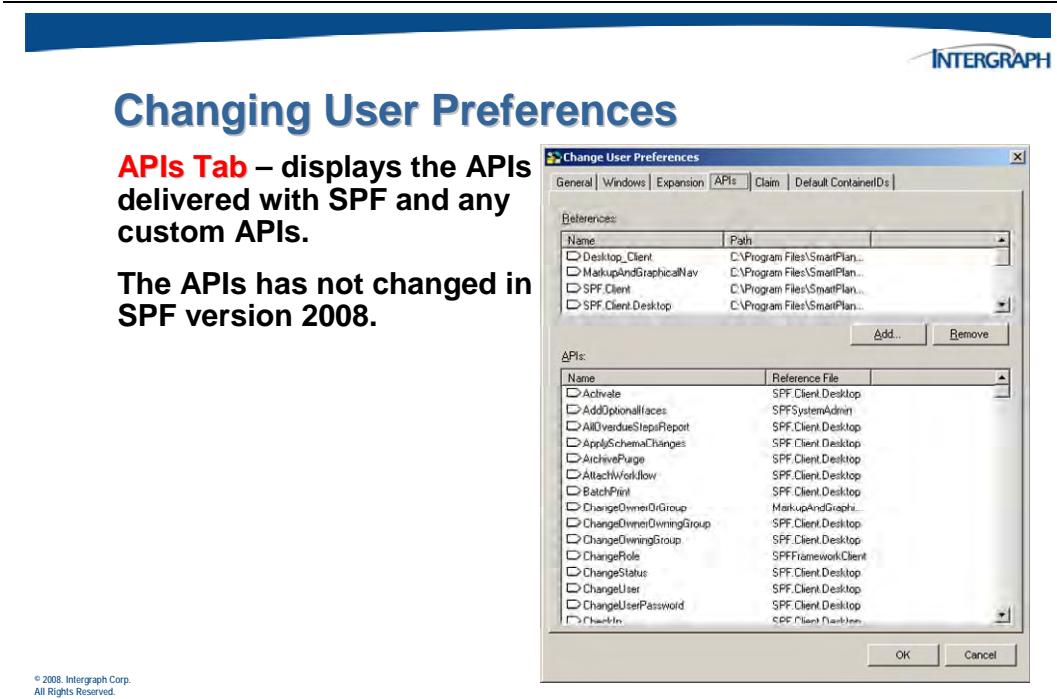


© 2008, Intergraph Corp.  
All Rights Reserved.

- Expand to new window** - Displays items in a new window.
- Expand to tree** - Displays items in the Tree view.
- Expand to New Items window** - Displays items in the New Items window.
- Show submenus on context menus** - Turns on or off the display of submenus.
- Always update Properties window to reflect selected item** - Turns on or off the display of properties values. If this item is turned on, right-clicking an item will display its properties in the Properties window.
- Windows Classic menu style** - Turns on or off the display of Windows-style menus. If this option is turned off, the menus display as web-style menus.

## APIs Tab

The following sections, buttons, and fields can be found under the *APIs* tab:



**References** - Displays a list of the APIs referenced by the software.

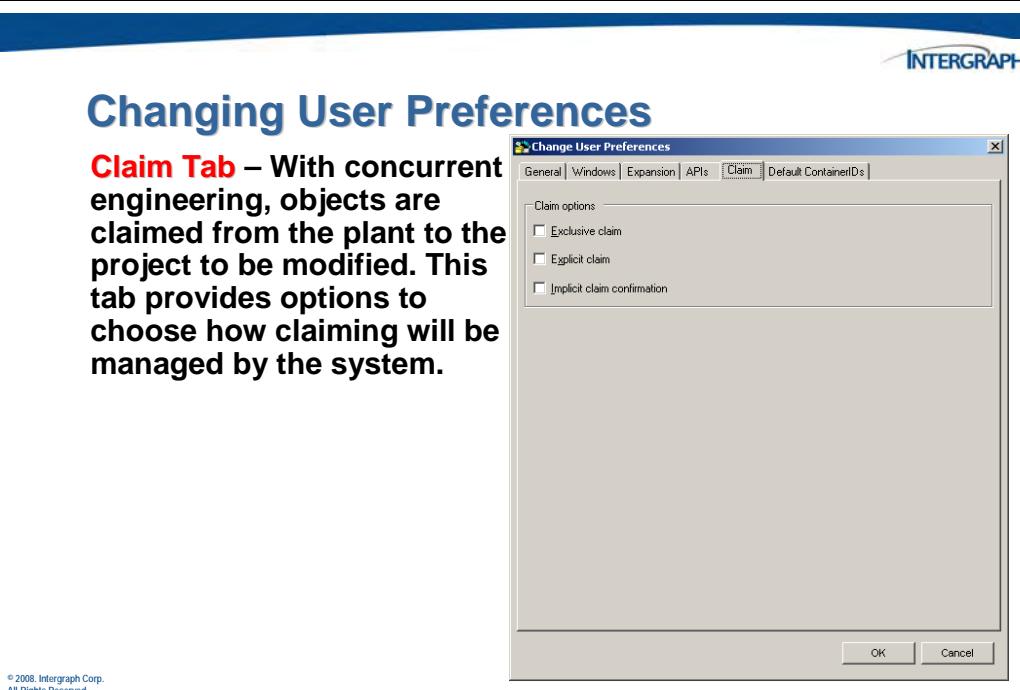
- Name** - Displays the name of the APIs referenced by the software.
- Path** - Displays the file location of the APIs referenced by the software.
- Add** - Writes the selected API to the list of referenced APIs.
- Remove** - Deletes the selected API from the list of referenced APIs.

**APIs** - Displays a list of available APIs that the software can reference.

- Name** - Displays the name of the API.
- Reference File** - Displays the application component that is referenced by the API.

## Claim Tab

A new **Claim** tab is provided to allows users to specify how they want to configure the Concurrent Engineering portion of the software.



- Exclusive claim** – Indicates that items system-wide may be claimed only once.
- Explicit claim** – indicates that system-wide, to work on an object, the user must right-click on the object and use the claim command.
- Implicit claim confirmation** – Indicates that the software should display a confirmation dialog box to the user before claiming the object for that user. If neither the *Exclusive claim* nor *Explicit claim* options are selected, then this option is selected by default..

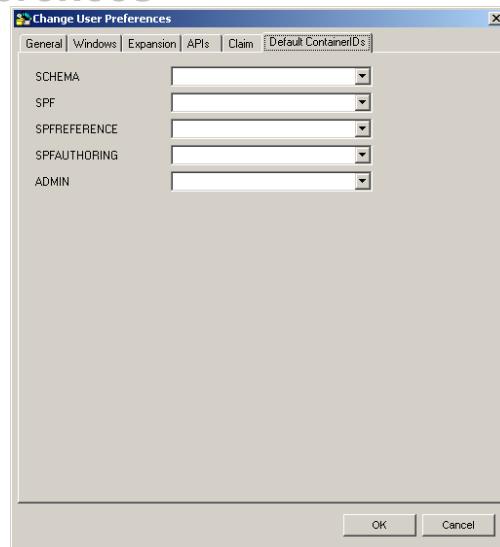
## Default ContainerIDs Tab

A new **Default ContainerIDs** tab is provided to allow users to indicate in what containers new objects should be placed. They may choose an existing contain for each domain, or create a new one by typing in a new name.

---

## Changing User Preferences

**Default ContainerIDs –**  
**Specify the container that**  
**should be used when**  
**creating new objects for**  
**each of the specified**  
**domains. Choose an**  
**existing domain or type a**  
**new one.**



© 2008, Intergraph Corp.  
All Rights Reserved.

---

## 2.4.2 Setting the Active Scope

The **Set Active Scope** command allows you to set the active scope for viewing, creating, modifying, and terminating data within the context of a selected configuration without affecting the as-built data. You are also allowed to choose the role you will play in the selected configuration.



### Setting the Active Scope

**In SmartPlant Foundation, each user works in the context of two active configurations or scopes and at least one role:**

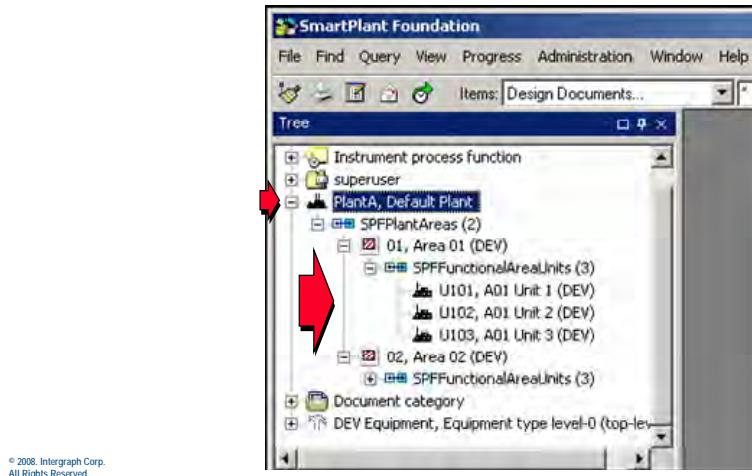
- Query scope – used for all data queries and relationship expansions.**
- Create scope – used for data creation, modification, and termination.**
- Role – specifies what role you want to play in the selected configuration from the list of roles that are available to you.**

The Set Active Scope dialog box can be used either by query or user role.

Configurations in SmartPlant Foundation are represented by a tree of related business objects. Only business objects for which the System Administration definition supports configurations can be part of the configuration tree. Typically, configuration trees contain plants and projects. For example, the following configuration tree contains Plant **EFPLANT-SC-2** and Projects **PRJ-1001**, **PRJ-1002**, **PRJ-2001**, and **PRJ-2002**.

## Setting the Active Scope

- Click + on a plant object in the tree to expand the nodes and see the configurations available.

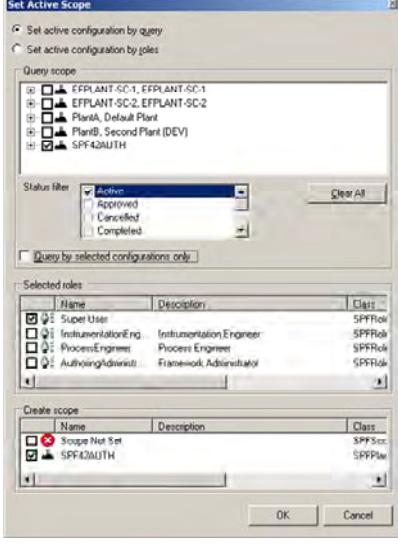


Your query scope defines the plant and/or project in which you want to search for data. Your create scope defines the plant or project in which you can create and update objects.

Click **File > Set Active Scope**. In order to perform queries or create new objects, the active scope must be set. Choose your active configuration by query or by role.

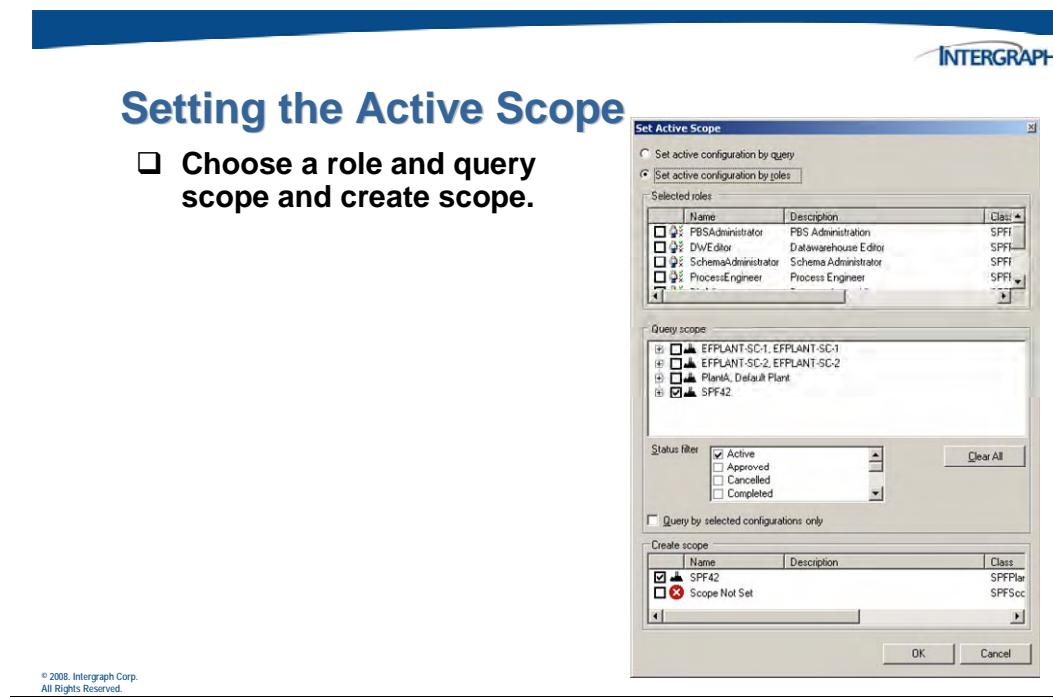
## Setting the Active Scope

- Select a project or a plant from the query scope, a role, and a create scope. Use the Status filter field to determine what configurations are available in the *Query Scope* list.**
- By selecting multiple configurations from the Query scope list, you can perform searches that span all selected configurations.**



© 2008, Intergraph Corp.  
All Rights Reserved.

When you select a scope for querying data, you are defining the scope in which you want to conduct searches. For example, if you select **EFPLANT-SC-2, PRJ-2001** as your query scope, searches will return only data that is part of that plant or that project. In the configuration tree, click the plant or project in which you want to search for objects.



When you select a scope for creating data, any data that you create becomes a part of that scope. For example, if you select **EFPLANT-SC-2, PRJ-2001** as your create scope, any data that you create is part of Project PRJ-2001 in Plant EFPLANT-SC-2. If you do not want the create scope to be the same as the query scope, click the plant or project in which you want to create and update objects in the tree.

- Set active configuration by query/roles** – Indicates if the configuration should be based on roles or query scope.
- Query scope** - Defines the plant and project in which you want to search for data.
- Status Filter** - Sets the life cycle status filter for the configuration(s).
- Selected Roles** – Defines the roles(s) you will play in the selected configuration(s).
- Create Scope** – Defines the plant and project in which you want to create and modify objects..

The results of your selections are displayed in the status bar. You can also make changes to the create and query scopes by clicking the text beside **Selected Roles**, **Query Scope** or **Create/Update Scope** in the SmartPlant Foundation *Status Bar*.



## Setting the Active Scope

The new scope of work will be displayed in the **Status Bar** at the bottom of the Desktop Client window.



If you have selected more than one role or configuration for one of the settings on the **Set Active Scope** dialog box, the status bar will indicate only that multiple choices were selected, not a list of all selected roles and configurations.

© 2008, Intergraph Corp.  
All Rights Reserved.

You can change your create or query scope at any time. However, you can select only from roles, plants, projects, and other objects in the configuration tree that you have access to in SmartPlant Foundation.

After data is created, modified, and terminated within a project scope, it can be merged back into the parent configuration level. This process is repeated until the changes are merged into the as-built configuration.

## 2.4.3 Change User Password

The **Change User Password** command allows you to change the password you use to log in to the SmartPlant Foundation Desktop Client. Click **File > Change User Password**.

The *Change Password* dialog appears.

### Change User Password

- Enter the old password, a new password, and then confirm the new password.



© 2005, Intergraph Corp.  
All Rights Reserved.

The following fields are available in the *Change Password* dialog:

- User name** - Displays the user name for the current user. This field is display-only.
- Enter old password** - Type the password that you want to change.
- Enter new password** - Type the new password.
- Confirm new password** - Retype the new password.

You can change your SmartPlant Foundation user password only if Windows authentication is *not* enabled on your server. If Windows authentication is enabled, SmartPlant Foundation uses your Windows user name and password to log you in, so you must change the password in Windows.

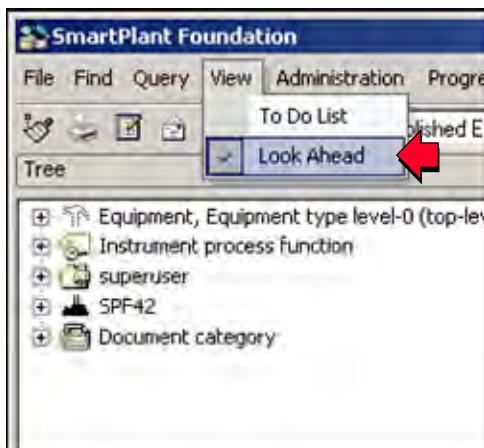
## 2.4.4 Enabling Look Ahead

Looking ahead for associations allows you to see the number of related objects in parentheses beside expansion headings in the Tree view and beside shortcut menu commands that display particular relationships.



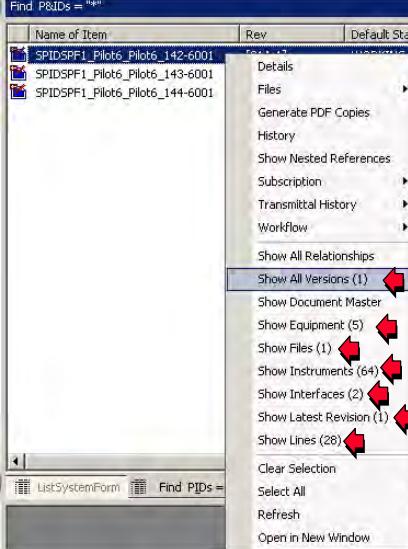
### Enabling Look Ahead

- Select the **Look Ahead** option from the **View** menu. A check mark (✓) indicates the option has been enabled.



**Note:** Using the Look Ahead feature may affect system performance.

Once activated, the Look Ahead feature provides information about the number of relationships that exist for an object, as illustrated here:



The screenshot shows a Windows context menu open over a list of items in a spreadsheet-like interface. The menu items and their counts are:

- Show All Relationships
- Show All Versions (1)
- Show Document Master
- Show Equipment (5)
- Show Files (1)
- Show Instruments (64)
- Show Interfaces (2)
- Show Latest Revision (1)
- Show Lines (28)
- Clear Selection
- Select All
- Refresh
- Open in New Window

© 2005, Intergraph Corp.  
All Rights Reserved.

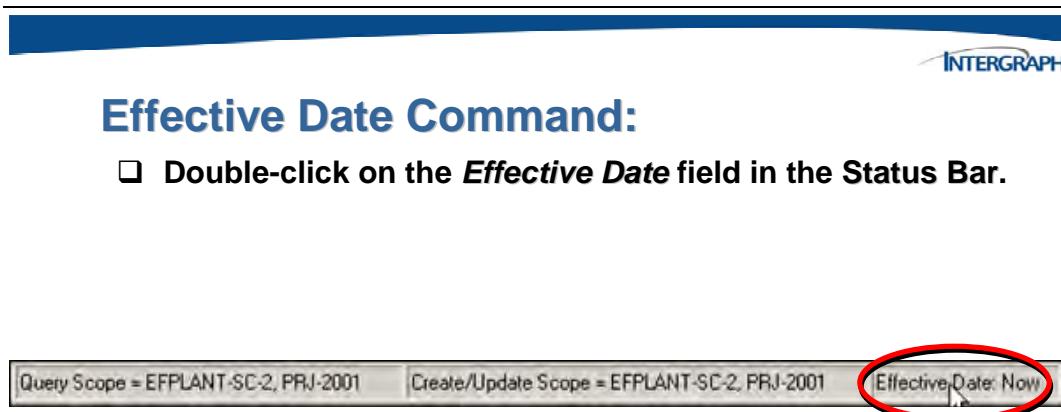


The screenshot shows a tree view of document categories. Each category node displays a count of related documents. The categories include:

- Document category
  - SPF42
    - Default Document Expansion (20)
      - 3D Documents
        - Default Document Expansion (9)
      - Dimensional Data Documents
        - Default Document Expansion (5)
      - Electrical Documents
        - Default Document Expansion (2)
      - Equipment Documents
        - Default Document Expansion (4)
      - General Documents
        - Default Document Expansion (17)
      - Instrument Documents
        - Default Document Expansion (1)
      - Isometric Documents
        - Default Document Expansion (1)
      - P&ID Documents
        - Default Document Expansion (1)
      - PBS Documents
        - Default Document Expansion (1)
      - PCE Documents
        - Default Document Expansion (1)
      - Piping Documents
        - Default Document Expansion (1)
      - Process Control Documents
        - Default Document Expansion (1)
      - Process Documents
        - Default Document Expansion (1)

## 2.4.5 Configuring the Effective Date

The **Effective Date** command allows you to view data from the SPF database as the data existed at a particular time in the past. This command is available in the *Status Bar* at the bottom of the window.

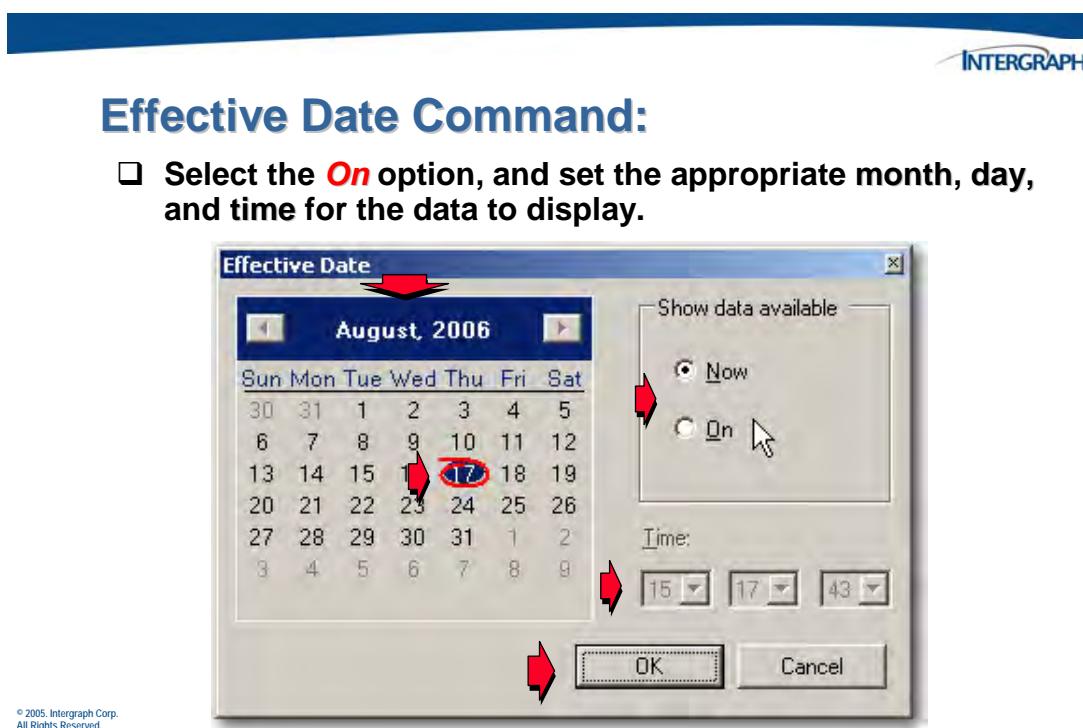


© 2005, Intergraph Corp.  
All Rights Reserved.

---

Click the current effective date to the right of the *Effective Date* label at the bottom of Desktop Client window.

The *Effective Date* dialog appears.



The following fields are available on the *Effective Date* dialog:

- ❑ **Show data available** – Allows you to activate the feature. If the **Now** radio button is selected, the interface displays the current data in the database. If you select the **On** radio button, you can use the other fields on this dialog box to select a point in history at which to view the data.
- ❑ **Calendar** – Select a date from the calendar. The calendar is available only if the *Show data available* option is set to **On**. Select a Month and Year by using the forward and backward arrows. Once you have selected the proper month and year, select a date from the calendar.
- ❑ **Time** – Sets the effective hour, minute, and second for which you want to view the data (using a 24-hour clock). This option is available only if the *Show data available* option is set to **On**.

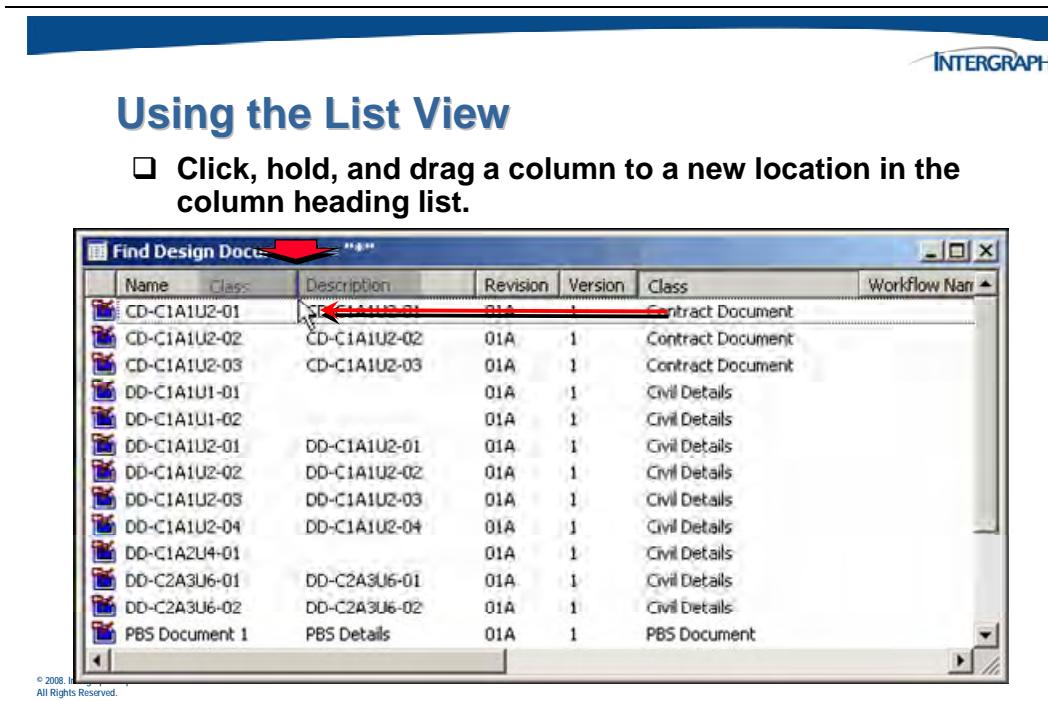
When you change the effective date, the software clears all views in the Desktop Client. The effective date to the right of the *Effective Date* label at the bottom of Desktop Client window changes to the month, day, year, and time that you specify. The data displayed is for **viewing purposes only**. No manipulations can be performed on any data except for data displayed as **Now**.

## 2.5 Using the List View Window

In the Desktop Client, windows organize the information you display from the database. The software uses windows to display the results of queries. You can also export the contents of a window to an Excel template (which will be covered in the next chapter).

Object data is often arranged in tabular format for easy viewing. Object properties appear as column headings, and the values for these properties appear in the table rows. You can customize tables for particular objects by changing the columns and column order in System Administration.

To rearrange the order in which columns display, you can drag a column heading and drop it in a new location in the column heading row.

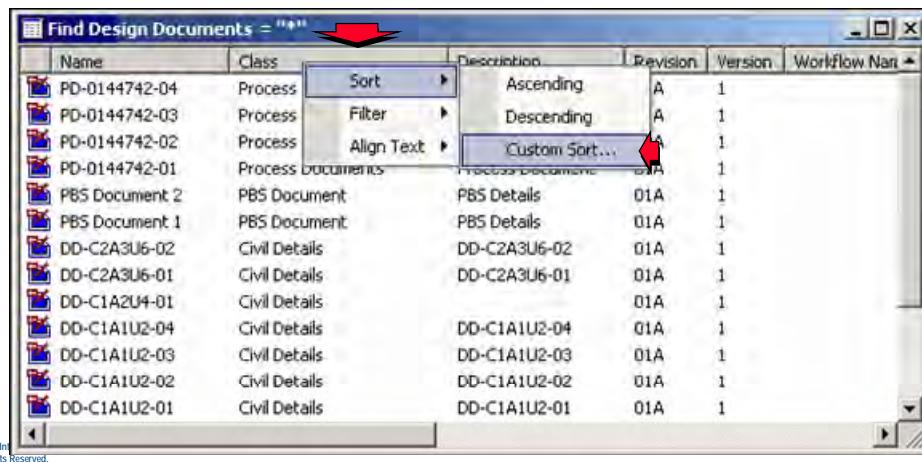


You can sort tables by particular columns by clicking that column heading. You can also sort tables by multiple columns by right-clicking a column heading, and then clicking **Sort > Custom Sort** on the pop-up menu.



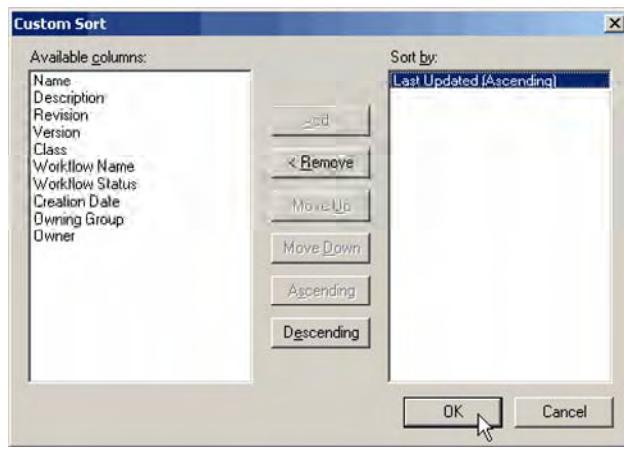
## Using the List View

- Right-click on a column heading, and select **Sort > Custom Sort** from the pop-up menu.



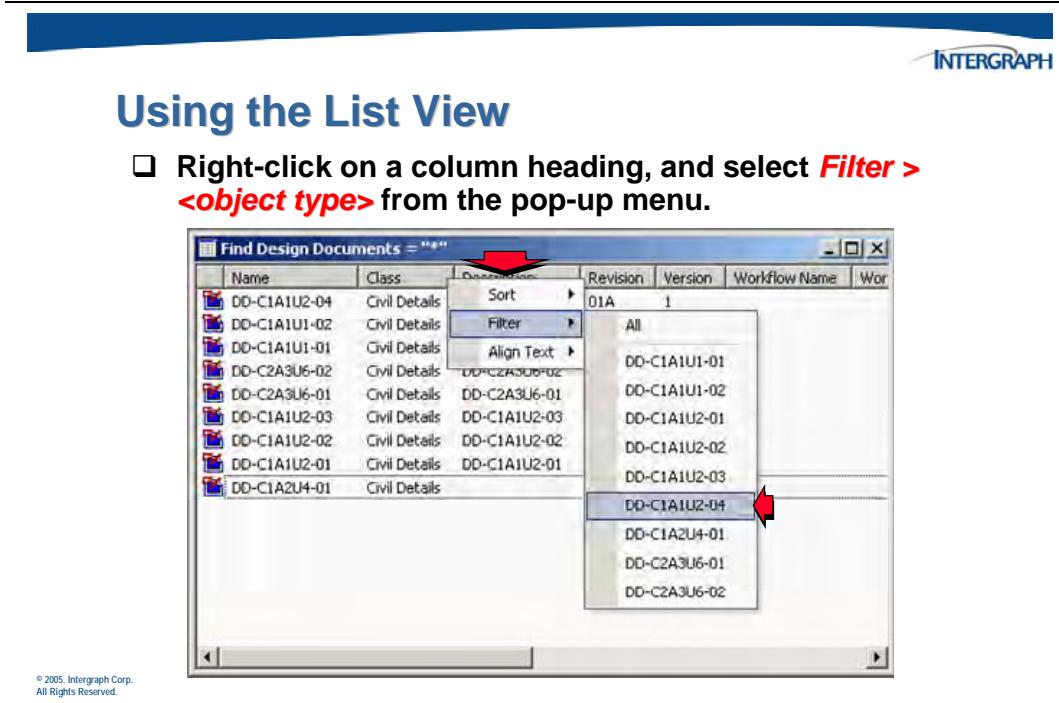
## Using the List View

- Select the column(s) to be used for sorting the view contents.

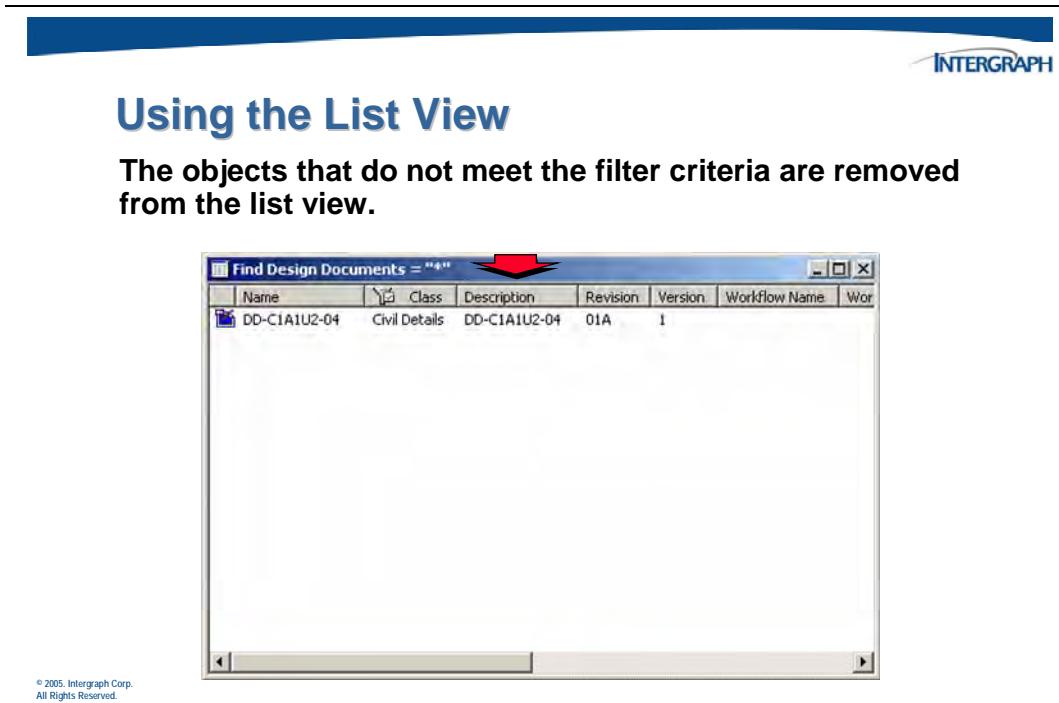


© 2005, Intergraph Corp.  
All Rights Reserved.

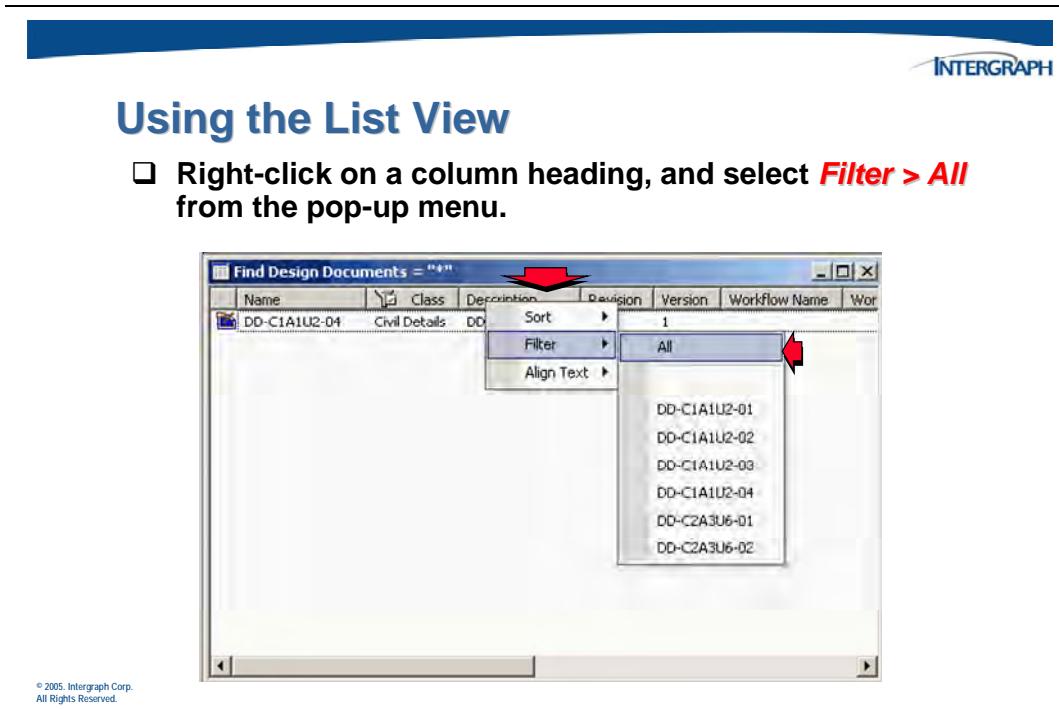
You can filter the contents of a table so that only the rows that contain a certain value are displayed. To filter the table, right-click a column heading, click **Filter** on the shortcut menu, and select a value.



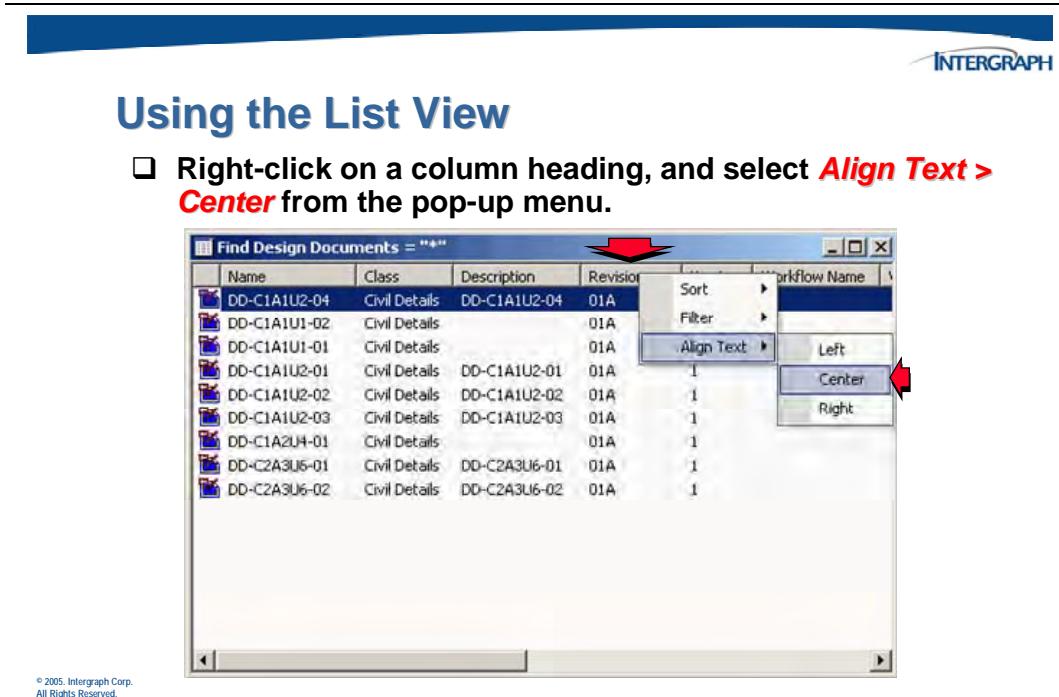
The table display then hides rows that do not contain the value for which you filtered, and the column heading used to filter the table contains a question mark icon.



To display all table rows again after filtering, right-click a column heading, and click **Filter > All** on the shortcut menu.



To change the alignment of the text in a column, right-click the column heading, click **Align Text** on the shortcut menu, and select an alignment.





## Using the List View

The column data will be displayed according to the criteria selected.

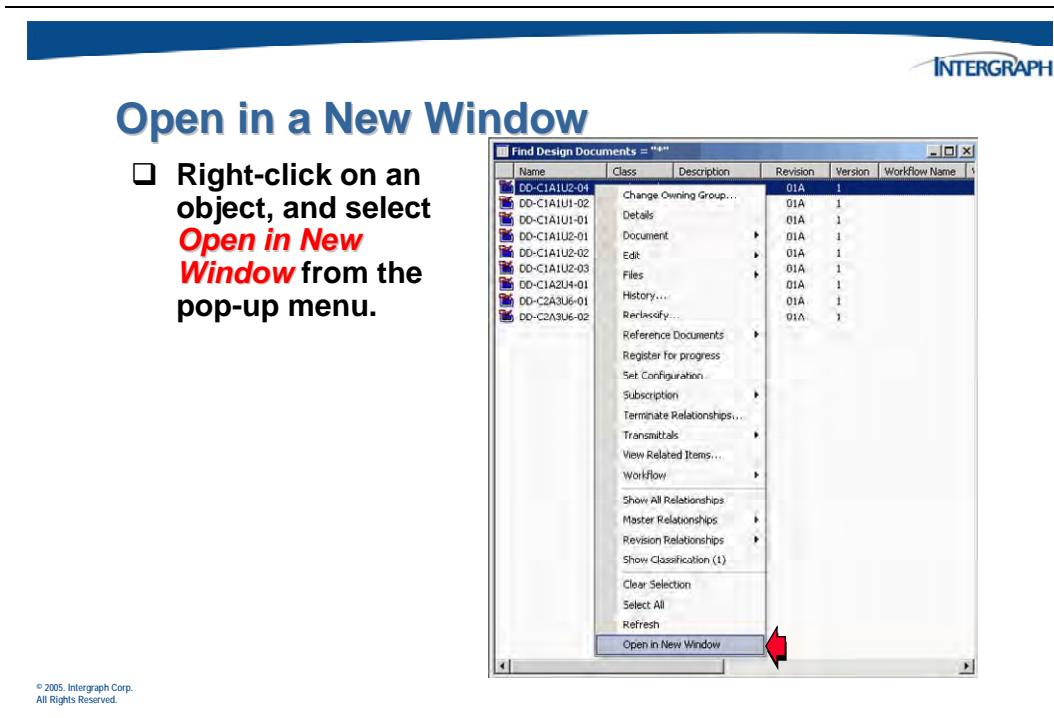
A screenshot of a Windows application window titled "Find Design Documents = '\*'". The window contains a grid of data with the following columns: Name, Class, Description, Revision, Version, Workflow Name, and a small icon column. A red arrow points from the text above to the top right corner of the window. The data in the grid is as follows:

Name	Class	Description	Revision	Version	Workflow Name
DD-C1A1U2-04	Civil Details	DD-C1A1U2-04	01A	1	
DD-C1A1U1-02	Civil Details		01A	1	
DD-C1A1U1-01	Civil Details		01A	1	
DD-C1A1U2-01	Civil Details	DD-C1A1U2-01	01A	1	
DD-C1A1U2-02	Civil Details	DD-C1A1U2-02	01A	1	
DD-C1A1U2-03	Civil Details	DD-C1A1U2-03	01A	1	
DD-C1A2U4-01	Civil Details		01A	1	
DD-C2A3U6-01	Civil Details	DD-C2A3U6-01	01A	1	
DD-C2A3U6-02	Civil Details	DD-C2A3U6-02	01A	1	

© 2005, Intergraph Corp.  
All Rights Reserved.

## 2.6 Open in a New Window

The ***Open in New Window*** command allows you to view a selected object in a new window. This command is available when you right-click an object in the tree view.



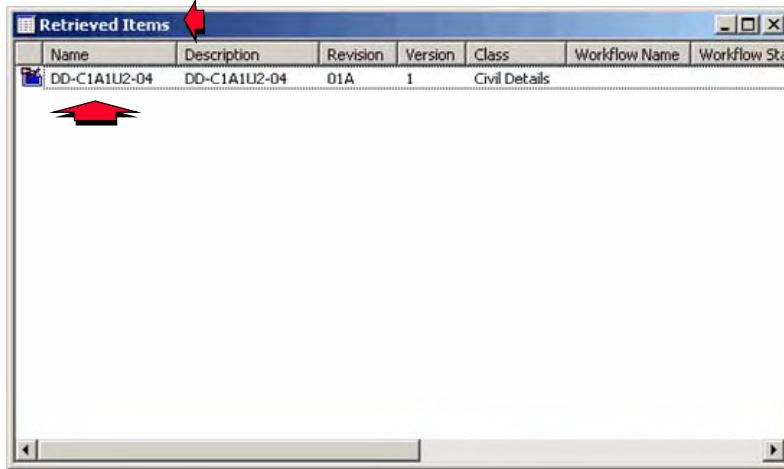
© 2005, Intergraph Corp.  
All Rights Reserved.

---



## Open in a New Window

The selected object is displayed in a new window.



© 2005, Intergraph Corp.  
All Rights Reserved.

---

## 2.7 Activity – Using the SPF Desktop Client

Complete the **Chapter 2 - Activity** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.

# 3

C H A P T E R

---

## Finding and Manipulating Objects



### 3. Finding and Manipulating Objects

In this chapter, we will cover several ways of searching and finding objects. Once objects have been located, they can be viewed and manipulated using a variety of commands.



#### Finding and Manipulating Objects

Once object instances exist in the SPF system, either as a published document or a non-published document, they can be queried and manipulated using several methods.

##### Published and non/published documents

- Object Query
- Quick Find (menu and toolbar)
- Exporting to Excel
- Object Details and History
- Navigating and Viewing Files
- View relationships between objects
- Update existing objects



## Finding and Manipulating Objects

Non-published documents can also be manipulated using a variety of interactive commands such as the following:

### Non-published documents only

- Creating new documents**
- Attaching electronic files**
- Copying objects**
- Deleting objects**
- Terminating objects**
- Changing the Owning Group**
- Creating and editing relationships**

## 3.1 Searching for Objects

The SmartPlant Foundation Desktop Client search functions allow you to find objects based on your search criteria. You can perform two types of searches in SmartPlant Foundation: queries and quick finds.

If you install the Full-Text Retrieval (FTR) components, you can also search for documents using FTR.

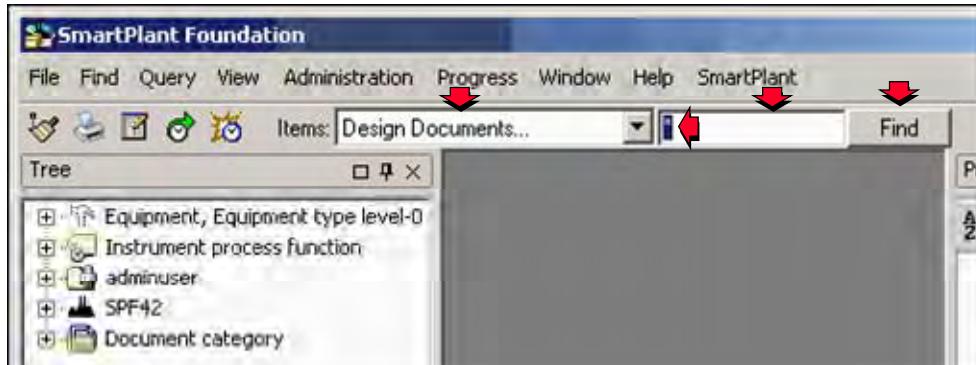
The main difference between quick finds and queries is that quick finds allow you to search on the objects name, where queries allow you to find objects based on detailed information about them.

The commands that are available on the **Find** and **Query** menus are determined by your organization's configuration, and more specifically, by the role you are playing in the software and what types of objects you have access to in the system.

Quick finds allow you to search for various objects using all or part of the object's name.

## Quick Find

- Choose an object type from the select list, enter the criteria you want to use to find object instances by **name**, and click **Find**.

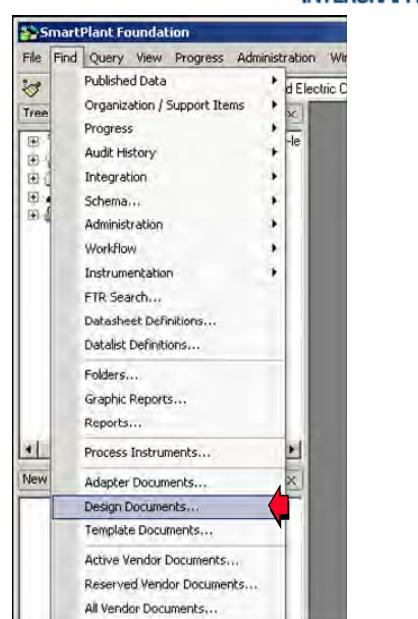


© 2005, Intergraph Corp.  
All Rights Reserved.

The quick find options are available on the **Find** menu and on the toolbar. Click **Find > <object type>**.

## Quick Find

- From the menu, select **Find > <object type>** to perform a quick find for existing object instances.



© 2008, Intergraph Corp.  
All Rights Reserved.

During a quick find, you can specify the object name, part of the name, or a combination of the name and the valid wildcard characters (for example, n%).



## Quick Find

- Enter some criteria to perform a find by the object instance name.



© 2005, Intergraph Corp.  
All Rights Reserved.

The following wildcards can be applied to searches:

- ? - Finds any single character
- \* - Finds any string of characters
- % - Performs the same function as \*

If you do not want to search for only uppercase occurrences of the criteria you typed, turn off the *Force upper case* option.

Letters and numbers can be used with the wildcards to narrow your search. To search for all Design Document starting with the letters DD, use DD\*.

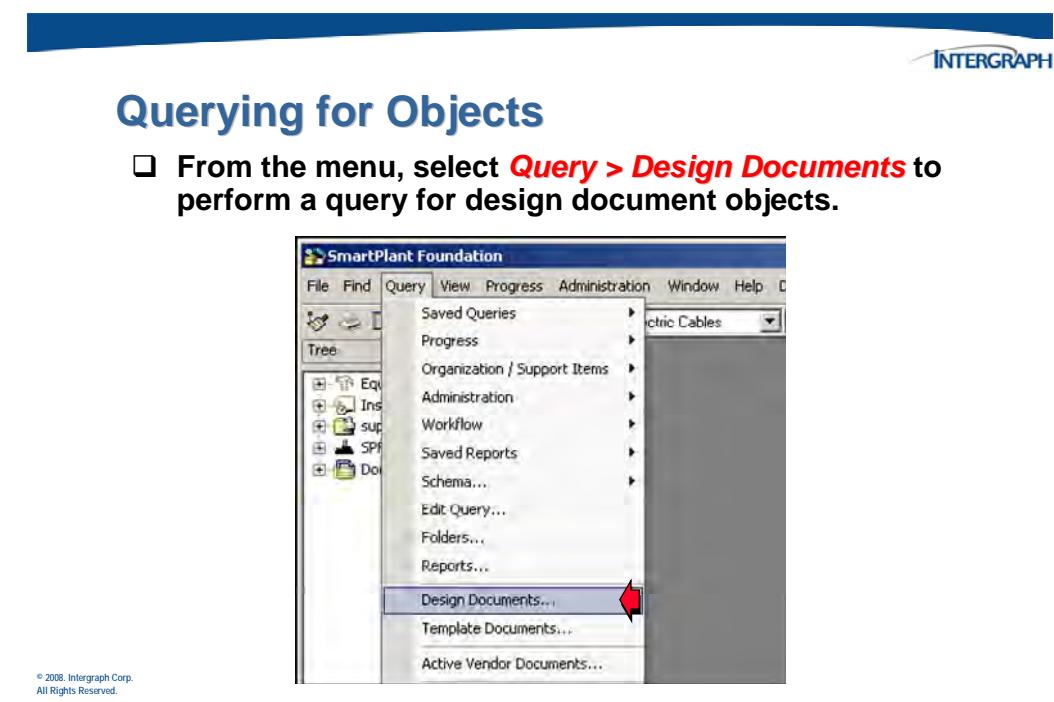
After a search is complete, a list of the matching items appears in a list view window. If no matches are found during a quick find or a query, then a dialog box appears to let you know that no matching results exist in the SmartPlant Foundation database.

## Quick Find

**The results of the Find will be displayed in a list view window.**

Name	Description	R...	V...	Class
DD-C1A1U1-01		01A	1	Civil Details
DD-C1A1U1-02		01A	1	Civil Details
DD-C1A1U2-01	DD-C1A1U2-01	01A	1	Civil Details
DD-C1A1U2-02	DD-C1A1U2-02	01A	1	Civil Details
DD-C1A1U2-03	DD-C1A1U2-03	01A	1	Civil Details
DD-C1A1U2-04	DD-C1A1U2-04	01A	1	Civil Details
DD-C1A2U4-01		01A	1	Civil Details
DD-C2A3U6-01	DD-C2A3U6-01	01A	1	Civil Details
DD-C2A3U6-02	DD-C2A3U6-02	01A	1	Civil Details

You can also query for objects to further narrow your search criteria. Click **Query > <object type>**. For example, click **Query > Design Documents**.



During a detailed query, you can specify search criteria that apply to several different properties of an object.



## Querying for Objects

- Enter the search criteria in the appropriate form fields.

The screenshot shows a Windows-style dialog box titled "Query For Design Documents". The window contains several sections with expandable/collapsible headers:

- Main details:
  - Name: [Text input field]
  - Description: [Text input field]
- Details:
  - Status: [Dropdown menu]
  - Title: [Text input field]
- Owning group:
  - Item owning group: [Dropdown menu]
- Design document revision:
  - Notes: [Text input field]

At the bottom left is a checkbox labeled "Collapse sections automatically". Below the checkboxes are several buttons: Reset, Save, Collapse All, Expand All, Print, Back, Next, Apply, Finish, and Cancel. A small copyright notice at the bottom left of the dialog box reads: "© 2005, Intergraph Corp. All Rights Reserved."

Use the scroll bar to access additional properties on the query form. Remember that you are performing an “AND” operation – only items that meet *all* of the criteria that you select will be returned.

Once all of the search criteria have been entered, click **Finish** to perform the query.

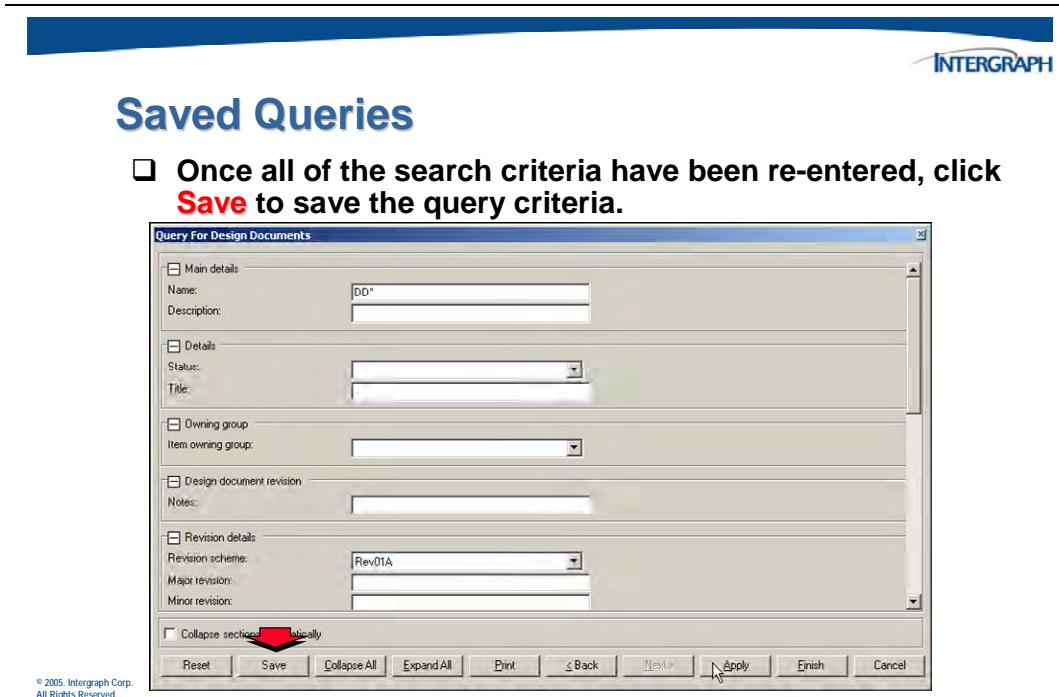
The availability of fields on this form is determined by the System Administrator, who configures and manages query forms, and depends on the type of object for which you are searching.

### 3.1.1 Saved Queries

After you define your search criteria for a query, you can save that query and run it again later. Saved queries are saved across Desktop Client sessions, allowing you to access queries any time you are using the Desktop Client. After you save queries, you can change the search criteria or delete queries.

Again, select the **Find > Query > Design Documents** command to display the query form.

This displays the query form so that the search criteria can be re-entered. It is always a good idea to test your criteria by actually performing a search before saving it. You can test your query using the **Apply** button. This command will run the query, but leave the form open so you can return to it again later to modify your criteria or save your query.

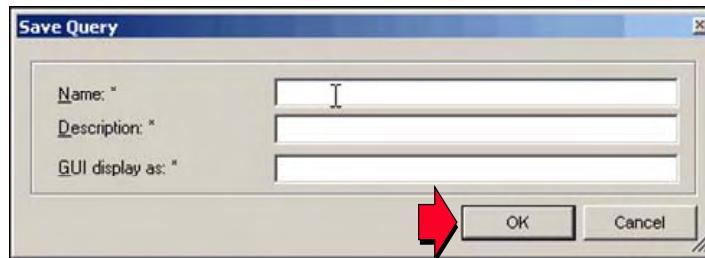


The **Save** button allows you to save a query, so that you can run the query later.



## Saved Queries

- ❑ Enter the required information, and click **OK** to save the query criteria.



© 2005, Intergraph Corp.  
All Rights Reserved.

---

The following fields are available on the *Save Query* dialog:

- ❑ **Query name** - Enter a name for the query.
- ❑ **Description** - Enter a description for the query.
- ❑ **GUI display as** – Enter the text that will display on the menu entry.

Once the query criteria have been saved, dismiss the query form since it is no longer needed.

The **Saved Query** can be executed from **Query > Saved Queries**. The **Saved Queries** submenu provides a list of all queries saved by the active user.

The **Query > Saved Queries > Manage Saved Queries** command allows you to edit or delete saved queries.



## Saved Queries

- Select the **Find > Saved Queries > PIDInstrABV, With New Construction Status** command to perform a saved query for instrument objects.

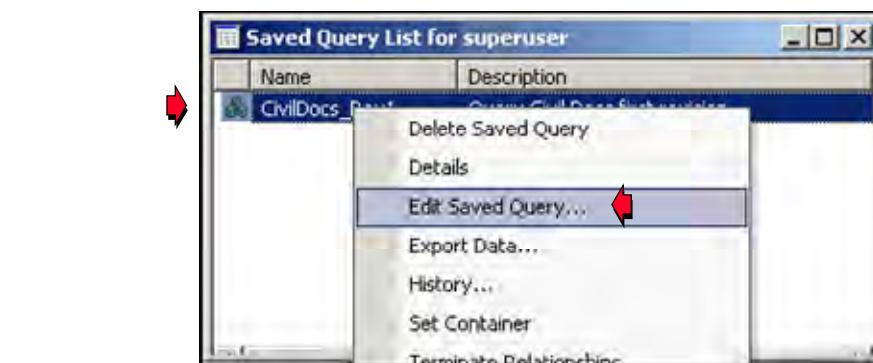


A *Saved Query List* window will be displayed. It contains a list of all queries saved by the active user.



## Saved Queries

- Right-click on a saved query from the list, and select **Edit Saved Query** from the pop-up menu.

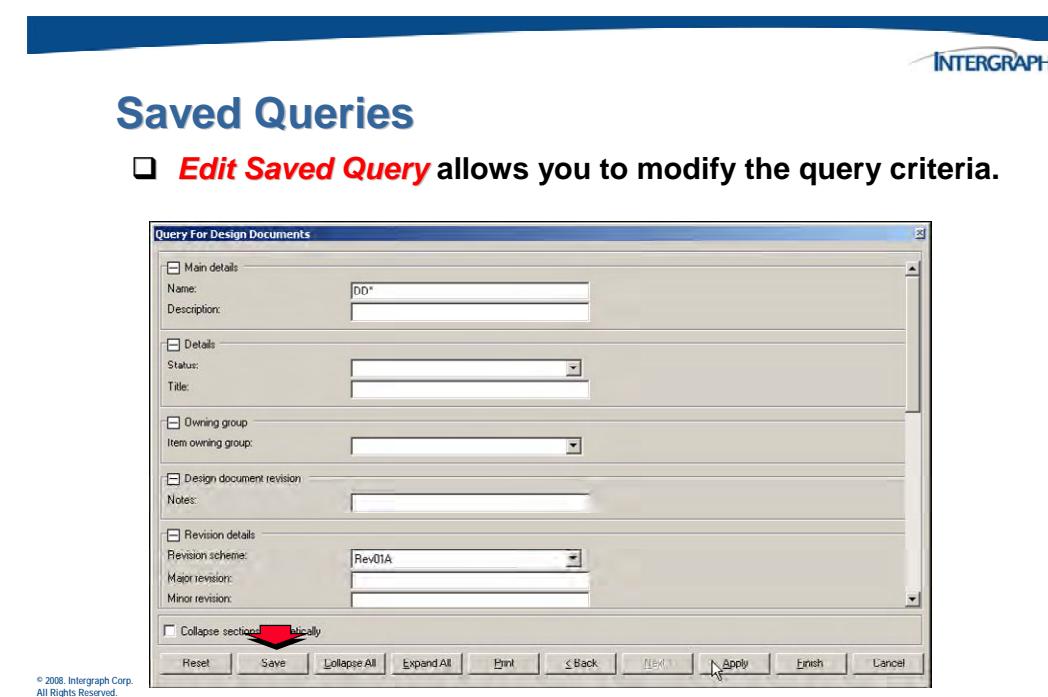


### To edit saved queries

- ❑ Click **Saved Queries > Manage Saved Queries**.
- ❑ In the *Saved Query List*, right-click the query that you want to modify, and click **Edit Saved Query**.
- ❑ Make changes to the query.
- ❑ Click **Save**.

### To delete a saved query

- ❑ Click **Saved Queries > Manage Saved Queries**.
  - ❑ In the *Saved Query List*, right-click the query that you want to delete.
  - ❑ Click **Delete Saved Query**.
- 

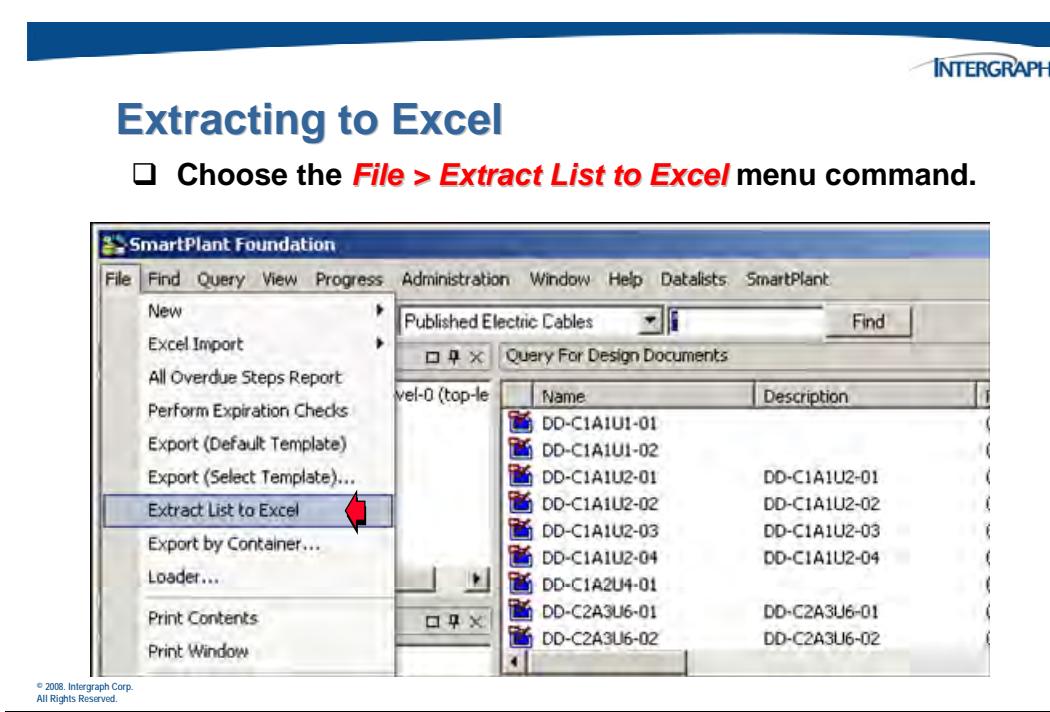


## 3.2 Extracting/Exporting to Excel

There are several commands available on the Desktop Client **File** menu to allow you to export the contents of a list view window to an excel file. You must have Microsoft Excel installed on the client computer to use these commands.

The **File > Extract List to Excel** command allows you export the contents of a window to a Microsoft Excel spreadsheet. First, display the items for which you want to export data to Excel in a list view, using a query to find the items you want to export.

Select the list view that contains your items to make it the active view.

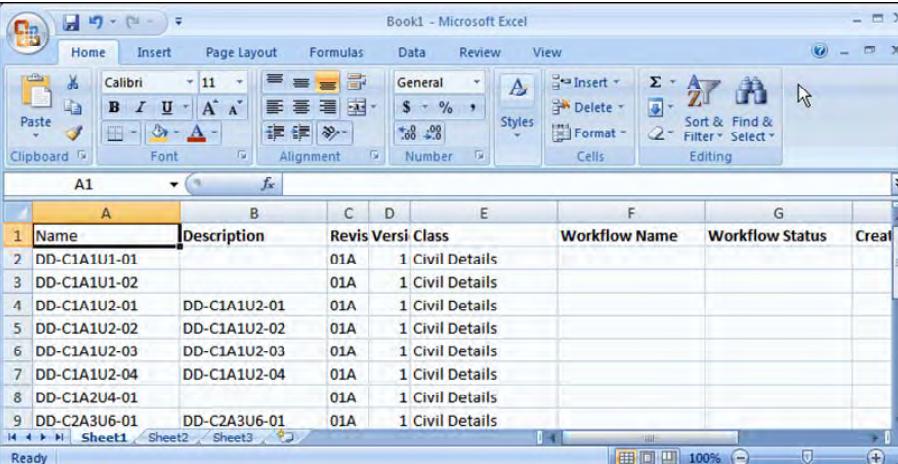


The items you have selected appear in a Microsoft Excel spreadsheet.

INTERGRAPH

## Extracting to Excel

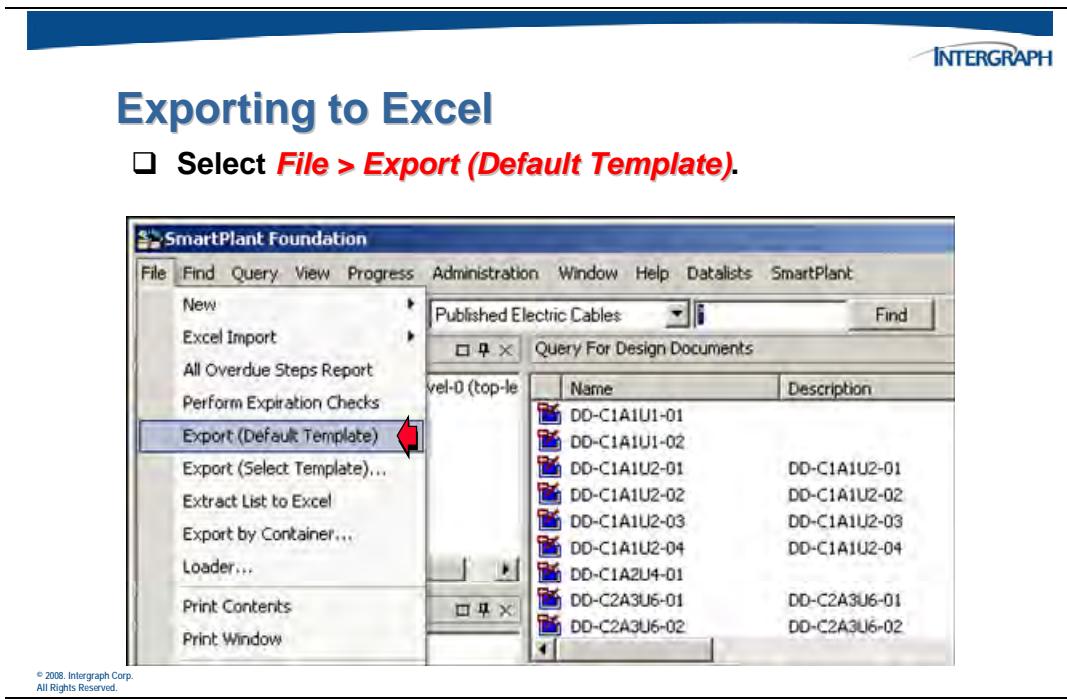
The objects from the active list view window are extracted to an Excel file that can be saved.



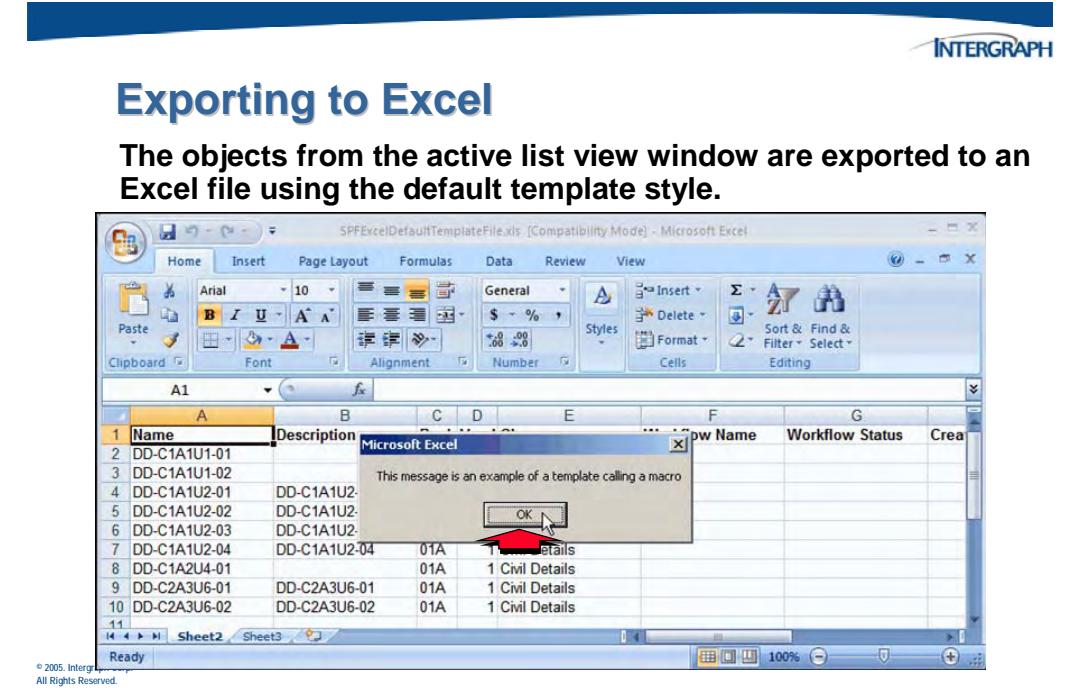
A screenshot of Microsoft Excel showing a table of extracted data. The table has columns labeled A through G. Column A contains row numbers 1 through 9. Column B contains names like 'DD-C1A1U1-01' and 'DD-C1A1U2-01'. Column C contains descriptions like 'Revis Versi Class'. Column D contains values like '01A'. Column E contains values like '1 Civil Details'. Column F contains 'Workflow Name' and Column G contains 'Workflow Status'. The table is titled 'Book1 - Microsoft Excel'.

	Name	Description	Revis Versi Class	Workflow Name	Workflow Status	Created
1	DD-C1A1U1-01		01A	1 Civil Details		
2	DD-C1A1U1-02		01A	1 Civil Details		
3	DD-C1A1U2-01	DD-C1A1U2-01	01A	1 Civil Details		
4	DD-C1A1U2-02	DD-C1A1U2-02	01A	1 Civil Details		
5	DD-C1A1U2-03	DD-C1A1U2-03	01A	1 Civil Details		
6	DD-C1A1U2-04	DD-C1A1U2-04	01A	1 Civil Details		
7	DD-C1A2U4-01		01A	1 Civil Details		
8	DD-C2A3U6-01	DD-C2A3U6-01	01A	1 Civil Details		

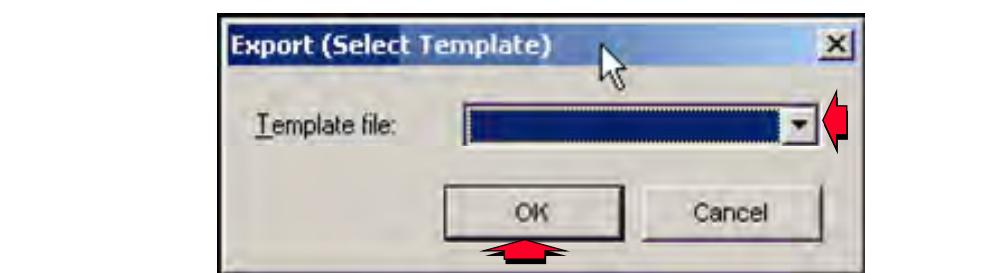
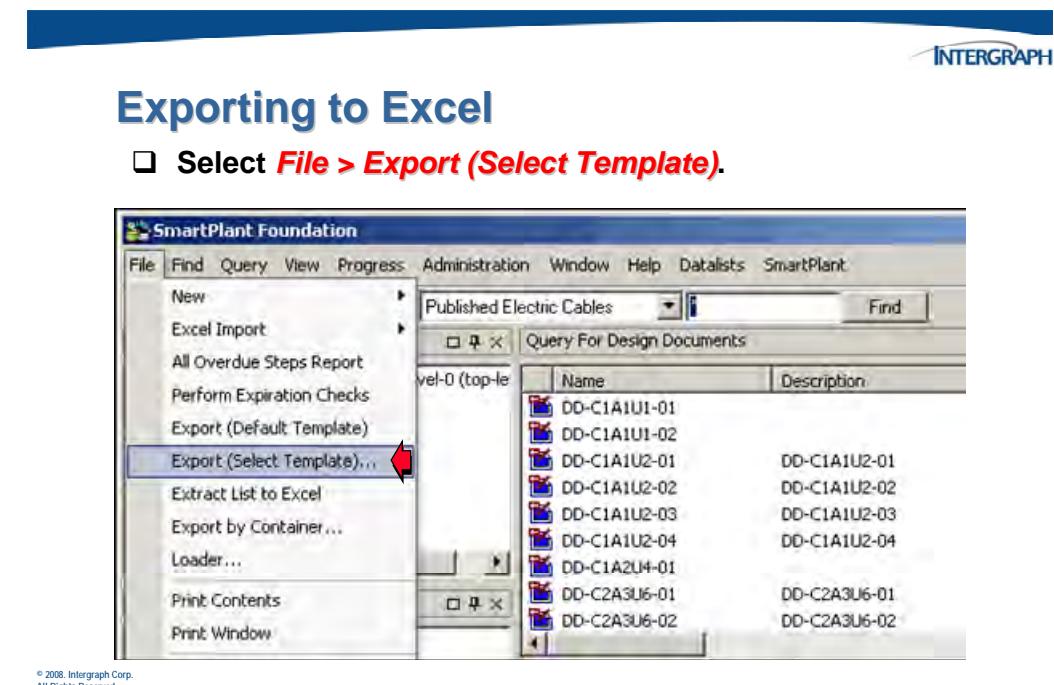
The **File > Export (Default Template)** command allows you to export the contents of a window into a Microsoft Excel file using a template to format the results of the export.



The items you have selected appear in Microsoft Excel.



There is another way to export the contents of a window into a Microsoft Excel file using a custom template to format the results of the export. This command is called **Export (Select Template)**. Click **File > Export (Select Template)**.



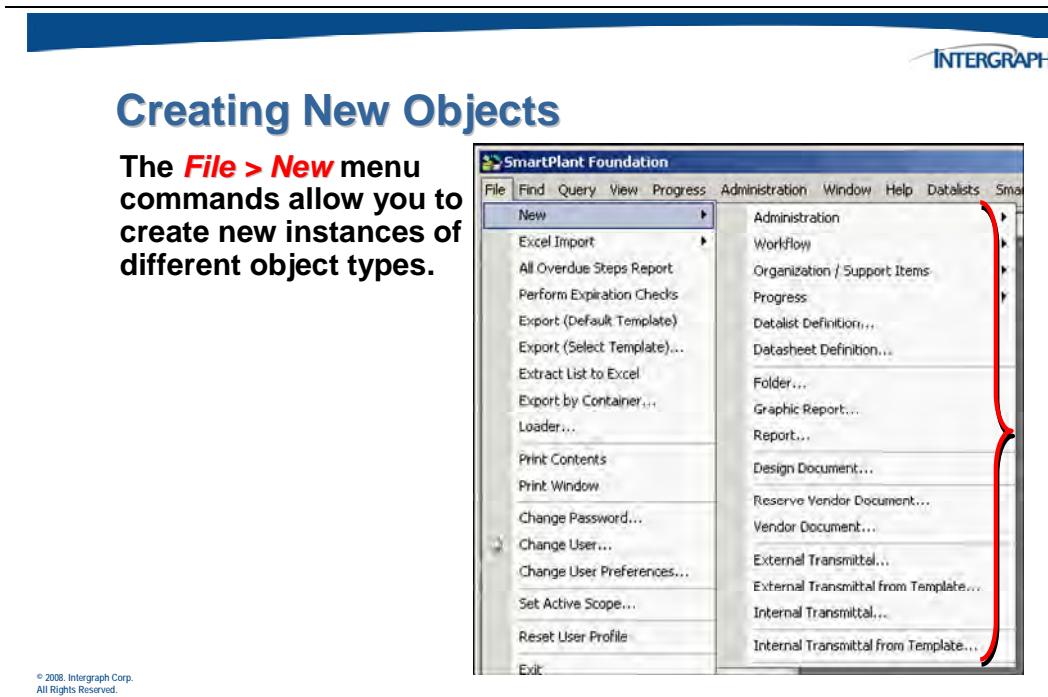
## 3.3 Creating New Objects

In the SmartPlant Foundation Desktop Client, you can create a variety of objects, depending on your configuration and user access privileges.

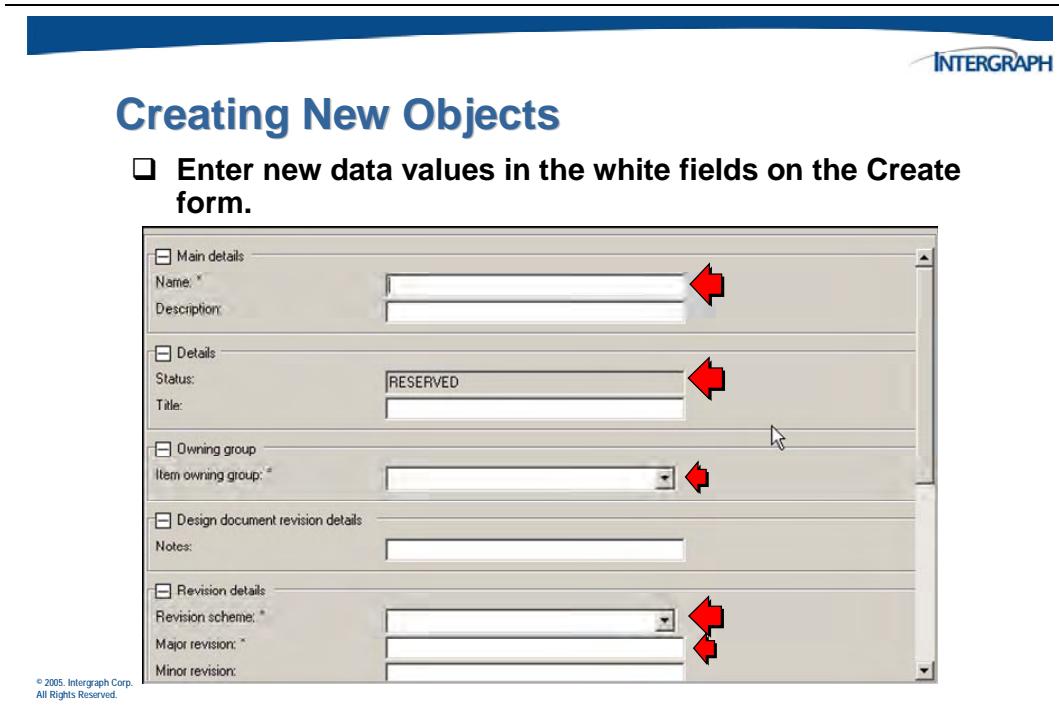
You can create some types of objects, like tags and documents, using a creation wizard. You can access the wizard for the objects that have one by clicking **File > New** and clicking the type of object that you want to create.

The commands available on the **File > New** submenu vary depending on your configuration and user access. If an object appears on the **File > New** menu, you can click **File > New > < Object Name >** to create the object.

For example, when you create a document in the Desktop Client using the **File > New > Design Document** command, you use the *New Document* wizard to define the document classification, name, description, and other attributes. You can also attach one or more design files to the document and specify the workflow for the document when you create it.



The *Create* dialog box allows you to define properties for creating an object in the Desktop Client. Below, you see a sample of a create form in the SmartPlant Foundation Desktop client. The form used can vary greatly, depending on the type of object you are creating.



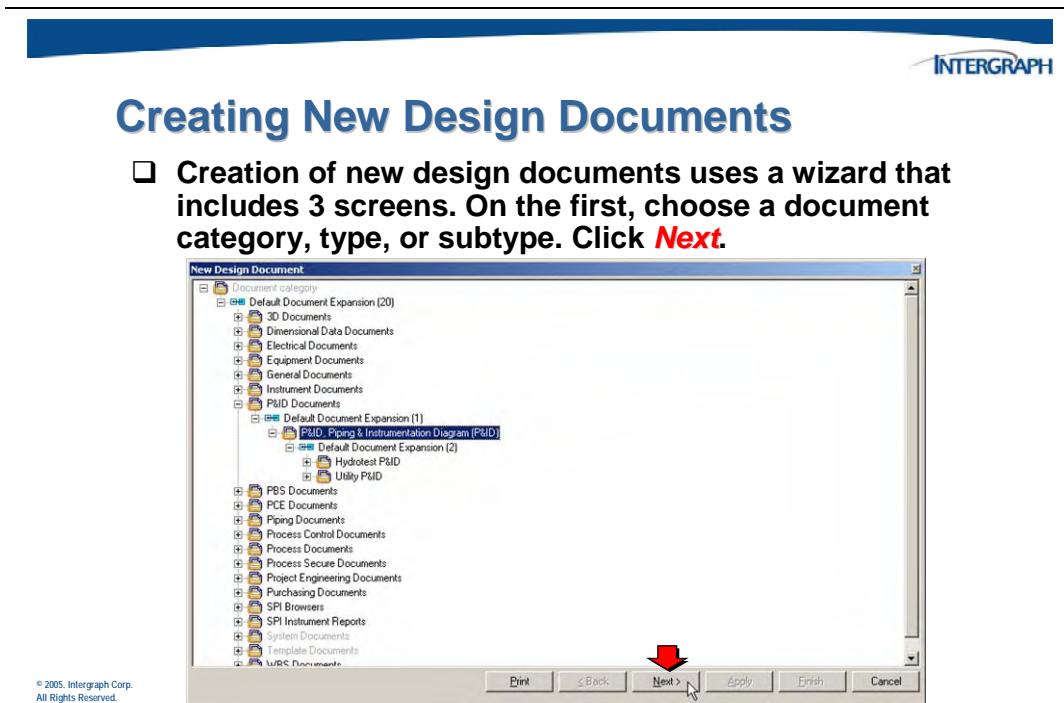
The *Create* dialog box contains a minimum number of default sections/fields. All other fields are determined by the System Administrator, who configures the creation forms for business objects, and depend on the type of object you are creating.

Note that all fields with an asterisk (\*) are required, and a value must be provided there before you can move on to the next screen of the creation wizard.

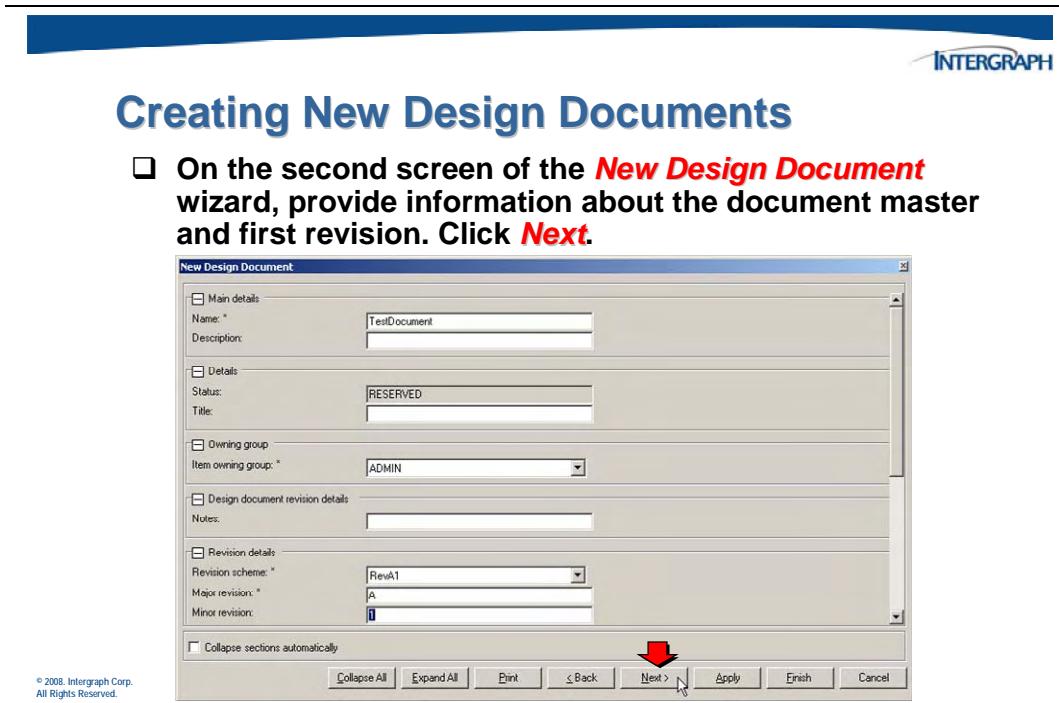
In the SmartPlant model, most objects are created in the integrated model...

The following example demonstrates how to create a new object using the create wizard. For example, to create a new document, click **File > New > Design Document**.

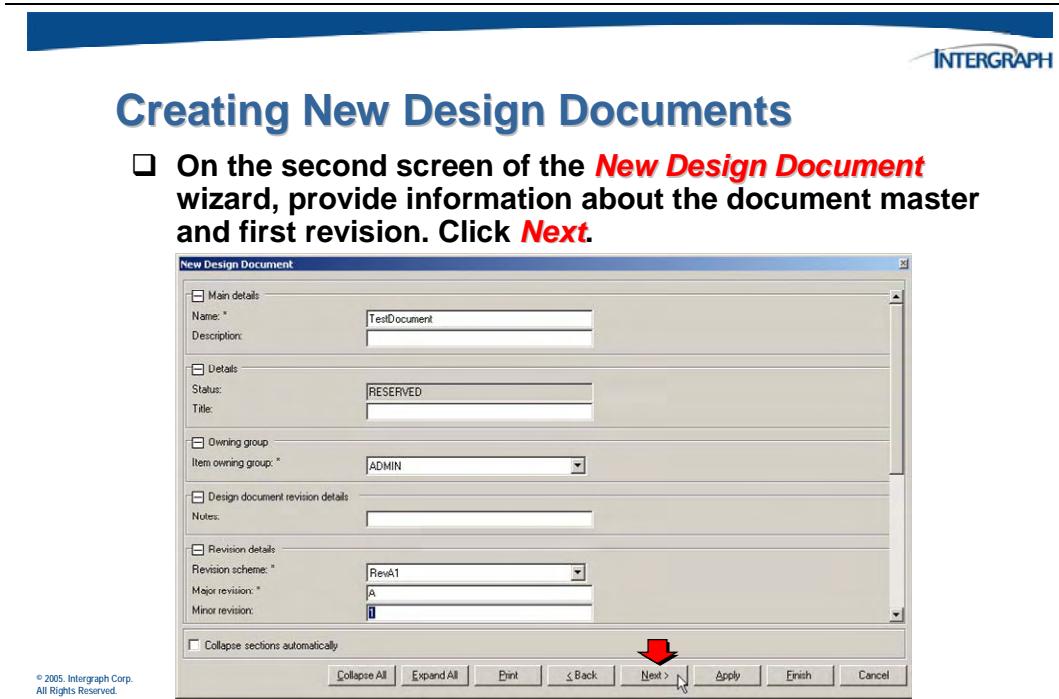
In the tree view, click the classification for the new object. For example, to create a Utility P&ID, click **P&ID Documents > P&ID > Utility P&ID** in the tree view.



Define details (metadata) for the new object, such as the name, description, owning group, and revision information for the document.



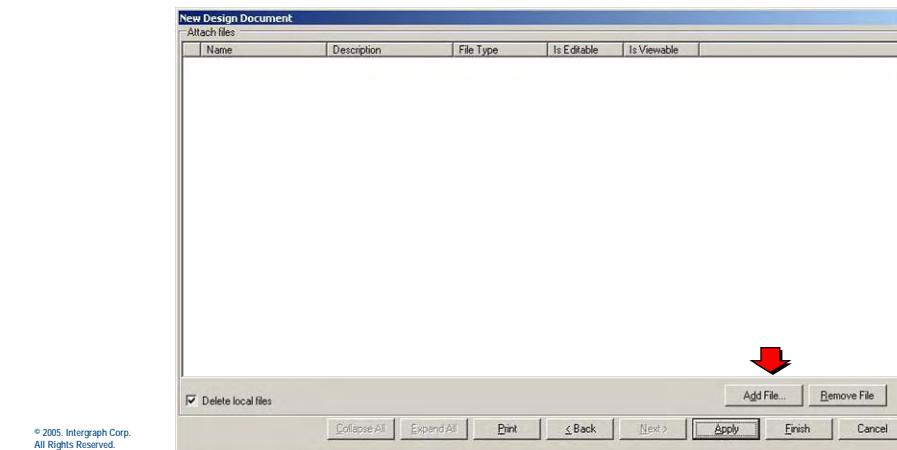
Remember, fields followed by an asterisk (\*) are required to create the selected object.



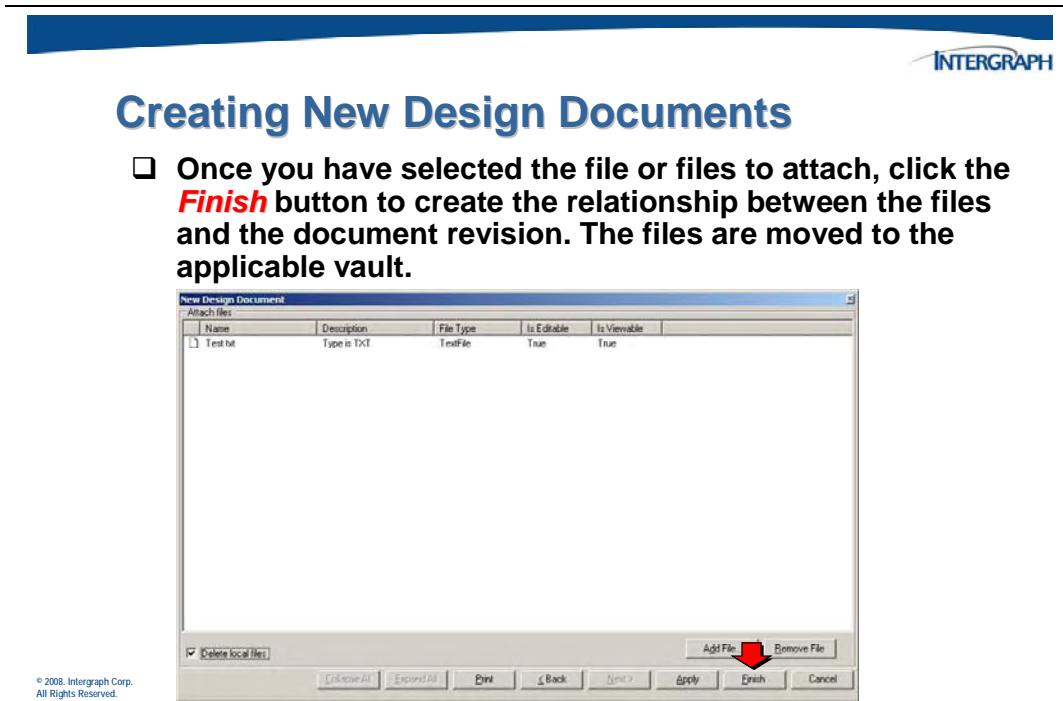
The *Attach files* dialog will appear allowing you to attach an electronic file to this new document. This procedure can be performed now or at a later time. If you want to attach an electronic file, click the **Add File** button.

## Creating New Design Documents

- From the third screen of the **New Design Document** wizard, you can attach files to the first revision of the design document. Click **Add File**.



Using a standard Microsoft **Open** window, find the file(s) you want to attach and click **Open**. Confirm the file selection on the **New Design Document** wizard screen, and then click **Finish**.



For objects with additional details or actions, click **Next**. For example, the next dialog box in the wizard might allow you to submit a document to a workflow.

To verify that the file was attached to the new document, right-click on the new document in the **New Items** window and choose **Show Files** from the shortcut menu. The view will expand to show the document/file relationship.

## 3.4 Object Manipulations

In the Desktop Client, you can make a copy of existing non-published objects and attached files, as necessary. You can also update, terminate, or delete objects as needed.

Object manipulations can also include the interactive creation and editing of relationships.

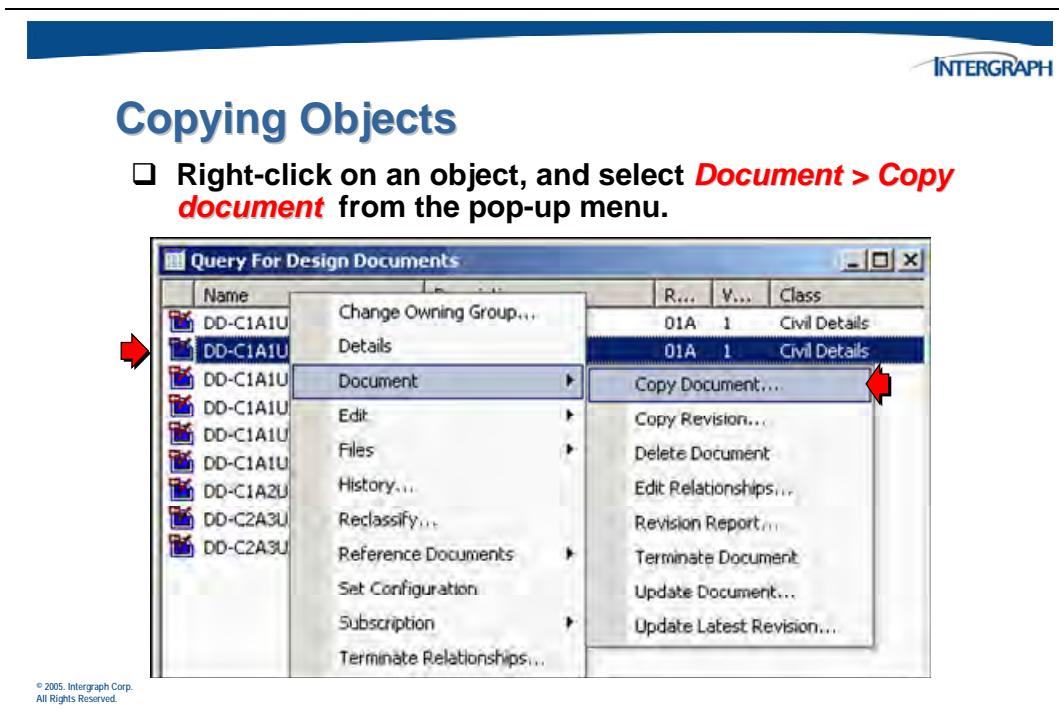
The following selections will look, in more detail, at some of the manipulation commands available to be performed on objects in the SmartPlant Foundation database.

### 3.4.1 Copying an Object

The **Copy** command allows you to create a copy of the selected object. This command is available when you right-click objects in the Tree view, New Items window, or List view.

In both models, the copy command can be used to create a new sheet by simply changing the number at the end of the document name. Once you have created the new copy, you can update attributes, add files, or modify the copy in any way necessary.

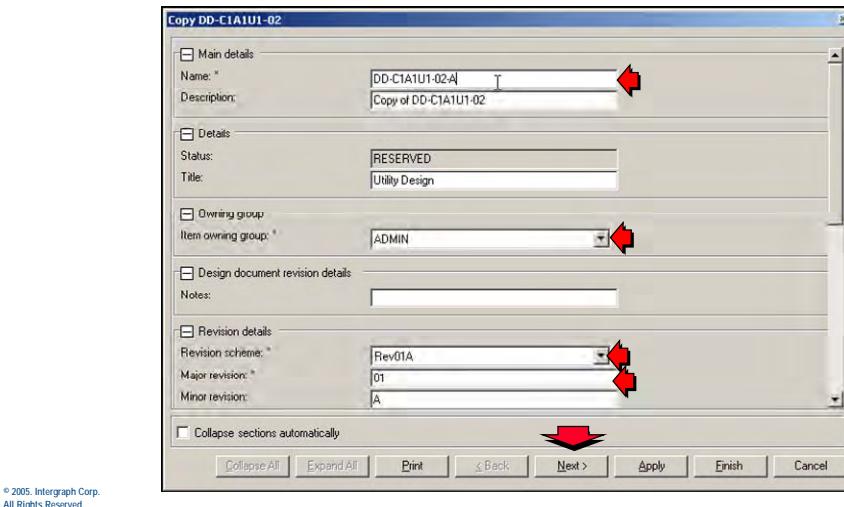
Perform a find or query to locate the object that will be copied. Right-click on the object and select **Document > Copy Document** from the pop-up menu. A similar copy command is available on the shortcut menu of other types of objects created through SmartPlant Foundation.



In the *Copy* dialog box, make changes to the attributes for the object you copied.

## Copying Objects

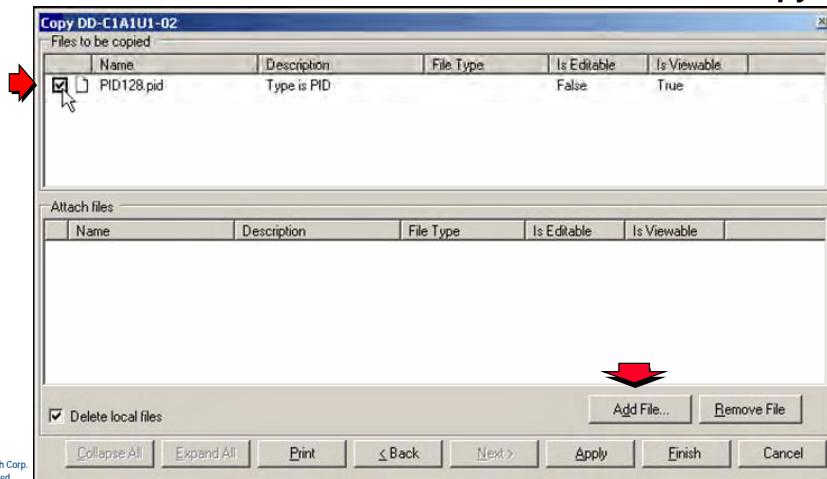
- Enter new values for the required fields, and click **Next**.



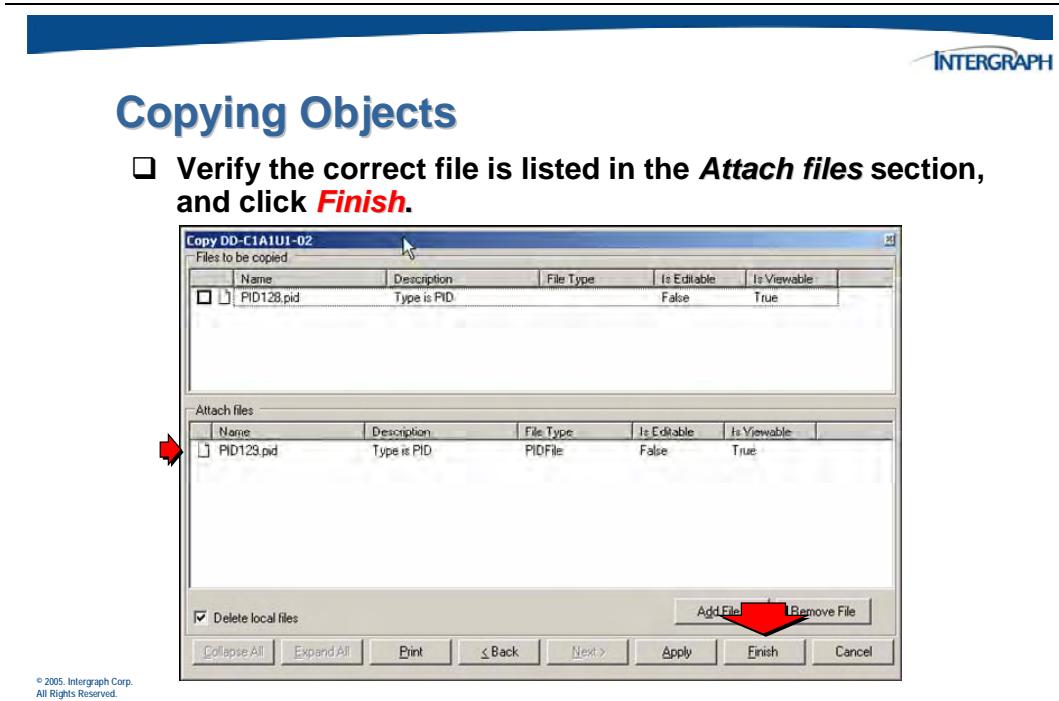
You have the option to make a copy of the currently attached file, or attach a completely new file to the new object.

## Copying Objects

- Disable the existing file if it is NOT to be copied. Select the **Add File** button to attach a new file to the new copy.



Using a standard Microsoft **Open** window, find the file(s) you want to attach and click **Open**. Confirm the file selection on the **New Design Document** wizard screen, and then click **Finish**. At this point, the software will attach any file or files listed in the bottom portion of the screen and copies of any file or files in the top portion of the screen that have check boxes selected. All the attached files are then placed in the SPF vault.



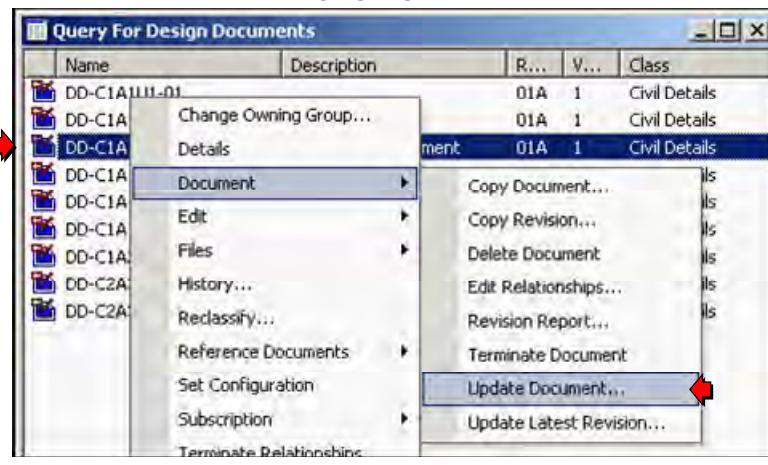
The new object is listed in the **New Items** Window.

### 3.4.2 Updating Objects

The **Update Document** command allows you to update the attributes for the selected object. This command is available when you right-click an object in the tree view. A similar Update command is available from the shortcut menu of other types of objects in SmartPlant Foundation.

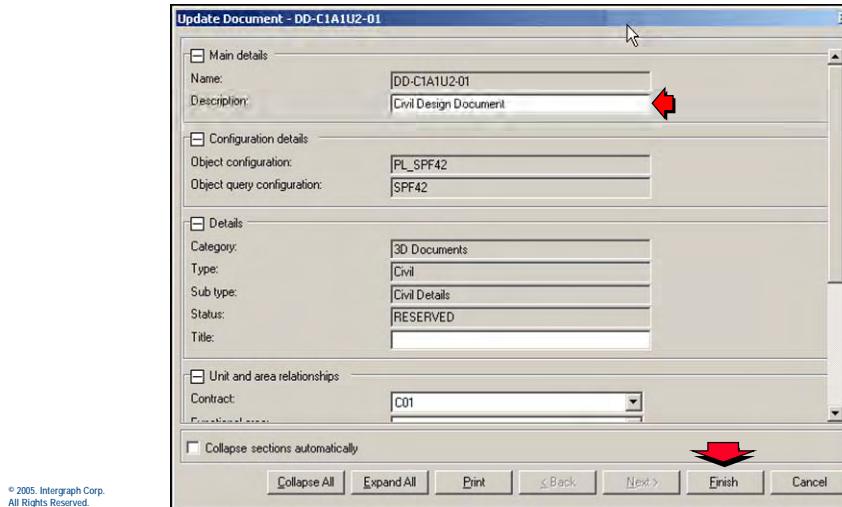
#### Updating Objects

- ❑ Right-click on an object, and select **Document > Update Document** from the pop-up menu.



## Updating Objects

- Enter new values for the available fields, and click **OK**.

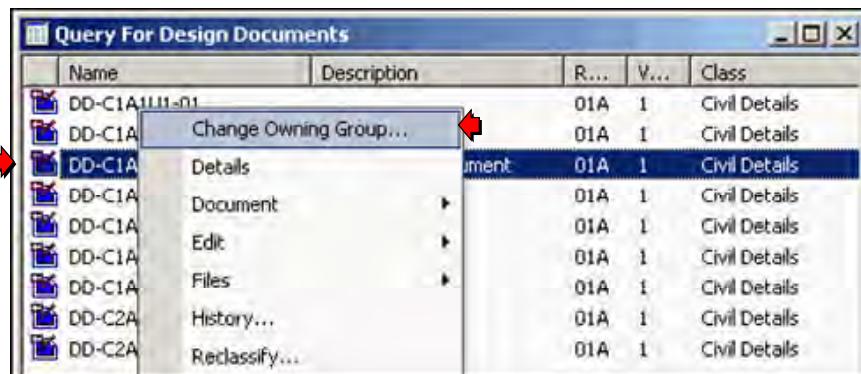


### 3.4.3 Change Owning Group

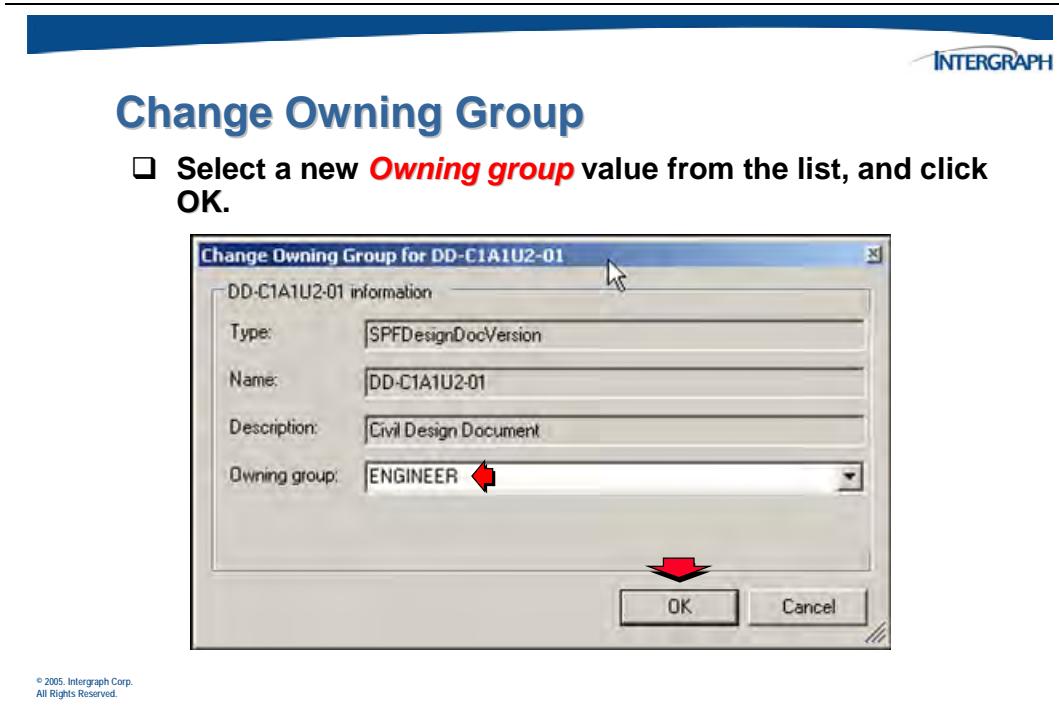
The **Change Owning Group** command allows you to change the owning group to which the selected object belongs. This command is available from the shortcut menu of the object.

#### Change Owning Group

- Right-click on an object, and select **Change Owning Group** from the pop-up menu.



The *Change Owning Group* dialog will appear.



The following fields are available on the *Change Owning Group* dialog:

- Type** – Displays the item type. This field is for display only.
- Name** – Displays the name of the item. This field is for display only.
- Description** – Displays the description of the item. This field is for display only.
- Owning group** – Allows you to choose the owning group to which you want to move the item. The list contains the available owning groups for the item.

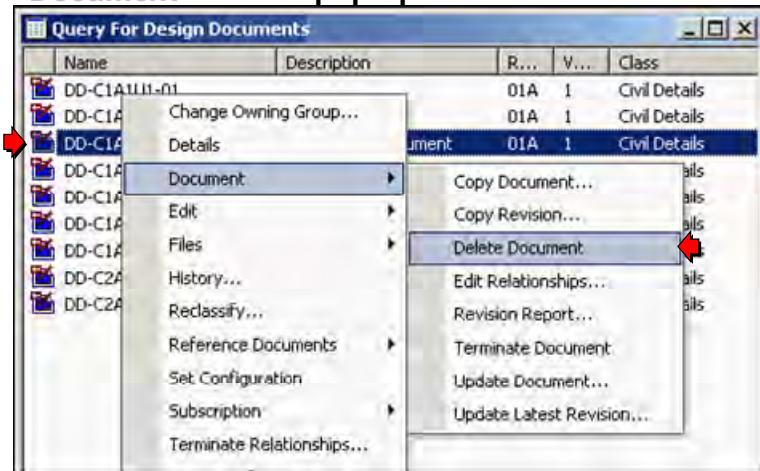
### 3.4.4 Deleting Objects

The **Delete Document** command allows you to delete the selected document. This command is available from the document's shortcut menu. If you want to take advantage of the functionality provided by *Effective Date*, instead of deleting objects, you will want to terminate them instead. The Terminate command will be discussed later in this chapter.

Other types of object will have similar Delete commands available on their shortcut menus.

#### Deleting Objects

- Right-click on an object, and select **Document > Delete Document** from the pop-up menu.

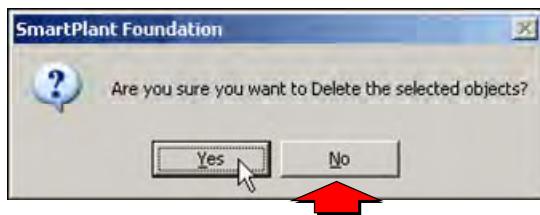


Deleting an object will remove its information from the SmartPlant Foundation database as if it never existed.

A delete confirmation dialog will appear.

## Deleting Objects

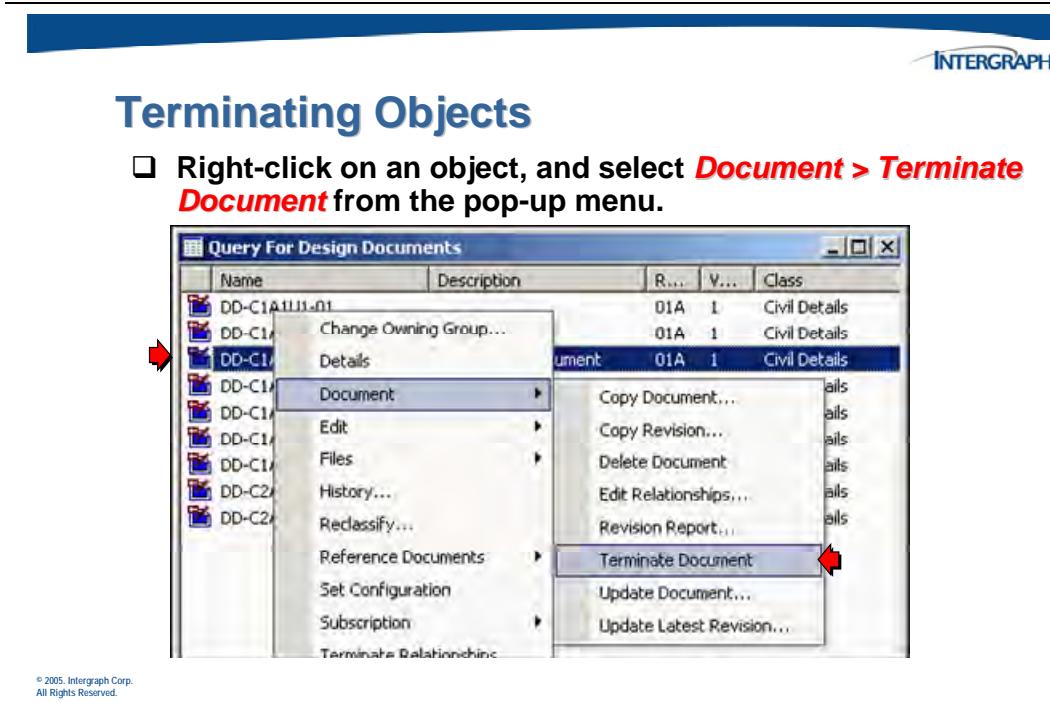
- Click Yes to confirm the deletion of the object.



### 3.4.5 Object Termination

The **Terminate** command allows you to terminate the selected object. This command is available when you right-click an object.

Unlike the Delete command, terminating an object does not remove it from the database. Past history on terminated objects can still be reviewed with the *Effective Date* functionality.



A termination confirmation dialog will appear. Click **Yes** to confirm the confirmation of the object.

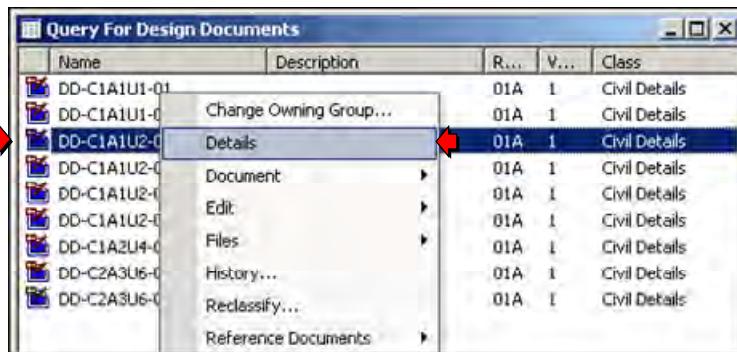
Even though the terminated object disappears from the window, and it will not be returned by finds or queries run on the current database, it will remain in the SPF database, and you can view it again by setting the effective date to a time before the termination command was issued.

### 3.4.6 Object Details

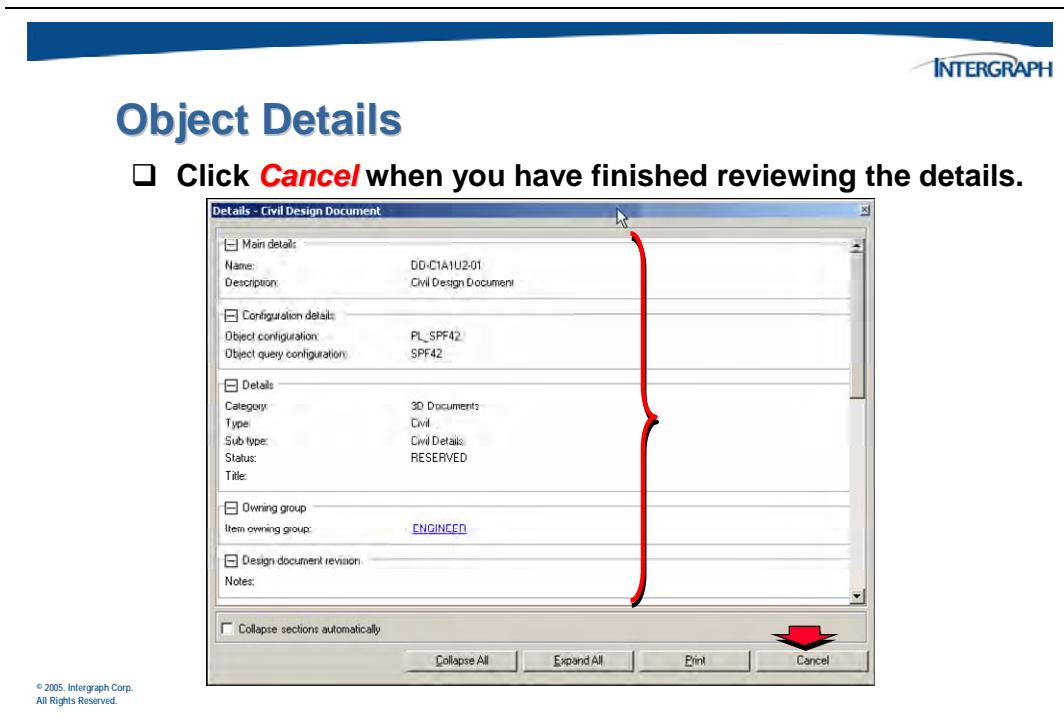
The **Details** command allows you to view the properties of the selected object. This command is available from the object's shortcut menu.

#### Object Details

- Right-click on an object, and select **Details** from the pop-up menu.

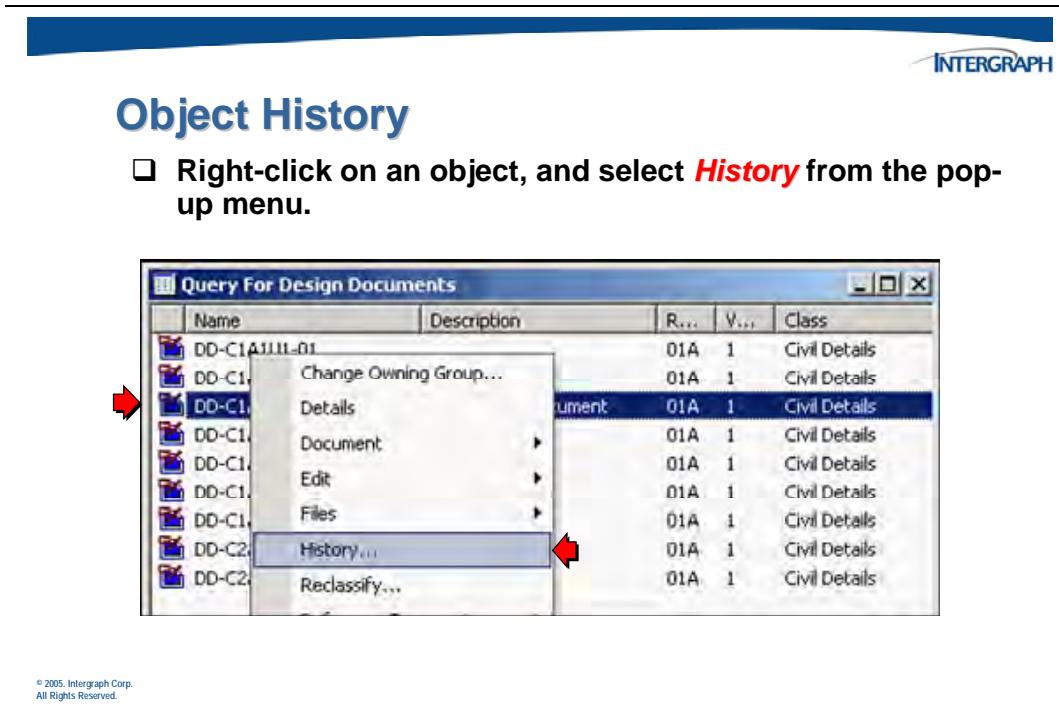


An object *Details* window will appear with all of the object properties and values.

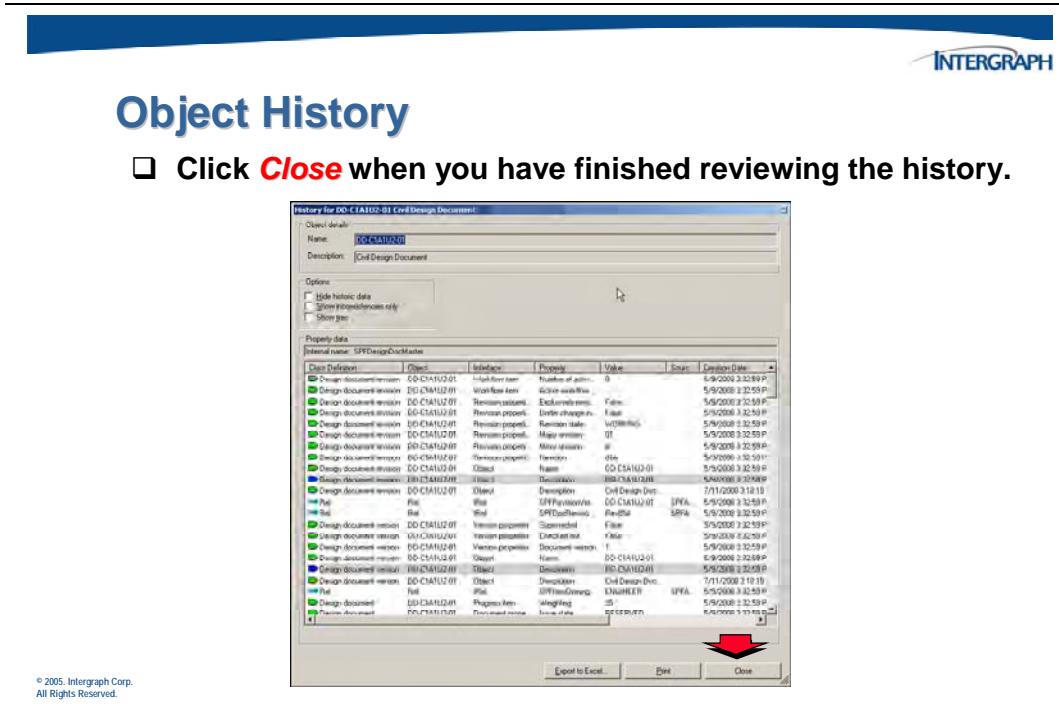


### 3.4.7 Object History

The **History** command allows you to view the update history of the selected object. This command is available from the object's shortcut menu.



An object *History* window will appear with a list of properties and their values.



## 3.5 Creating and Showing Relationships

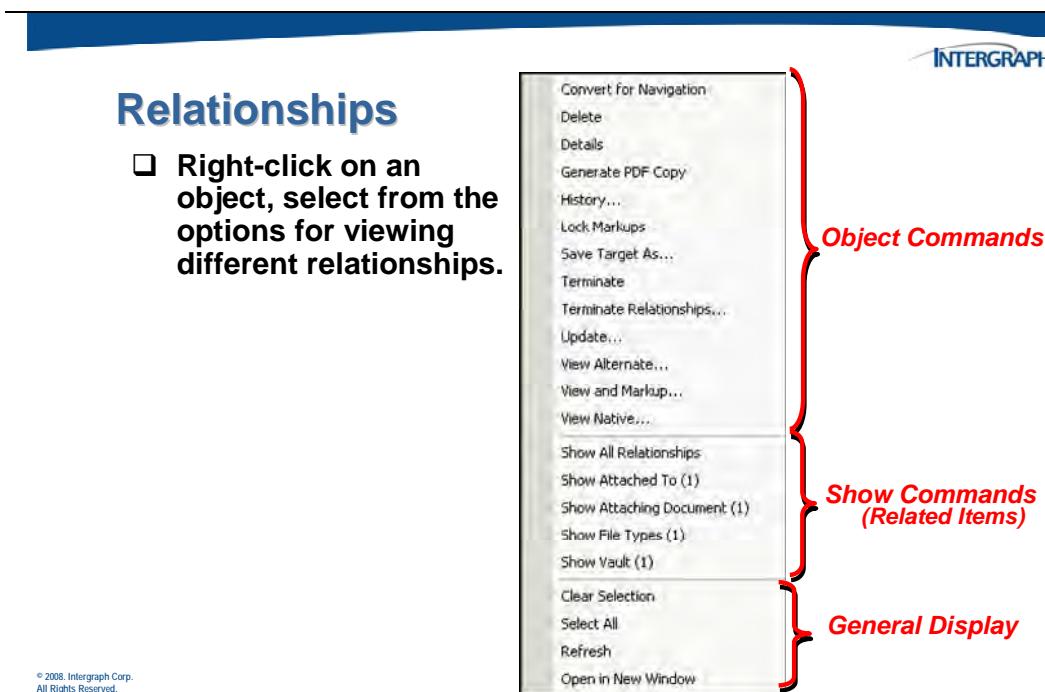
The Desktop Client provides options for creating, viewing, editing, and terminating relationships between objects. Many of these options are available from the object's shortcut menu.

When you view an object's shortcut menu, you will find that the menu is divided into at least three main sections. The top section contains Object Commands. These commands, or methods, are actions that you can perform against the selected object. This section is where you will find commands such as Details, History, Copy, and Delete.

The second section of the menu contains Show Relationships. With the exception of the Show All command, all the items here are types of the relationships that the selected object can have with other objects in the database. For example, if you right-click on a PID Drawing, you will see show commands such as Show Equipment or Show Instruments, which will show all the pieces of equipment or instruments stored in the SPF database that have a relationship with that PID drawing.

The Show All Relationships command is a special instance of a show command, which will return a list of all the relationships the selected objects has with any type of object in the database.

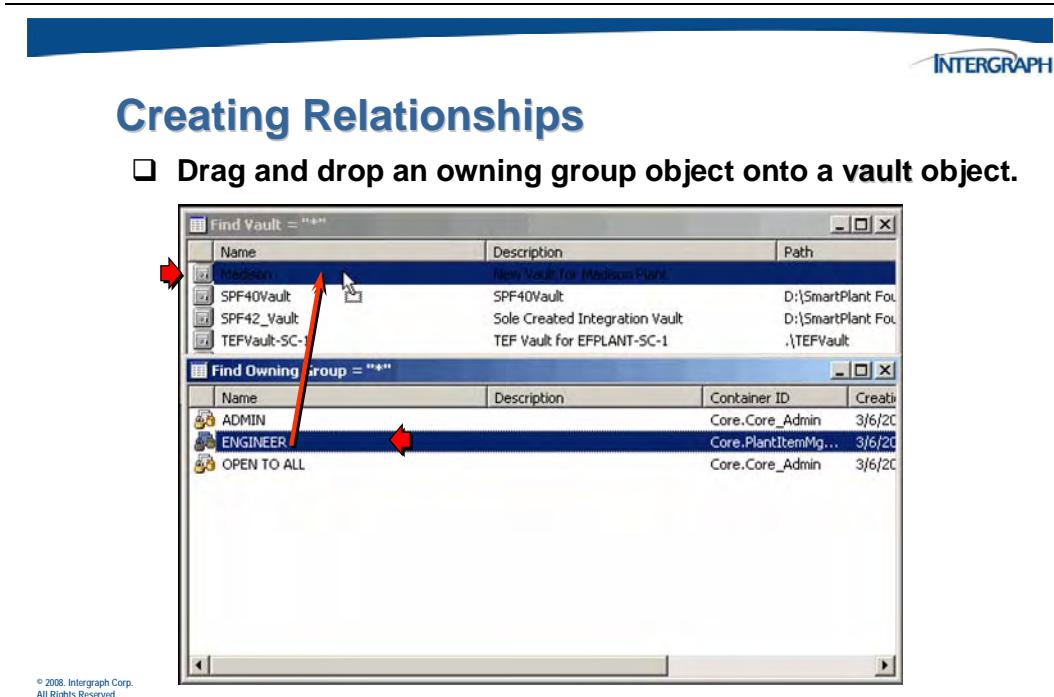
The third section of the menu contain general display commands that allow you to control how that object is presented to you in the user interface. For example, the Open in New Window command would send the selected object to a new window in the Desktop Client.



### 3.5.1 Creating Relationships

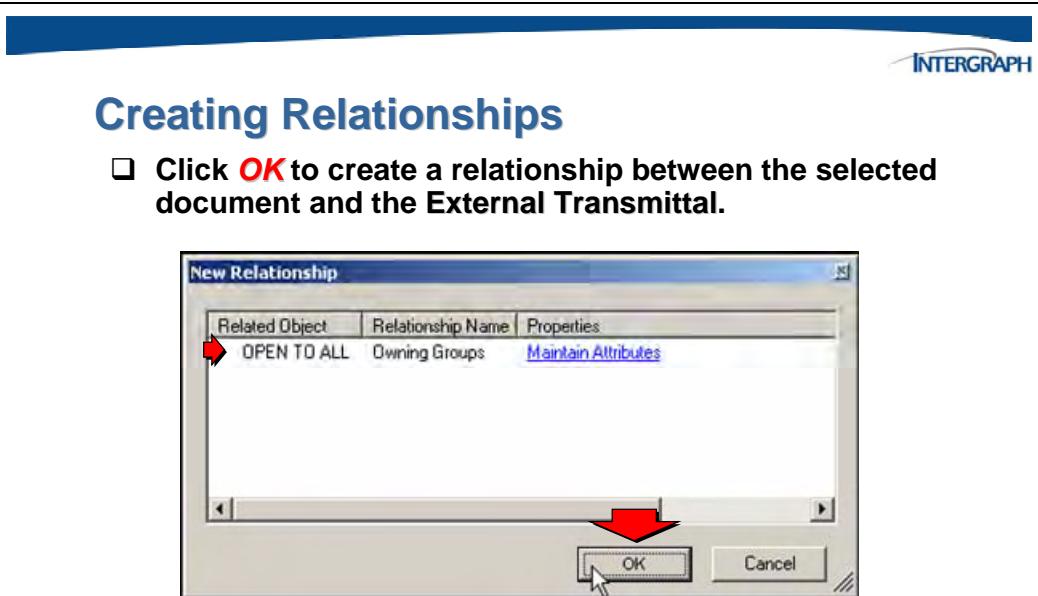
You can create a relationship by dragging and dropping one object onto another object, for example, dragging an owning group onto a vault. You can also create a relationship by selecting a parent object when you create a new object. For example, to relate a new unit to an existing area, you would select the area from the **Functional area** list on the **New Unit** form when you create the unit.

The procedures in this section are for non-administrative users. Administrative tasks are covered in the Administration II class.



For example, you can drag a document object in one list view window onto an object in another list view window to create a relationship.

In the *Create Relationship* dialog box, click **OK** to create the relationship.



© 2005, Intergraph Corp.  
All Rights Reserved.

---

The following fields are found on the *Create Relationship* dialog:

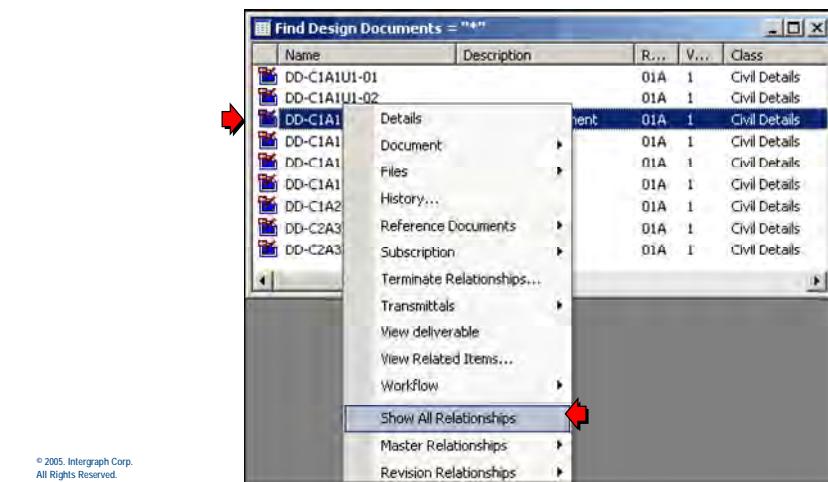
- Related Object** - Displays the name of the child object.
- Relationship** - Displays the type of relationship that is being created.
- Properties** - Displays any properties for the relationship.

### 3.5.2 Showing Relationships

The **Show All Relationships** command allows you to display all the relationships that exist between the selected object and other objects. This command is available from an object's shortcut menu.

#### Show Relationships

- Right-click on an object, and select **Show All Relationships** from the pop-up menu.



You can select the object for which you want to display relationships from either the tree view or list view. If you display relationships for an object in the tree view, the software expands the tree to show the related objects.

If you display relationships for an object in the list view, the software displays the related objects in another list view window.

## Show Relationships

An **All Relations** window will appear, showing the related objects.

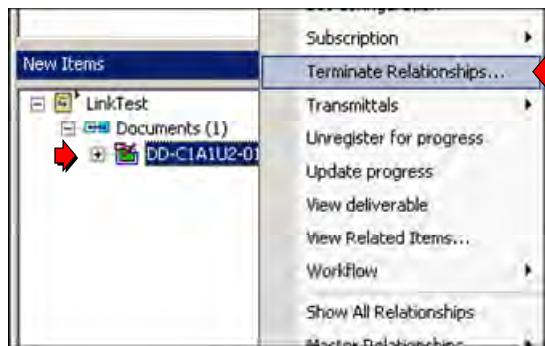
Name	Description	Class	Creation Date
A01	A01	SPFFunctionalArea	5/9/2008 3:11:...
Civil Details		SPFDocumentClass	3/6/2008 3:37:...
DD-C1A1U2-01	DD-C1A1U2-01	SPFDesignDocVers...	10/29/2008 9:...
DD-C1A1U2-01	DD-C1A1U2-01	SPFDesignDocVers...	5/9/2008 3:32:...
ENGINEER		SPFDatAccessGr...	3/6/2008 3:37:...
Rev01A	Revision Scheme 01-09, A-AF	SPFRevisionScheme	3/6/2008 3:37:...
RR1002-Design.doc	Type is DOC	SPFDesignFile	10/29/2008 9:...
U02	U02	SPFFunctionalUnit	5/9/2008 3:13:...
WP-C1-A1-U2		SPFPrgDesignWor...	5/9/2008 3:21:...

### 3.5.3 Terminating Relationships

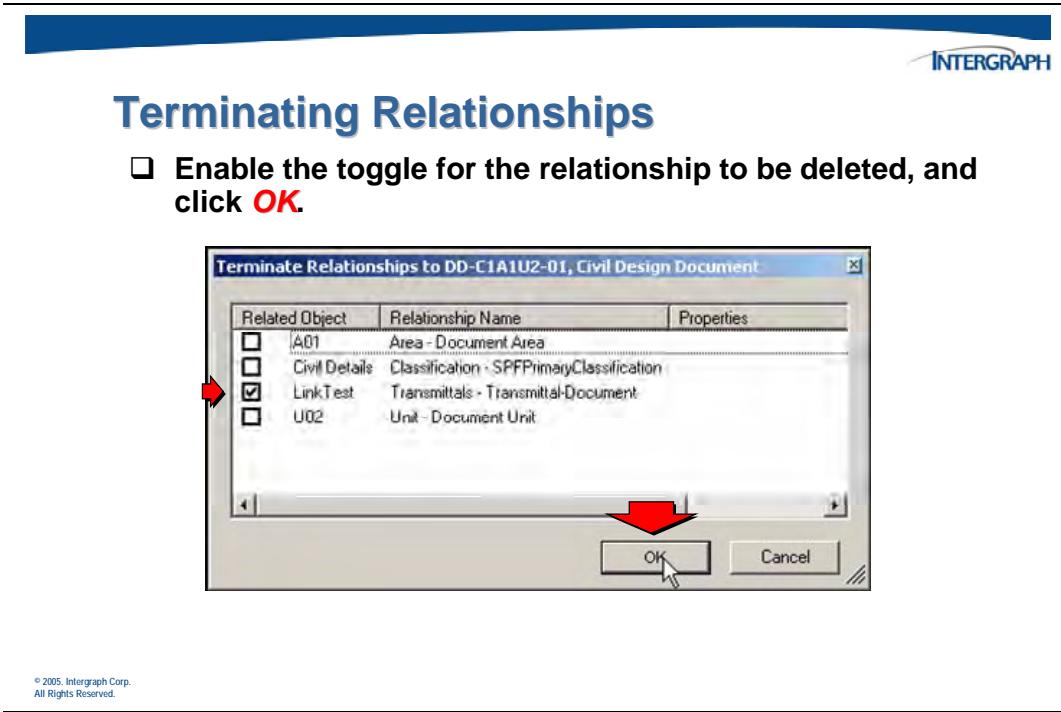
The **Terminate Relationships** command allows you to remove relationships that exist between the selected object and other objects.

#### Terminating Relationships

- Right-click on an object, and select **Terminate Relationships** from the pop-up menu.



The *Terminate Relationships* dialog appears.



The following fields are available on the *Terminate Relationships* dialog:

- ❑ **Check box** - Specifies whether or not to terminate a relationship. To terminate a relationship, fill the box. To keep a relationship, clear the box.
- ❑ **Related Object** - Displays the objects related to the selected object. This field is display-only.
- ❑ **Relationship Name** - Displays name of the relationship between the selected object and the object in the Related Item column. This field is display-only.
- ❑ **Properties** - Displays any properties for the relationship.

In the *Terminate Relationships* dialog box, select the check box beside the child objects for which you want to delete relationships to the parent object.

## 3.6 Activity – Finding and Manipulating Objects

Complete **Chapter 3 – Activity 1** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.



## 3.7 Document Management

Version 2008 of SmartPlant Foundation now supports additional types of documents. Documents, as known in previous versions of the software, such as non-published documents and published documents, are now known as Design Documents. As expected, files attached to these design documents are associated with document versions and are stored in vaults.

In addition to these design documents, we also now support vendor documents and template documents. Vendor documents are treated similarly to design documents, attached files are vaulted, but documents of this type have special properties that allow them to be used with the new Progress functionality.

Template documents represent templates used by the SmartPlant Foundation application. Files attached to this kind of document are not stored in the vault, but are stored in the database.

Even the schema files used for Integration with SmartPlant Enterprise are now stored in SPF. Now, to make changes to these schema files, you will access the document object in SPF and check the file out to the Schema Editor application for editing.



### SPF Documents

- In addition to the document categories that have been supported in previous SPF versions, version 2008 also supports different types of standalone documents, which are treated by the software differently.
- Types of Documents:
  - **Design Documents** are basic standalone documents placed in SPF for document control.
  - **Vendor Documents** are those with specific attributes for tracking documents that come from a third party and are part of the progress module.
  - **Template Documents** represents templates that are used by the SmartPlant Foundation software.
  - **Schema Documents** are the documents that represent the SPF schema (data model).

Design and Vendor documents are very similar in the way they are created and managed. Both are created with options from the *New* submenu off the *File* menu. Additionally, both are updated using the standard document management commands, such as Check Out, Check In, Sign-off, Revise, and View and Markup that will be discussed in later sections of this course.

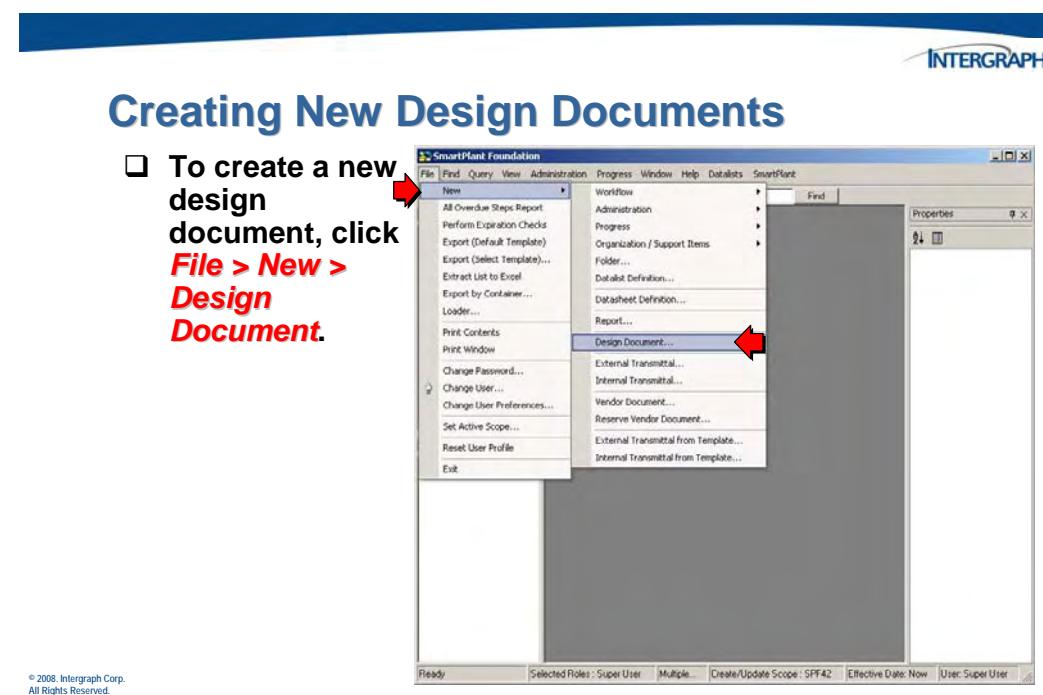


## Design and Vendor Documents

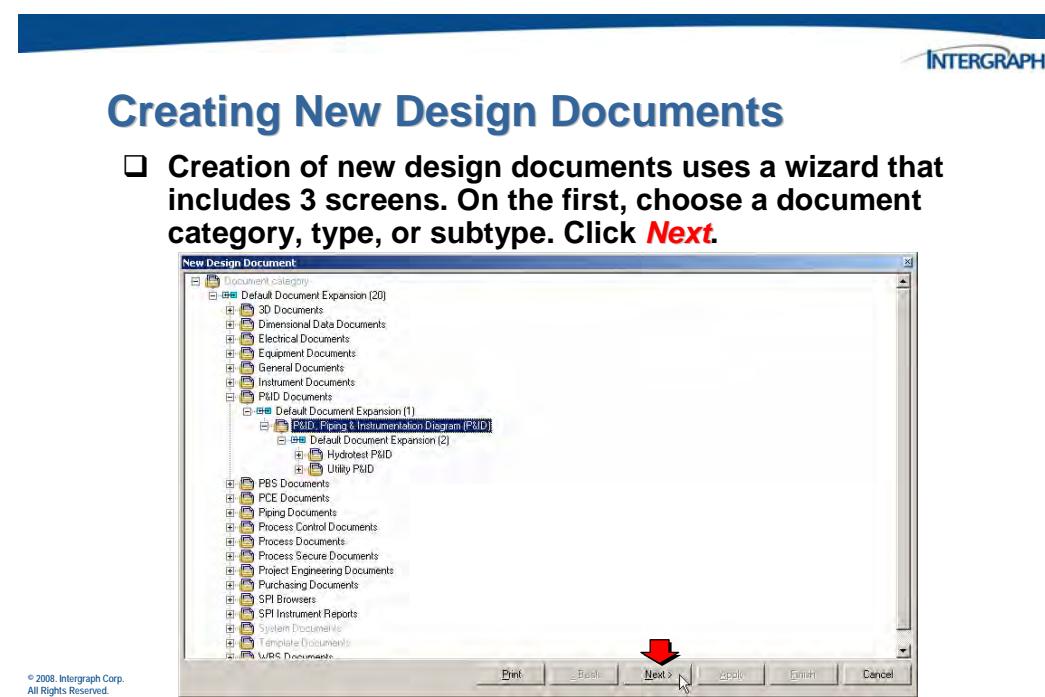
- Design documents and vendor documents are two types of standalone documents users can create with the Desktop Client.**
- Files attached to these two types of documents are placed in an SPF vault.**
- Document functionality like check-out, check-in, versioning, and revisions for these types of documents is the same as in previous versions of the software.**

### 3.7.1 Creating Design Documents

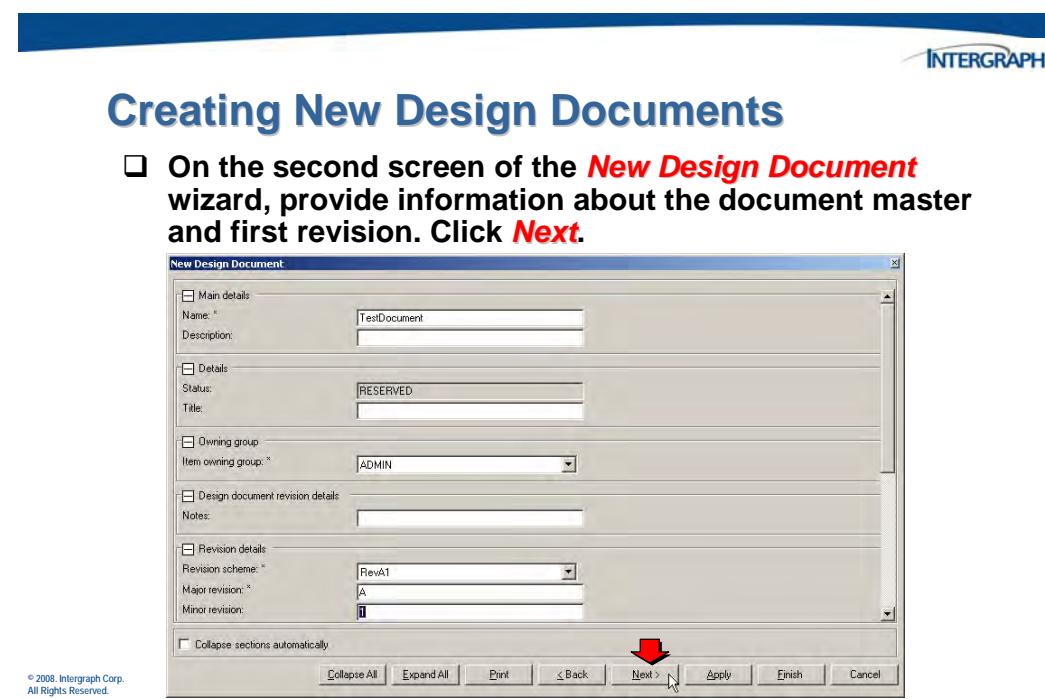
*Design Documents* are available for creation from the *New* submenu off the *File* menu.



From the hierarchy, choose the category, type, and/or subtype of the new document, and click ***Next***.

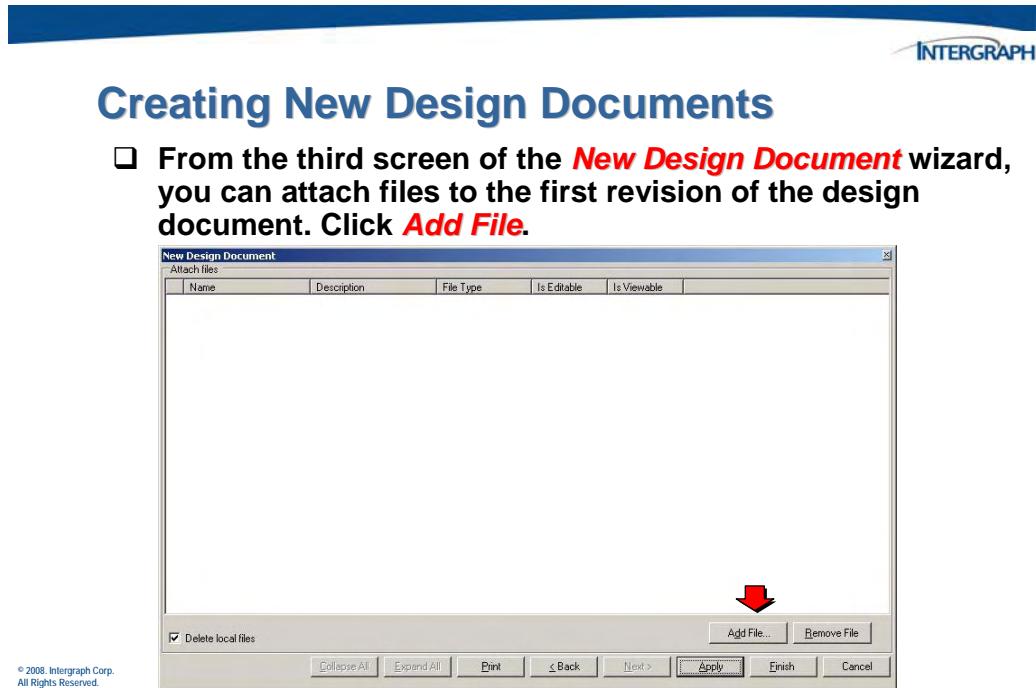


Provide metadata about the document object, and then click the ***Next*** button.



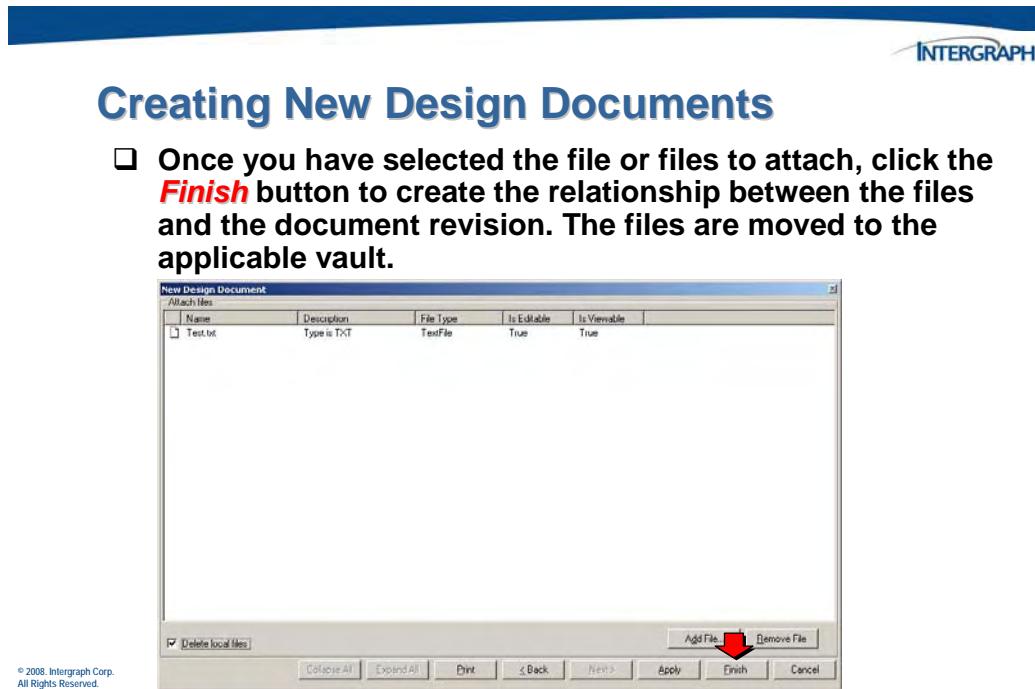
If you want to attach an electronic file, click the *Add File* button.

---



Using a standard Microsoft **Open** window, find the file(s) you want to attach and click **Open**. Confirm the file selection on the **New Design Document** wizard screen, and then click **Finish**.

---



## 3.7.2 Creating Vendor Documents

Vendor documents are very similar to design documents, however, they have access to additional properties for use with the Progress functionality. Additionally, document objects can be reserved in advance until you are ready to add the actual files to the document management system.

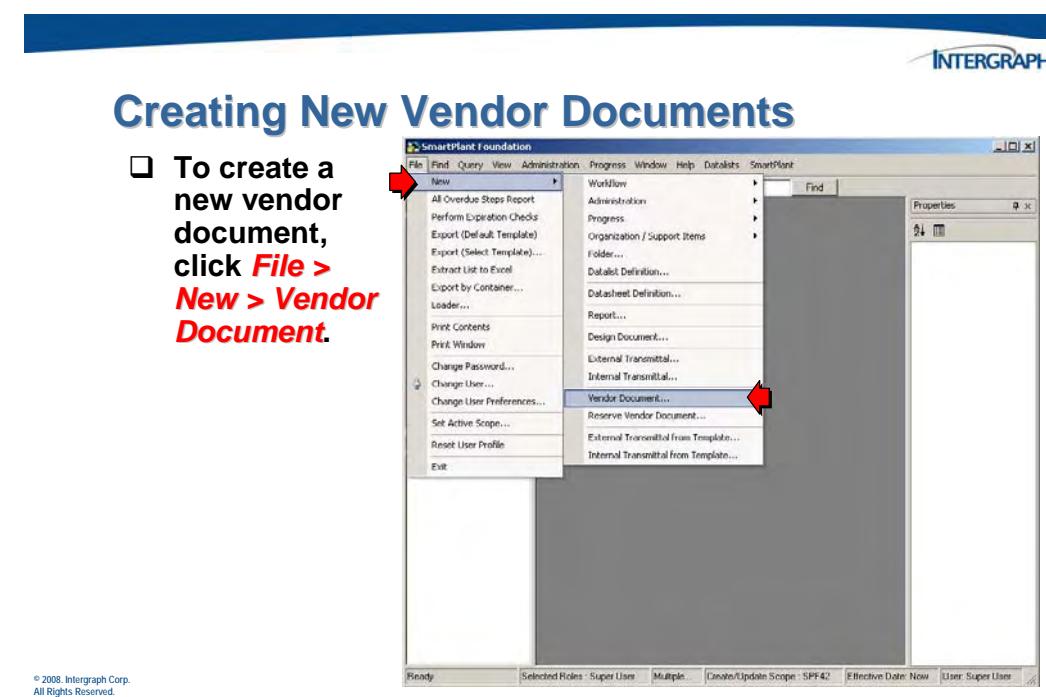
---



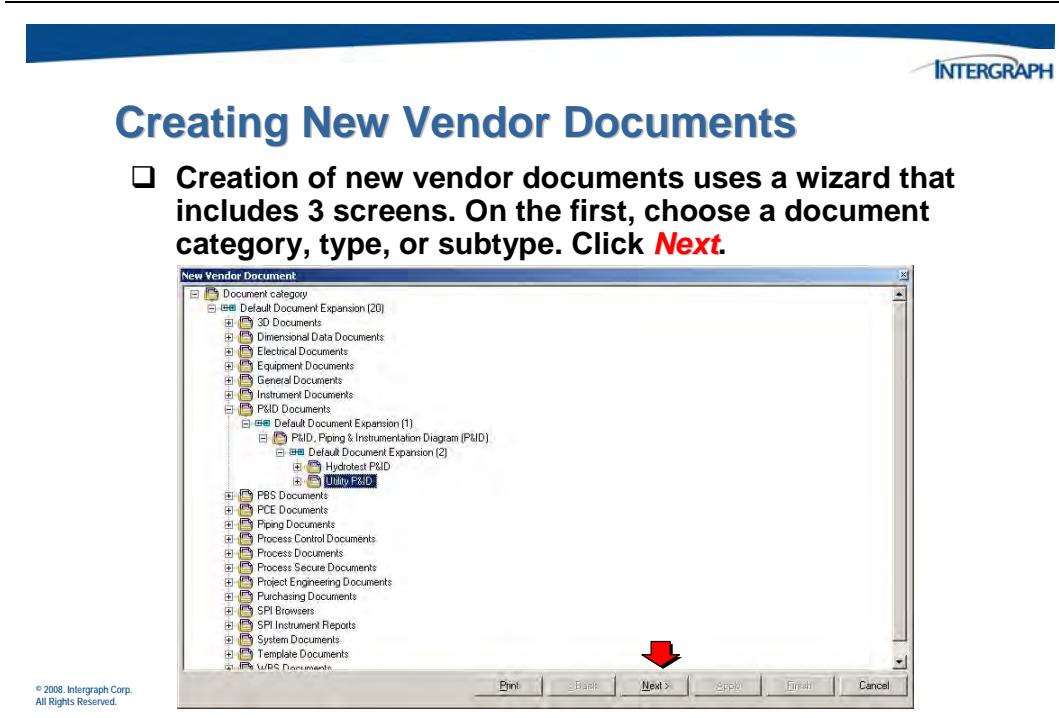
### Vendor Documents

- Vendor documents are standalone documents, like design documents, but have additional specific attributes for tracking documents that come from third-party and can be tracked by the progress module, discussed in a later section.**

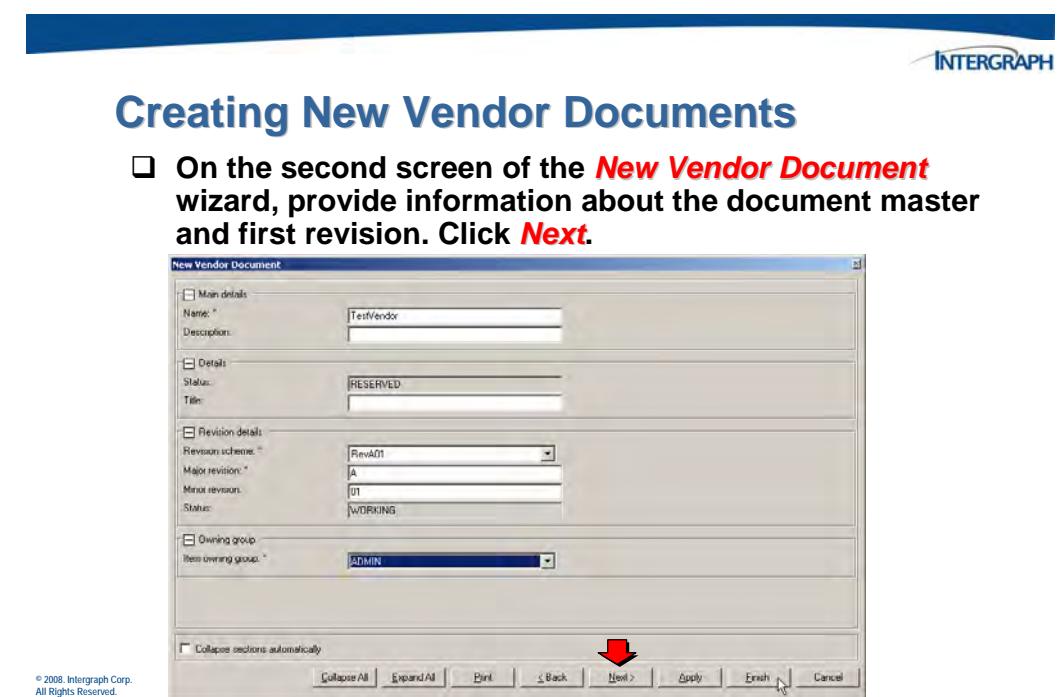
New vendor documents are created by using the **File > New > Vendor Document** command.



From the hierarchy, choose the category, type, and/or subtype of the new document, and click **Next**.

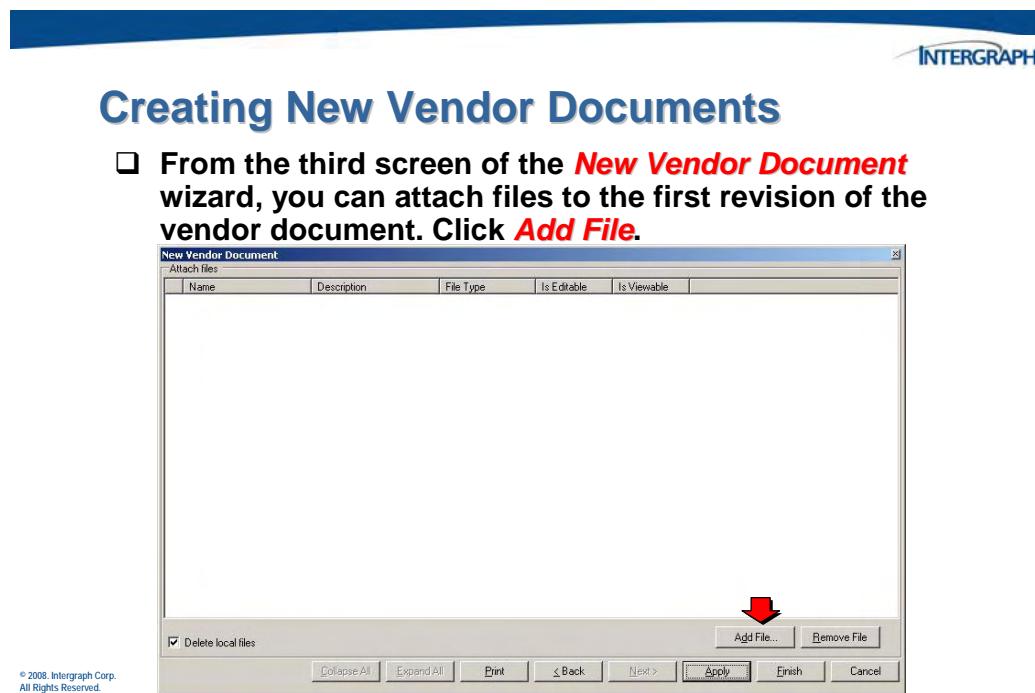


Specify information about the new vendor document, and click the **Next** button.



If you want to attach an electronic file to the new vendor document object, click the *Add File* button.

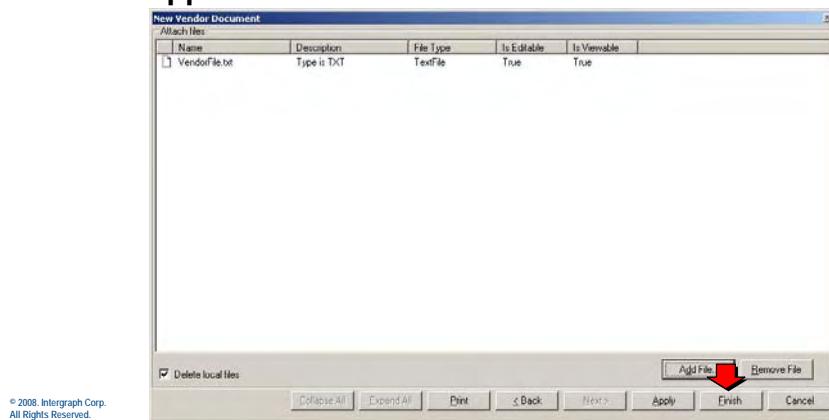
---



Find the file(s) you want to attach using the standard Microsoft **Open** dialog box and click the **Open** button. Confirm your selection on the **New Vendor Document** wizard, and then click the **Finish** button.

## Creating New Vendor Documents

- Once you have selected the file or files to attach, click the **Finish** button to create the relationship between the files and the document revision. The files are moved to the applicable vault.



### 3.7.3 Reserving Vendor Documents

Frequently, you may be aware that certain vendor documents are expected, even before they are available to put into SmartPlant Foundation. In those cases, you can reserve the document by creating the object in an inactive state. Later, when the electronic file is available, you can activate the vendor document, attach the file, and create a first working revision.

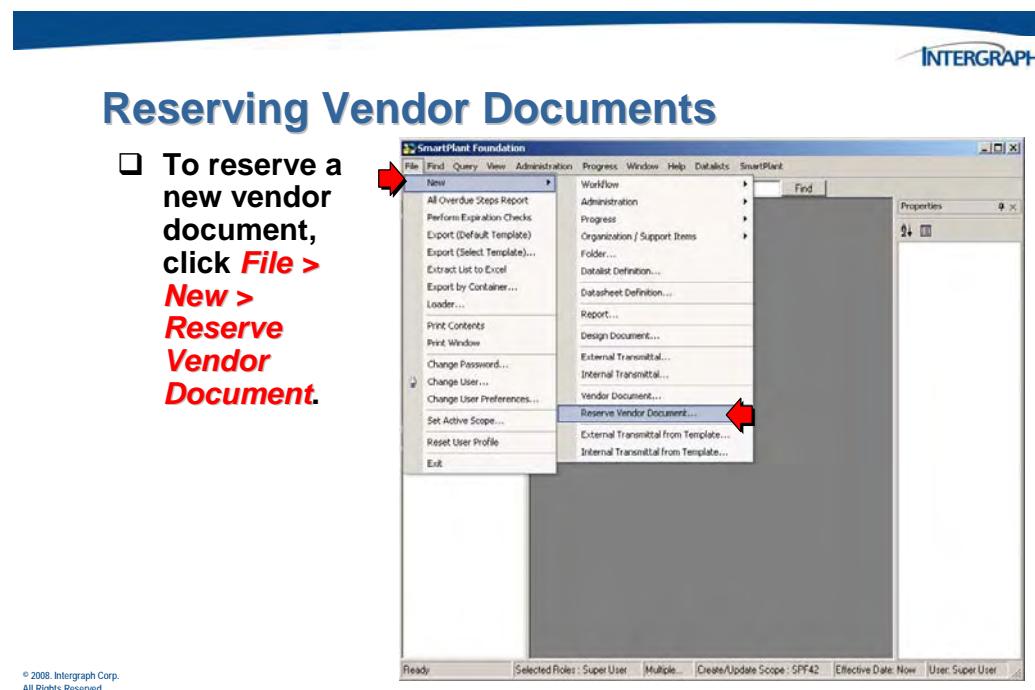
---



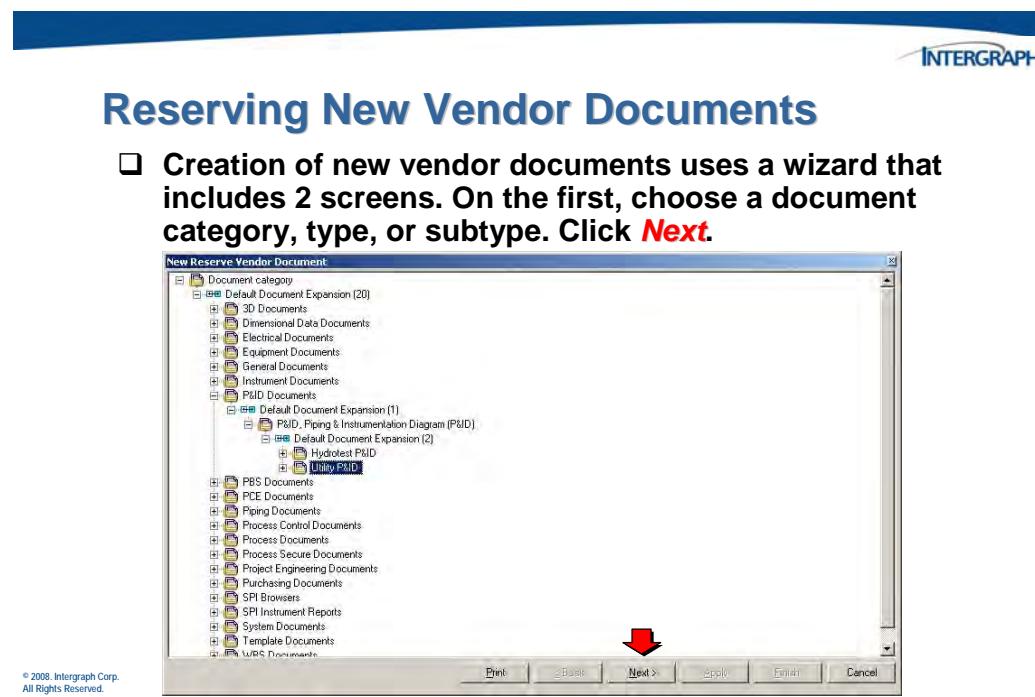
#### Reserving Vendor Documents

- You can also create new vendor documents in an inactive state, without attaching files or creating a first revision.

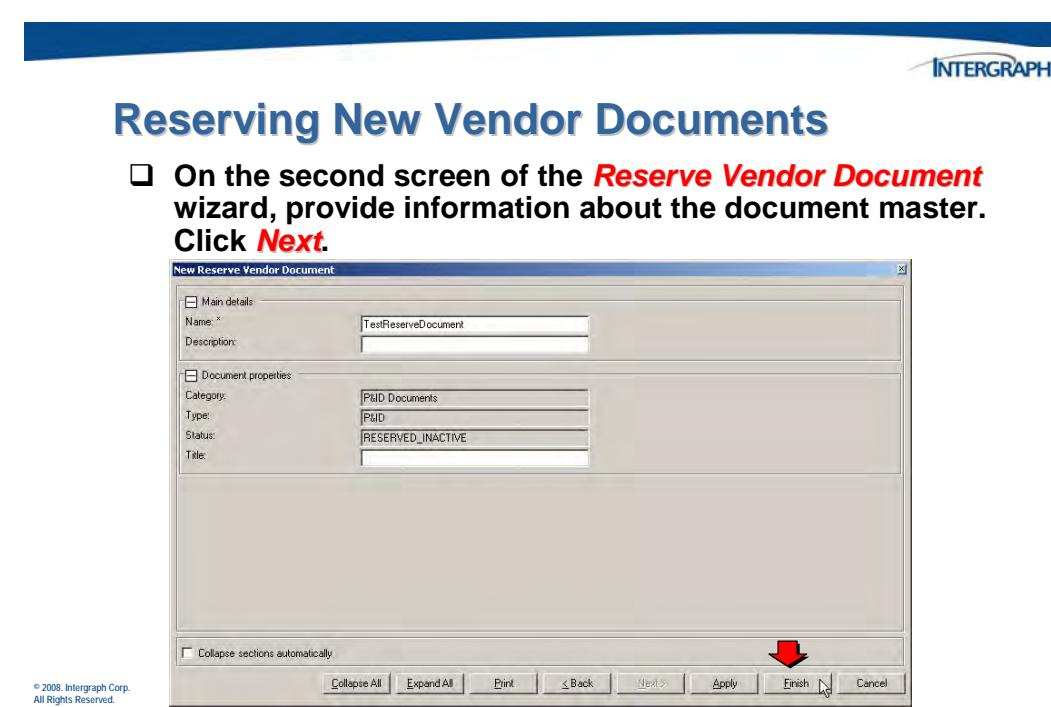
The command for reserving a vendor document object is ***File > New > Reserve Vendor Document.***



Specify the document category, type, and/or subtype, and then click ***Next.***



Provide metadata about the new vendor document that you are expecting, and then click the **Finish** button.



Those steps create an object in the database for the vendor document. No revision is created and no files are placed in the vault at this point. You have reserved the document in an inactive state. In order to attach a file, you will need to activate the reserved vendor document.

### 3.7.4 Activating a Vendor Document

Once the electronic file associated with a reserved vendor document is available, you need to activate the vendor document to attach it.

---

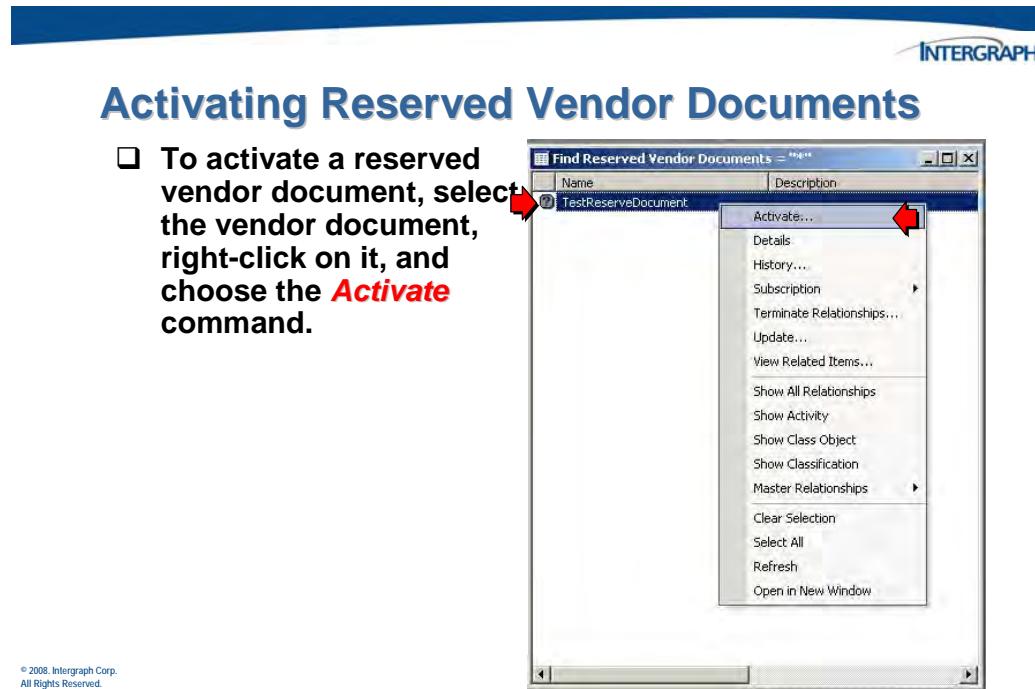


#### Activating Reserved Vendor Documents

- Once the files are ready to be attached to the reserved vendor document, you can activate it. Activation creates a first revision of the document and attaches any selected files to the first revision.

To activate a reserved vendor document, search for the inactive document in SPF using a quick find or query. Once you have found the document, right-click on it, and click the **Activate** command.

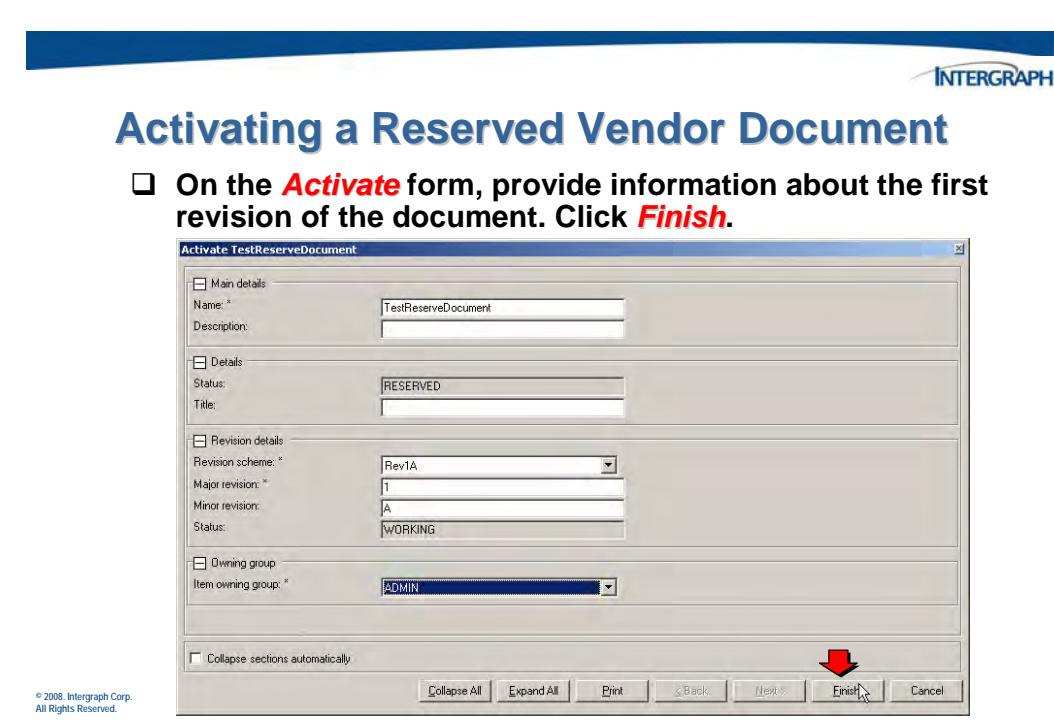
---



© 2008, Intergraph Corp.  
All Rights Reserved.

---

Provide additional metadata about the vendor document or change information that was provided when the document was reserved, and then click **Finish**.



If you would like to attach a file at this point, you can do so using the **Files > Attach File** option from the shortcut menu for the newly activated vendor document.

### 3.7.5 Creating Template Documents

Unlike design documents and vendor documents, files attached to template document objects are not stored in a vault. Template document objects are created to represent templates that are used by the SmartPlant Foundation software.

---



#### Templates Documents

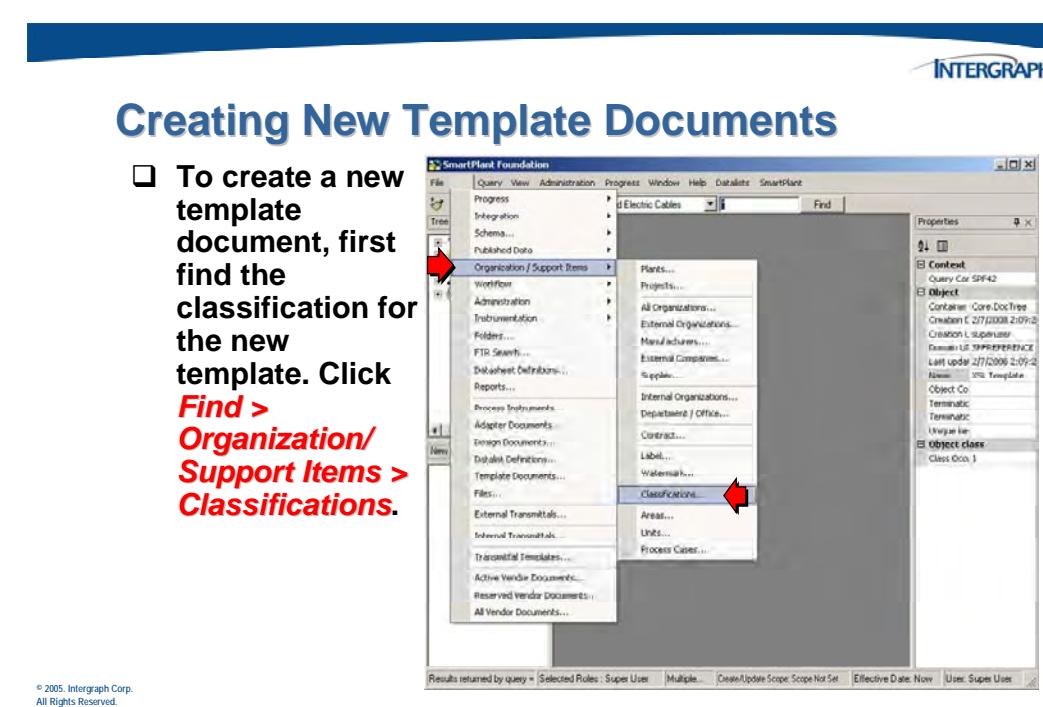
- Templates, used by the software for reporting and design document file creation, have now been pulled into SPF for document management as template documents.**
- Unlike design and vendor documents, files attached to template documents are stored as objects in the database rather than in the vault.**
- An assortment of templates are delivered with the product and can be found using the *Find > Template Document* command.**
- All delivered template documents belong to one of these three classifications: XSL Template, Datasheet Template, and Excel Template.**
- In the following examples, we illustrate how to create a custom Microsoft Excel template to be used when exporting from the SPF Desktop Client.**

Most templates are not saved as part of any specific plant, but are saved at to Top configuration, above all the plants in the database. This placements makes the templates available for use with any plant.

In order to create a new template at that level, you must first change your Create/Update Scope to Scope Not Set. Object created with that scope will exist above the plants and be available to all.

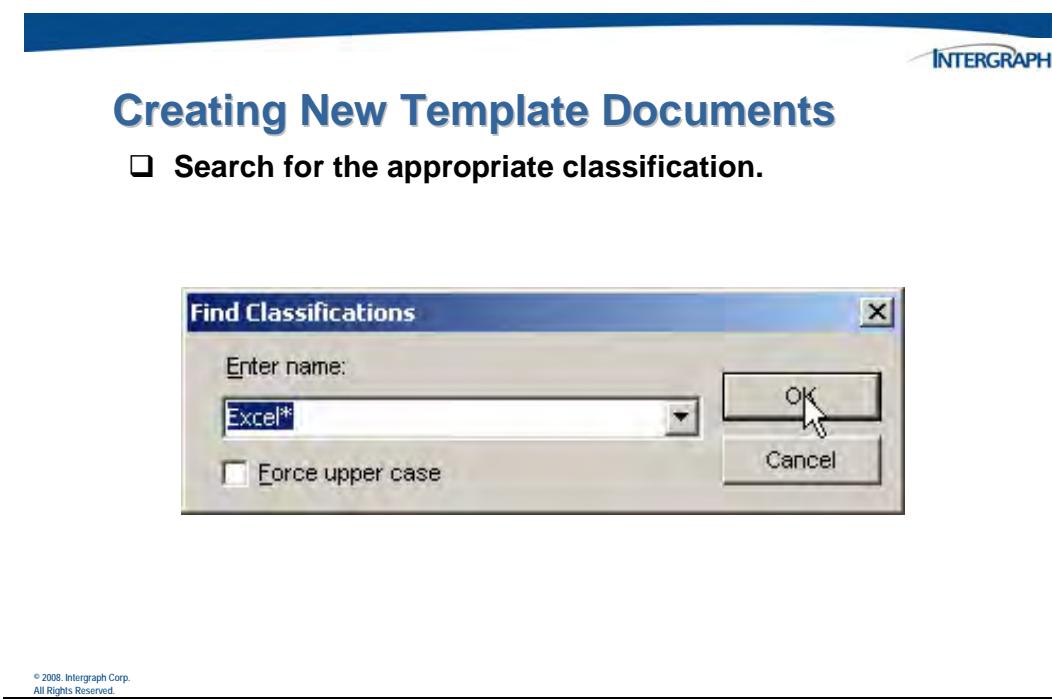
Most templates are not saved as part of any specific plant, but are saved at to Top configuration, above all the plants in the database. This placement makes the templates available for use with any plant.

The next step to creating a new template document in SPF is to find the classification for the type of document you want to create. Click ***Find > Organization /Support Items > Classification***.

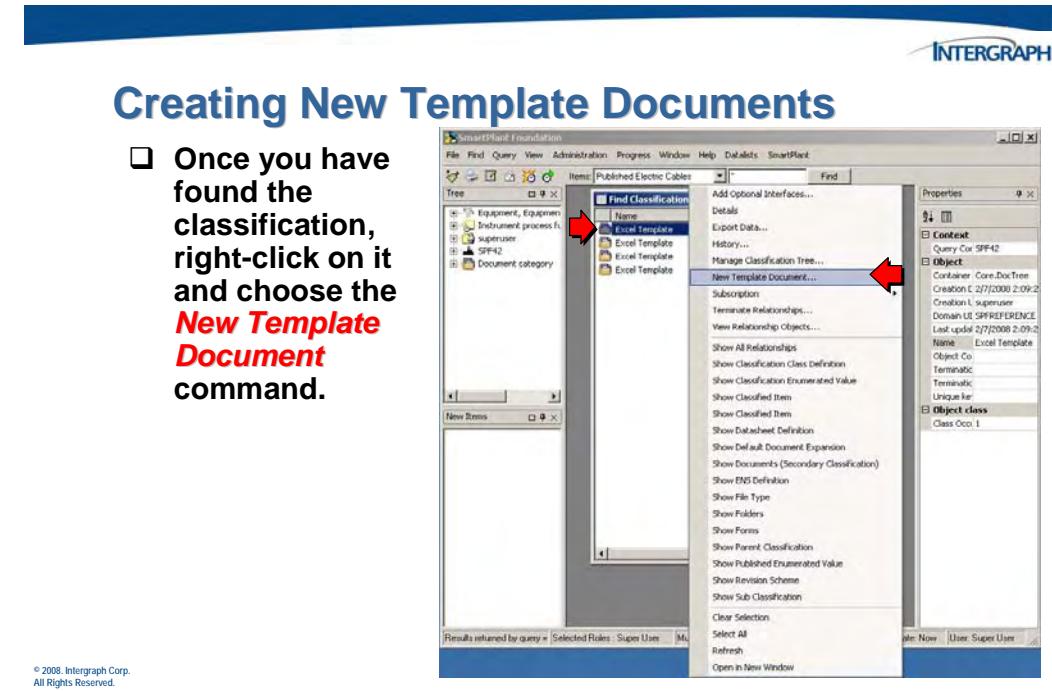


Delivered templates belong to one of the following classifications: Datasheet Templates, Excel Templates, and XSL Templates.

Search for the classification that matches the type of template you want to add to SPF.



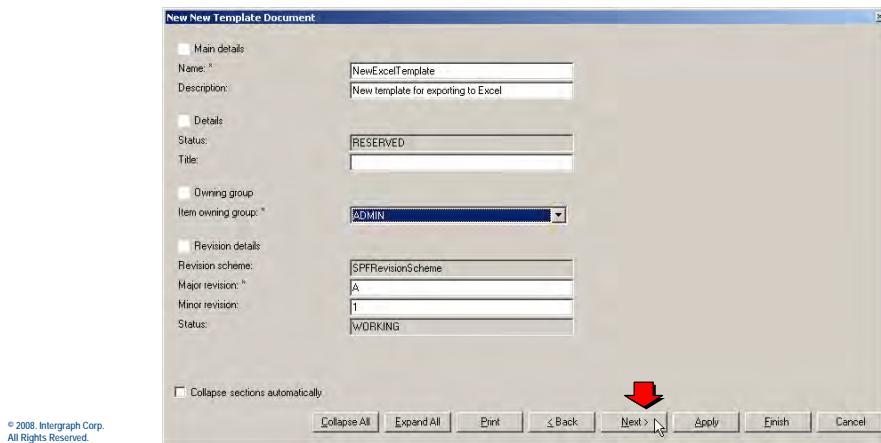
Once you have found the applicable classification, right-click it, and click the **New Template Document** option available from the short cut menu.



On the first screen of the **New Template Document** wizard, provide metadata about the template you are adding, and then click the **Next** button

## Creating New Template Documents

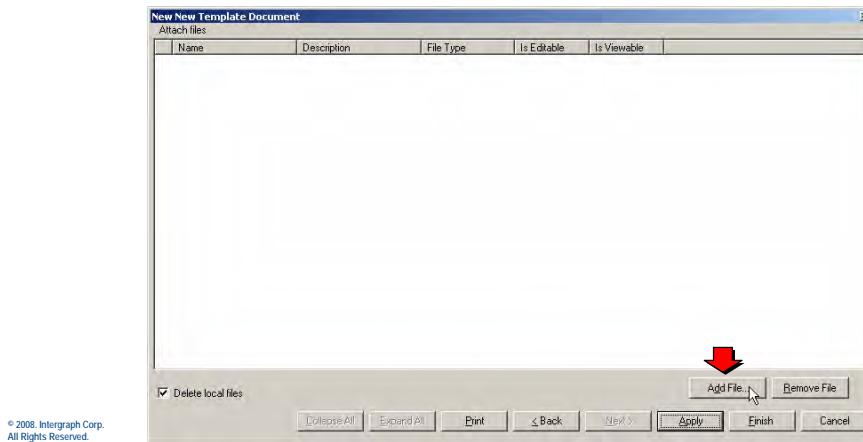
- Creation of new template documents uses a wizard that includes 2 screens. On the first, provide information about the master document and first revision. Click **Next**.



Click the **Add File** button to open a standard Microsoft **Open** window where you can find the file you want to add as a template.

## Creating New Template Documents

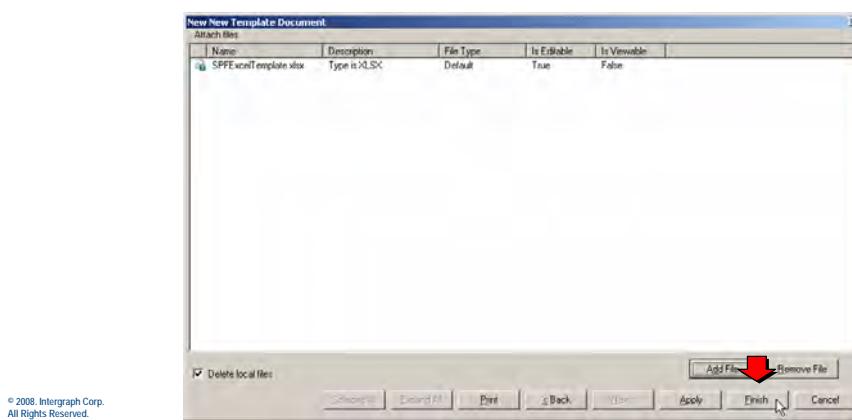
- From the second screen of the **New Template Document** wizard, you can attach files to the first revision of the template document. Click **Add File**.



Confirm the selected file, and then click the **Finish** button.

## Creating New Template Documents

- Once you have selected the file or files to attach, click the **Finish** button to create the relationship between the files and the document revision. The file is stored in the database rather than the vault.



## 3.7.6 Updating Template Documents

In order to update files stored in the system as template documents, they can be checked out and back in just like other types of documents. Typically, however, template documents are stored above standard configurations. In other words, templates usually do not belong to a particular plant or project, but are stored in SPF without a scope so that they are available to all scopes.



### Templates Documents

- Once in the system, template documents can be checked out and checked in, just like design templates.
- Most of the template files delivered with the software have no scope. To edit those files, the user must have their create scope set to No Scope. As long as their create scope is set to a configuration, they will not be able to edit non-scoped templates.

### 3.7.7 Other Documents

In addition to the documents already discussed, there other types of documents used by the system that are now under the control of the SPF software. Those are discussed in the remaining pages of this chapter.

#### Schema Documents

When working in an integrated environment, the CNF files that are part of the SmartPlant Schema for integration are now stored in SPF for document management. In order to make changes to these files, you need to find them in SPF, use the Check Out command to create a new version, and open them in the SmartPlant Schema Editor for modification.

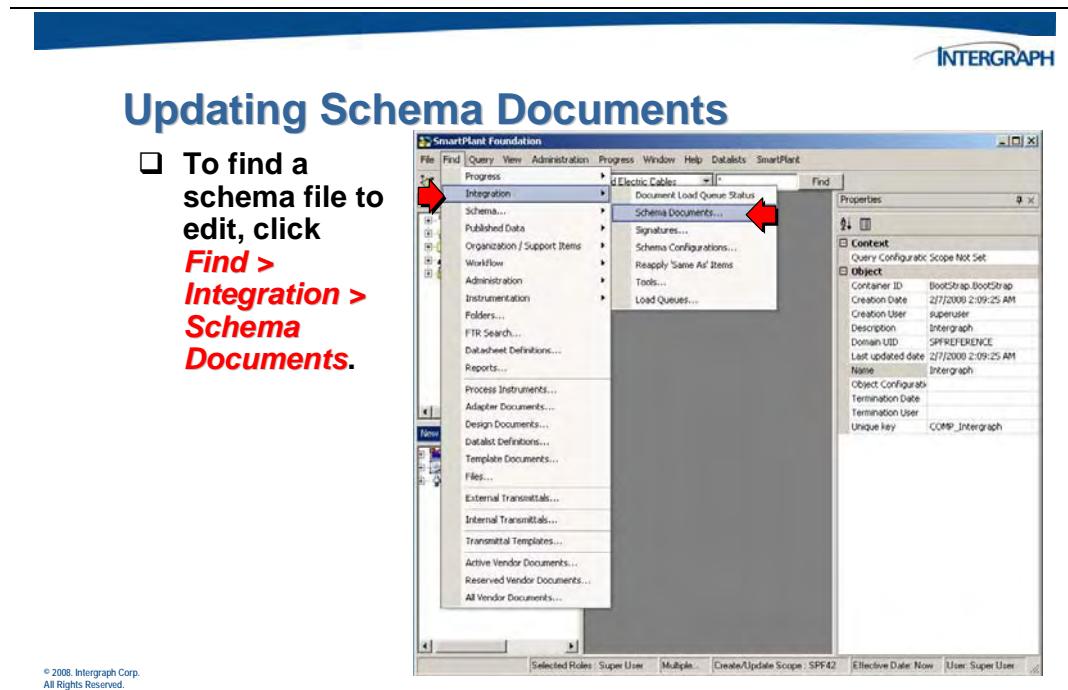
---



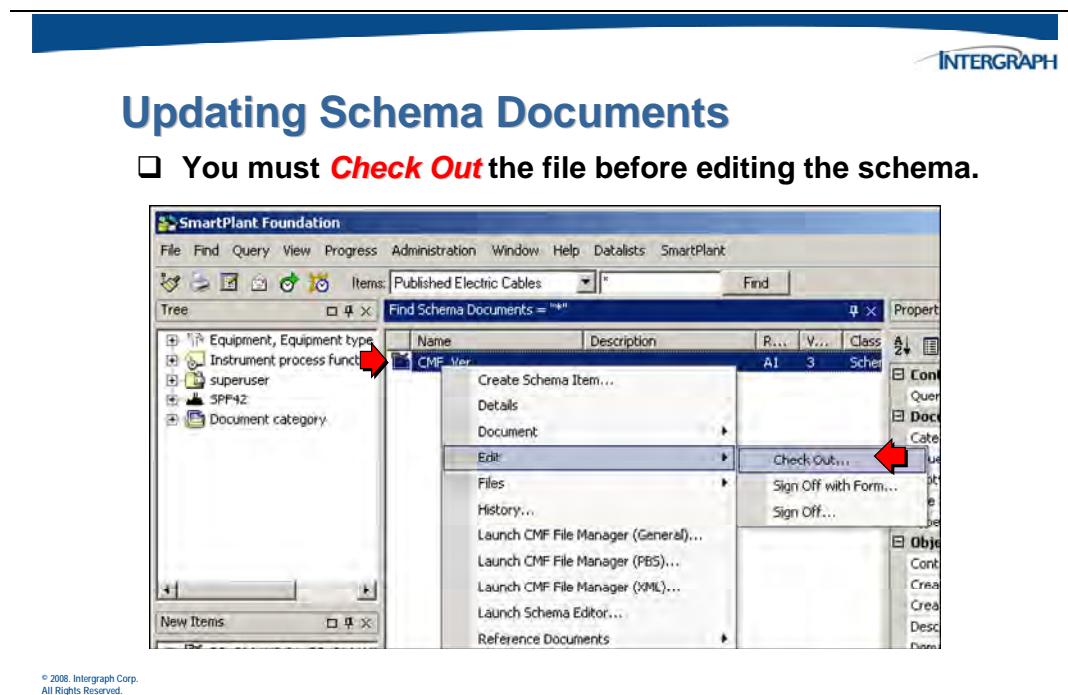
#### Schema Documents

- Like system templates, some schema files have now been pulled into document management.**
- To modify those schema files, you will need to check out the schema file to the SmartPlant Schema Editor for modifications.**

Use the **Find > Integration > Schema Documents** option to find the schema sets stored in SPF.



Find the CMF file that you want to modify. You will then need to check out the file before launching the Schema Editor from the shortcut menu. We will discuss document check out in a later chapter in this course.



Launch the Schema Editor command from the shortcut menu.

---



## Updating Schema Documents

- Find the CMF file to edit, right-click on it, and choose the **Launch Schema Editor** command.

### Note:

- For standalone modeling, you will launch the Schema Editor application as in previous versions and make your changes.

## Adapter Documents

Adapter documents, which are available in the Desktop Client, are very similar to template documents. These adapter documents represent files, especially tool map schema files, that are used by SmartPlant Foundation when publishing information, such as the PBS, WBS, or IPD datasheets.

---



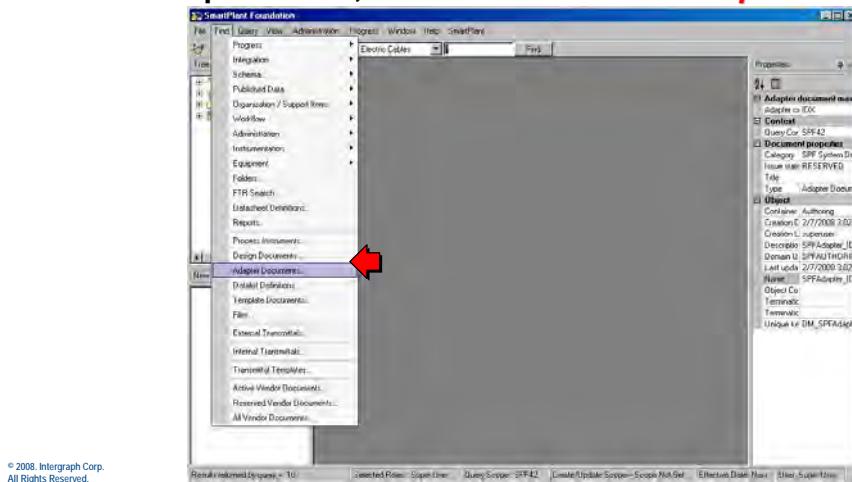
## Adapter Documents

- In addition to the Schema Documents, SPF also stores Adapter documents.**
- The are documents that represent files used by SPF when publishing, using the Authoring functionality.**

You can see, or find, adapter documents regardless of your scope. However, to modify the adapter documents, like with template documents, you will need to set your Create/Update scope above the configurations, to Scope Not Set. These adapter files are not specific to any one plant or configuration, but are applicable across all configurations.

## Adapter Documents

- To edit the adapter documents, set your update scope to Scope Not Set, and then click **Find > Adapter Documents**.



Provide a value to search for in the document name, and then click ***OK***.



## Adapter Documents

- Use the Find Adapter Document dialog to limit the search.

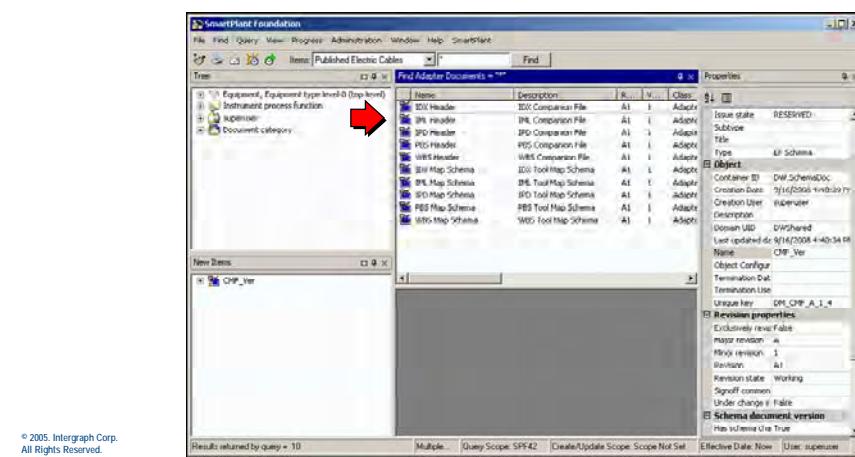
© 2008, Intergraph Corp.  
All Rights Reserved.

Find the file you want to edit, and check it out for modification.



## Adapter Documents

- You can select a document for modification from the returned list.



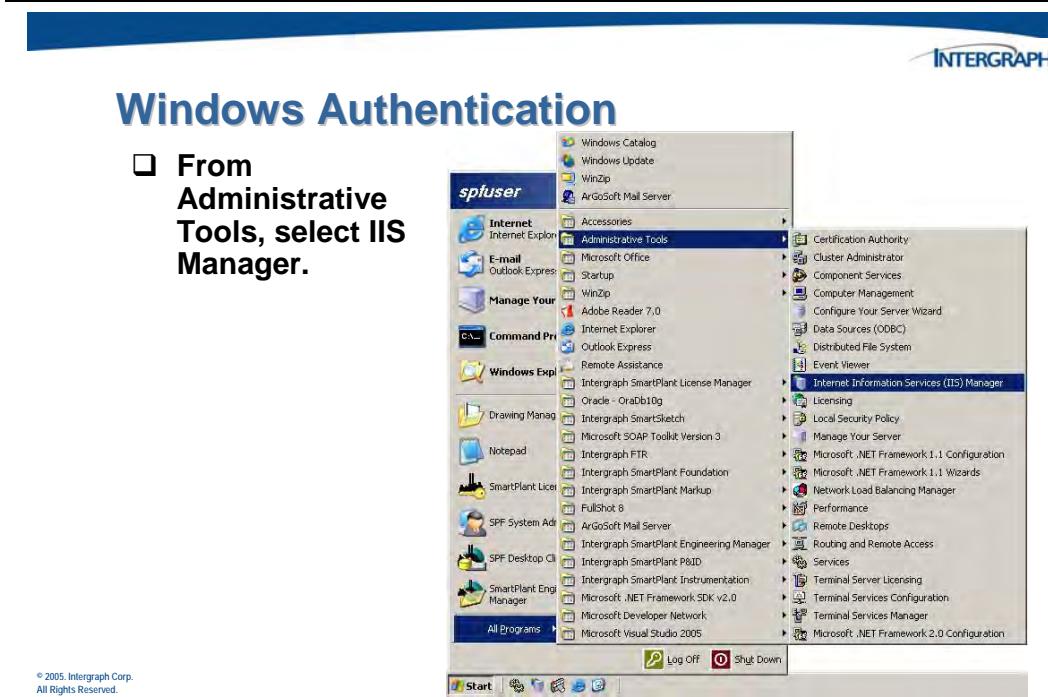
## 3.8 Integrated Windows User Authentication

Integrated Windows authentication, usually referred to as user authentication, affects the way that users log in to SPF. When user authentication is not in effect, SPF processes user logins by using the information in the SPF database. When user authentication is in effect, SPF uses the network domain username and password information provided at login to log the user into SPF automatically.

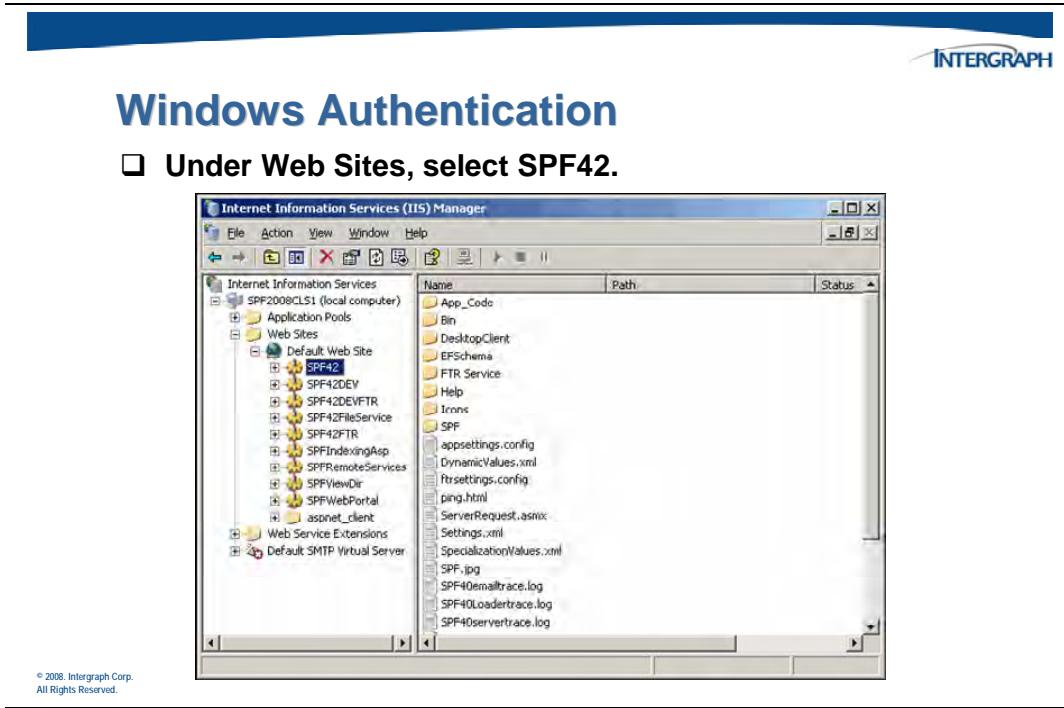
### 3.8.1 Changing the Integrated Windows Authentication

The following information pertains to the Windows 2003 Server operating system.

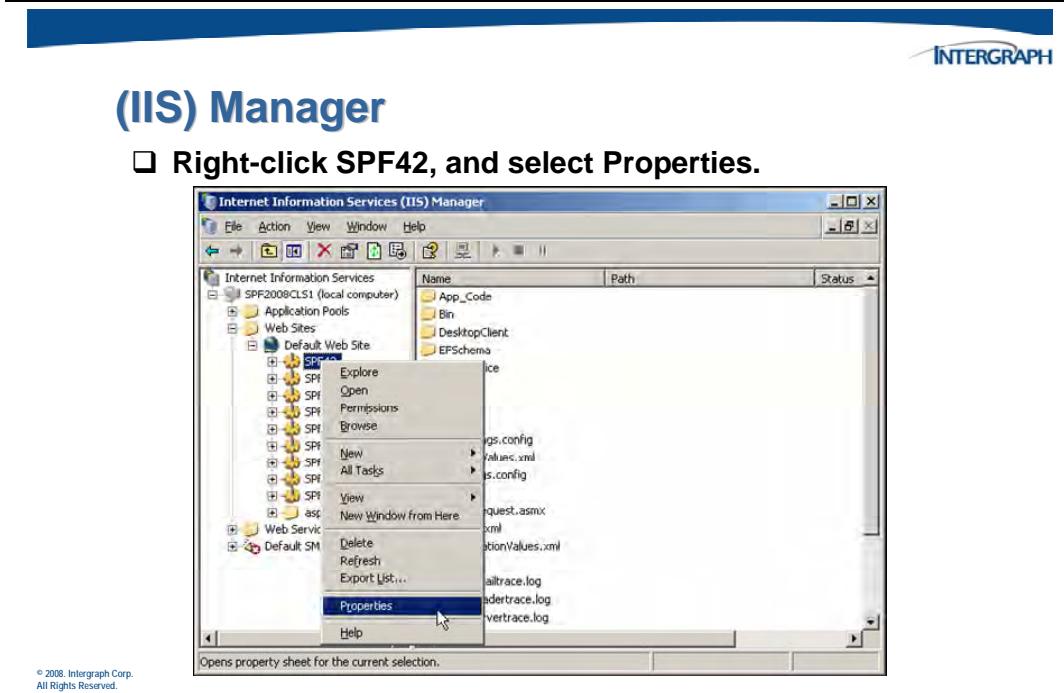
User authentication is set or unset on the security dialog for the SPF web site, which is SPFASP by default. Use the steps below to change the user authentication setting for an SPF server.



Open the Internet Information Services dialog, and navigate to the SPF42 web site.



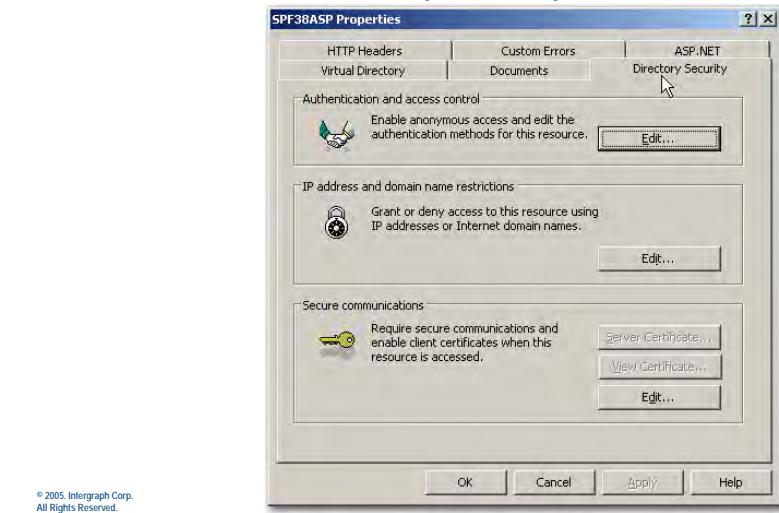
Right click on the SPF42 web site, and select *Properties*.





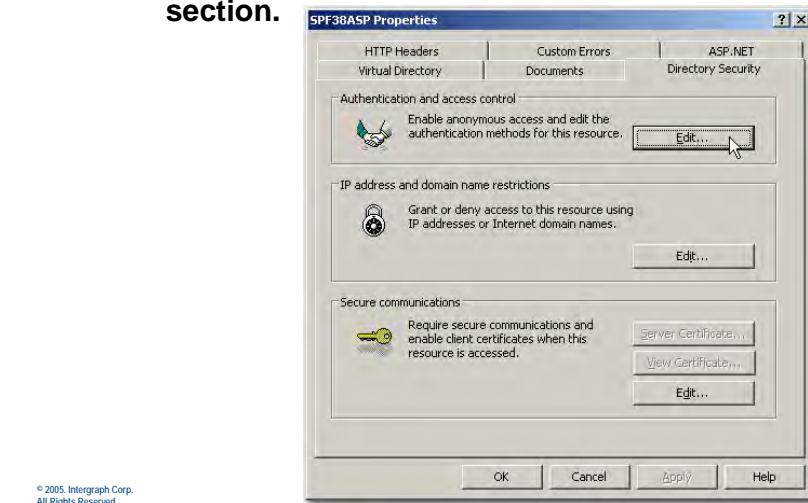
## SPFASP Properties

- Go to the Directory Security tab.



## SPFASP Properties

- Click Edit in the Authentication and Access Control section.



The Integrated Windows authentication check box is what controls the authentication setting for SPF. When a check mark is in the check box, user authentication is in effect.



## Authentication Methods

- The Integrated Windows Authentication check box should be checked to enable authentication.**

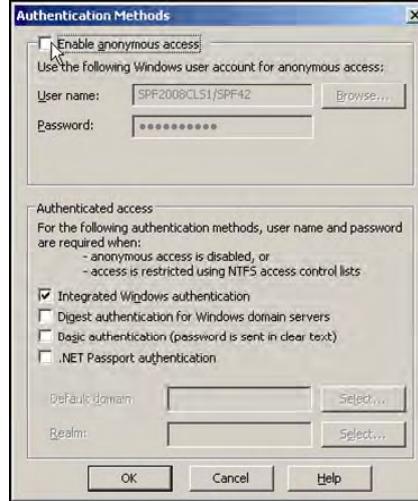


When there is no check mark in the check box, user authentication is not in effect. Change the Anonymous access check box so there is no check mark in it.



## Authentication Methods

- Verify that the *Enable anonymous access* check box is NOT checked.**

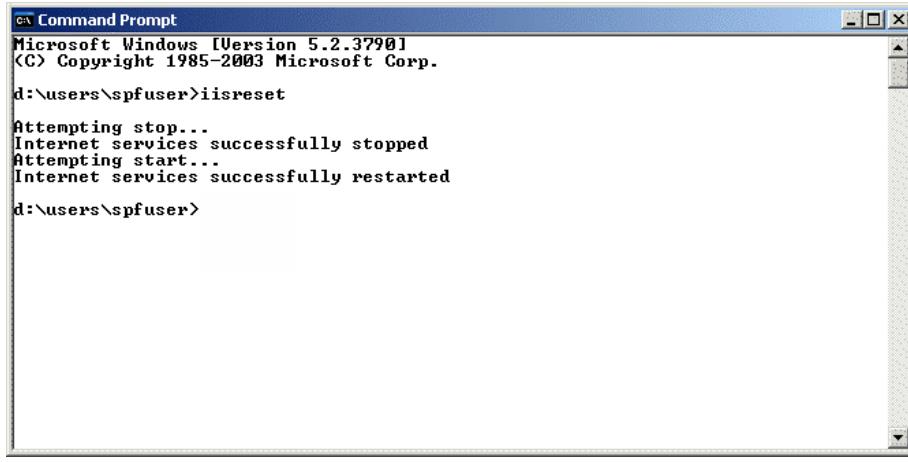


After changing the Integrated Windows authentication setting, click **OK** on the dialogs and reset IIS.

---

## Resetting IIS

- Enter **iisreset** from a *Command Prompt* window, and press **Enter**.



```
Command Prompt
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

d:\users\spfuser>iisreset

Attempting stop...
Internet services successfully stopped
Attempting start...
Internet services successfully restarted

d:\users\spfuser>
```

©2005, Intergraph Corp.  
All Rights Reserved.

---

### 3.8.2 SPF Users that are not in the domain

It is possible for users who are not in the domain to be able to log in to SPF when NT user authentication is active. It is sometimes helpful to be able to use these types of users when testing workflows. Follow the steps below to add a user who is not in the corporate domain.

**On the SPF server:**

1. Add the user as an operating system user on the SPF server (Start > Control Panel > etc.). The user's domain will be the SPF server. The user is added to the Users user group by default and does not need to be added to any other operating system user groups. A password must be specified for the user. The password can be set to never expire. It is probably best if these accounts are not used to log in on the SPF server itself; they should be used only when it is necessary to log in as a non-domain user from a client host. If the user is not needed for current testing, but might be needed at a later time, the user can be set to disabled. This will prevent logging in on the server as that user and will also prevent logging in to SPF as that user.
2. Use SPF System Administration to add the user as an SPF user. The password field can be left blank. With NT authentication active, the user's operating system password is used when logging in to SPF. If an SPF password is specified when the user is created, it is ignored when NT authentication is active, but enforced when NT authentication is not active.
3. In SPF System Administration, add the user to the desired SPF user groups as with any other user.

**On the client host:**

1. Add the user as an operating system user on the client host that the user will use to log in to SPF. The user's domain will be the client host. The same password that was used when the user was added to the SPF server operating system must be used for that user on the client host. If the passwords are different, attempts to log in to SPF will fail.
2. To log in to SPF, the user must log in to the operating system on the client host and then start the SPF desktop client. Specify the SPF server, and click OK on the login dialog.

## 3.9 Activity – Document Management

Complete **Chapter 3 – Activity 2** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.



# 4

C H A P T E R

---

## Using a Workflow in SmartPlant Foundation



## 4. SmartPlant Foundation Workflows

Workflows allow you to perform a review/approval using a configured process cycle. In SmartPlant Foundation, the **To Do List** provides a place for you to view all workflow steps that have been assigned to users and their statuses. For example, when a SmartPlant Foundation object is assigned to a workflow and a user name, role or matrix is assigned to a particular step in the workflow, the workflow step appears in that user's *To Do List*. Virtually all interaction with workflows in the Desktop Client occurs in the *To Do List*.

**Note:**

- The examples in this chapter use the *Document Review And Sign Off* workflow.

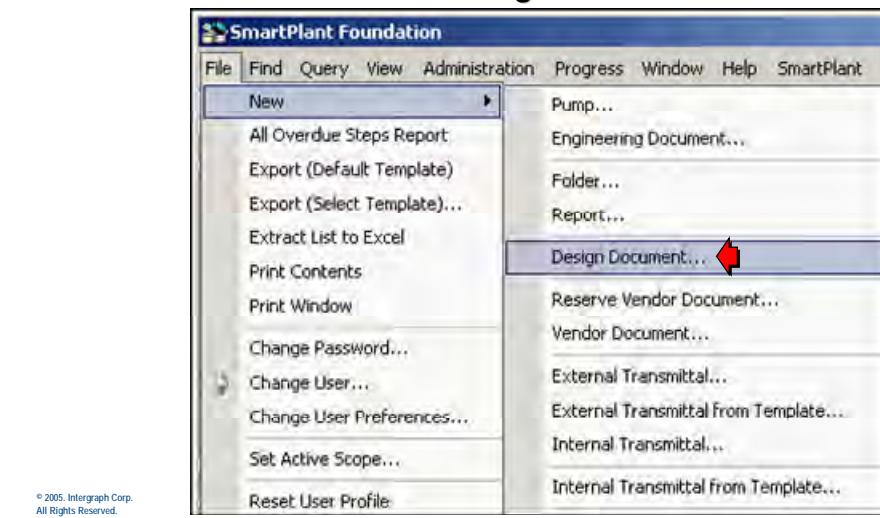
## 4.1 Using Workflows

The first step when using workflows is to create an object, such as a document, which will be used by the workflow in a custom review/approval process. You can assign an object to a workflow when you first create it, or you can attach it later.

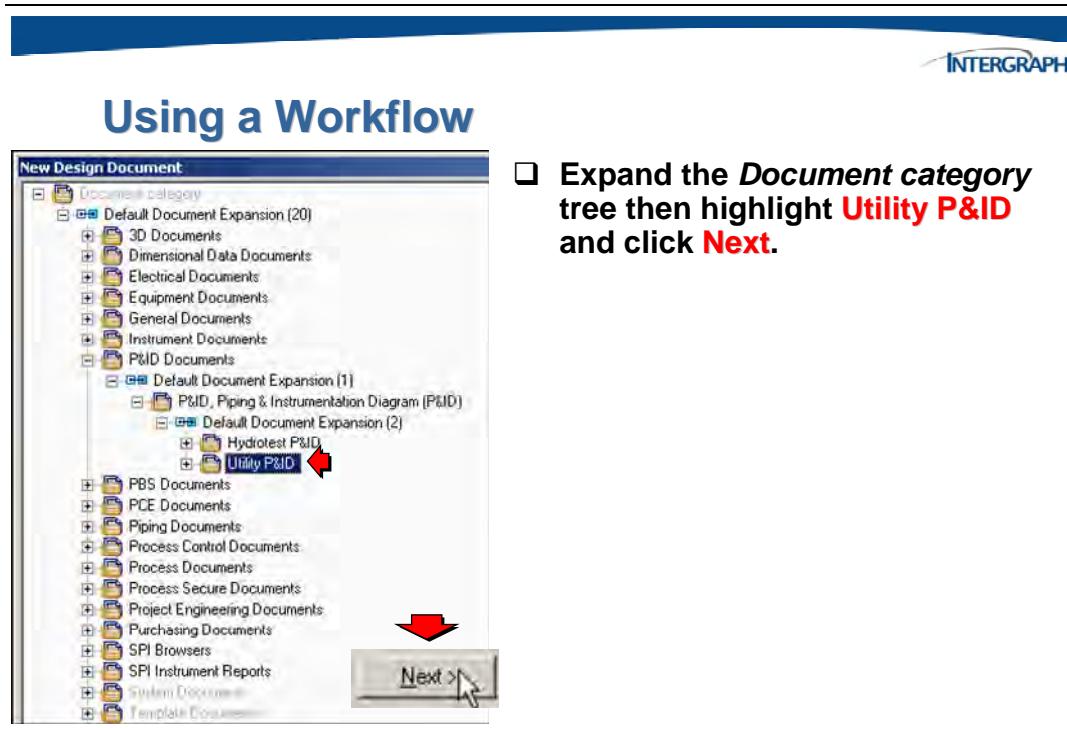


### Using a Workflow

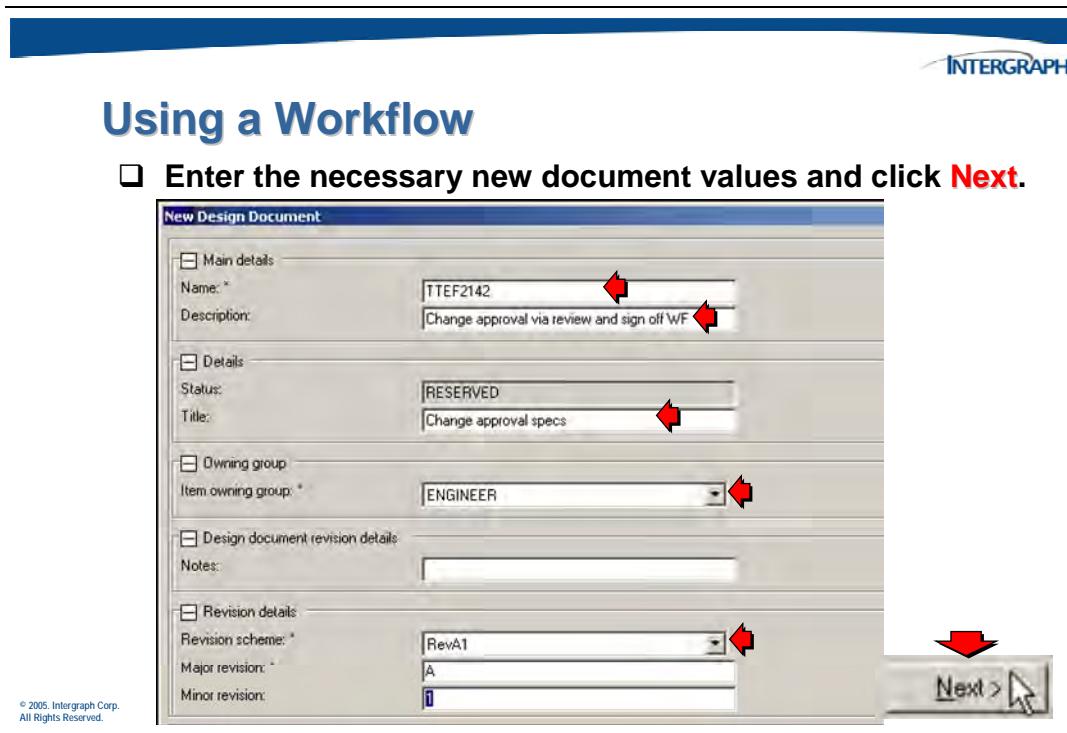
- Select **File > New> Design Document** from the menu.



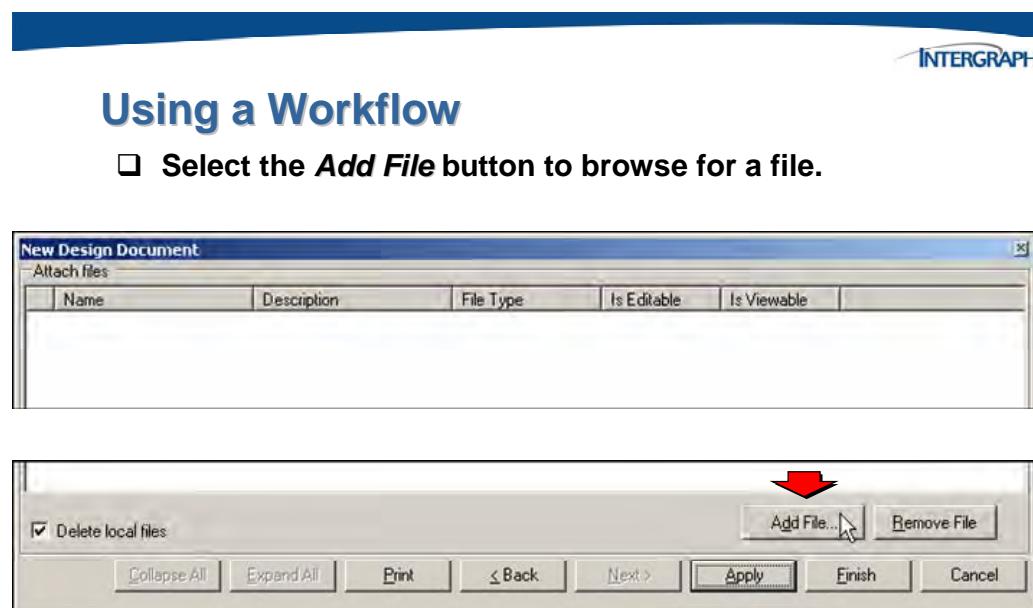
A *New Document category* window will appear.



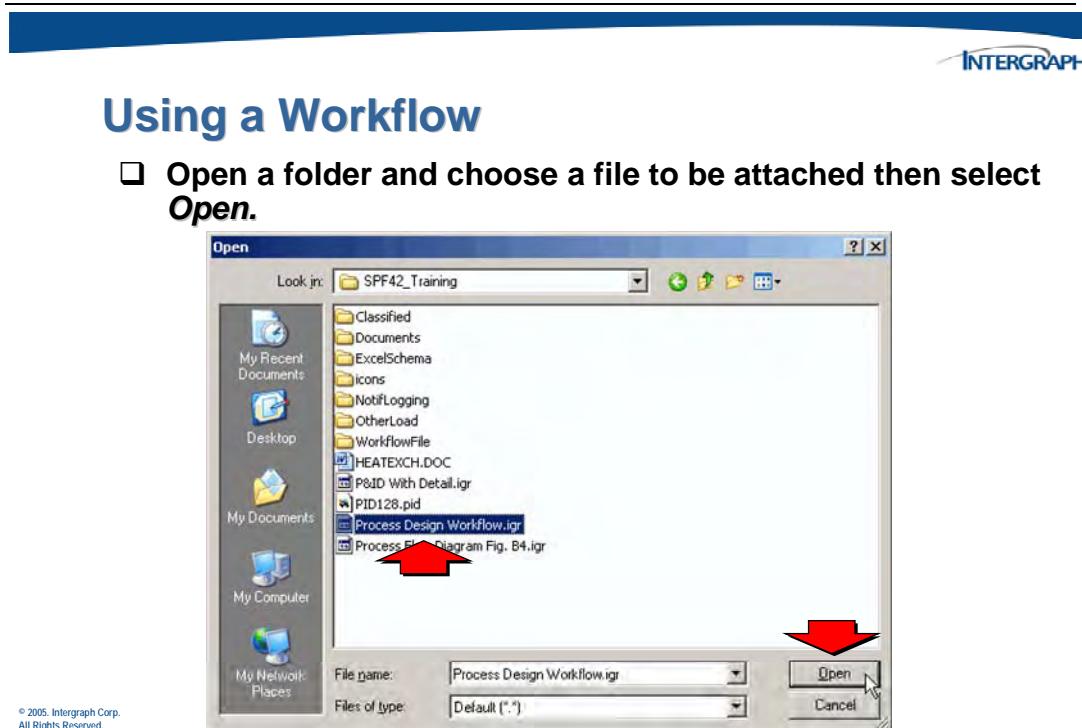
The *New Design Document* dialog displays.



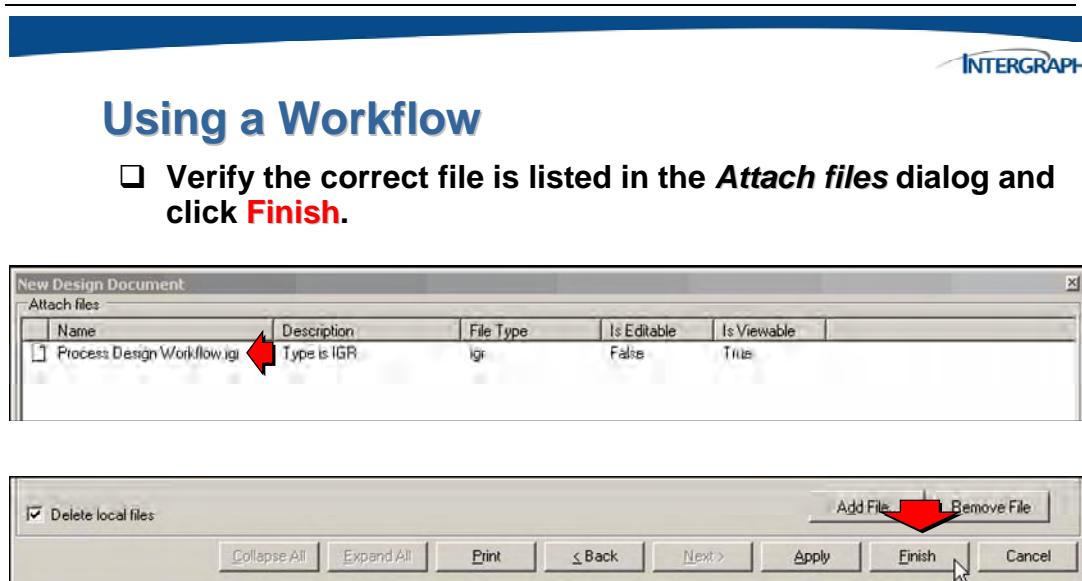
An electronic file can be attached to the document and processed by the workflow. The *Attach files* screen of the form will appear, allowing you to attach a file to this new document. Alternately, you can also attach the document to a workflow later.



A folder browser window will appear. Use this browser to locate the file you want to attach to the new document. The file can reside in any folder on the client, but once you attach it to the document, it will be moved from this location to the vault.



The selected file will be displayed in the *Attach files* window.

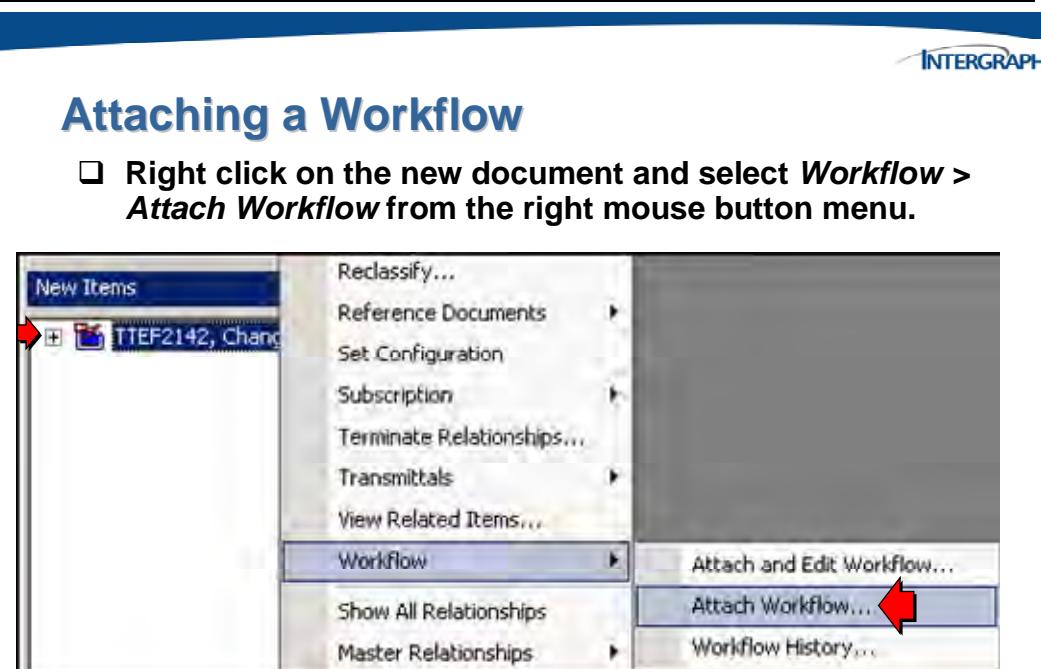


© 2005, Intergraph Corp.  
All Rights Reserved.

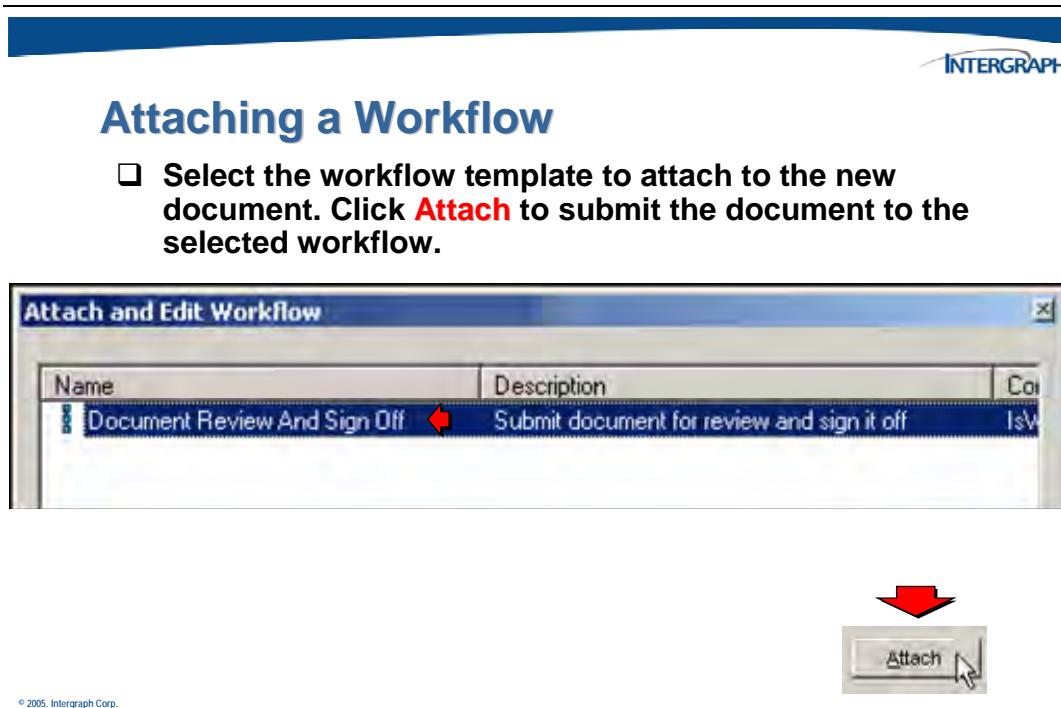
---

## 4.1.1 Attaching a Workflow

In order to submit the document and attached file to the workflow, the workflow must first be attached to the document. To start the workflow review and approval process, continue with the following steps:



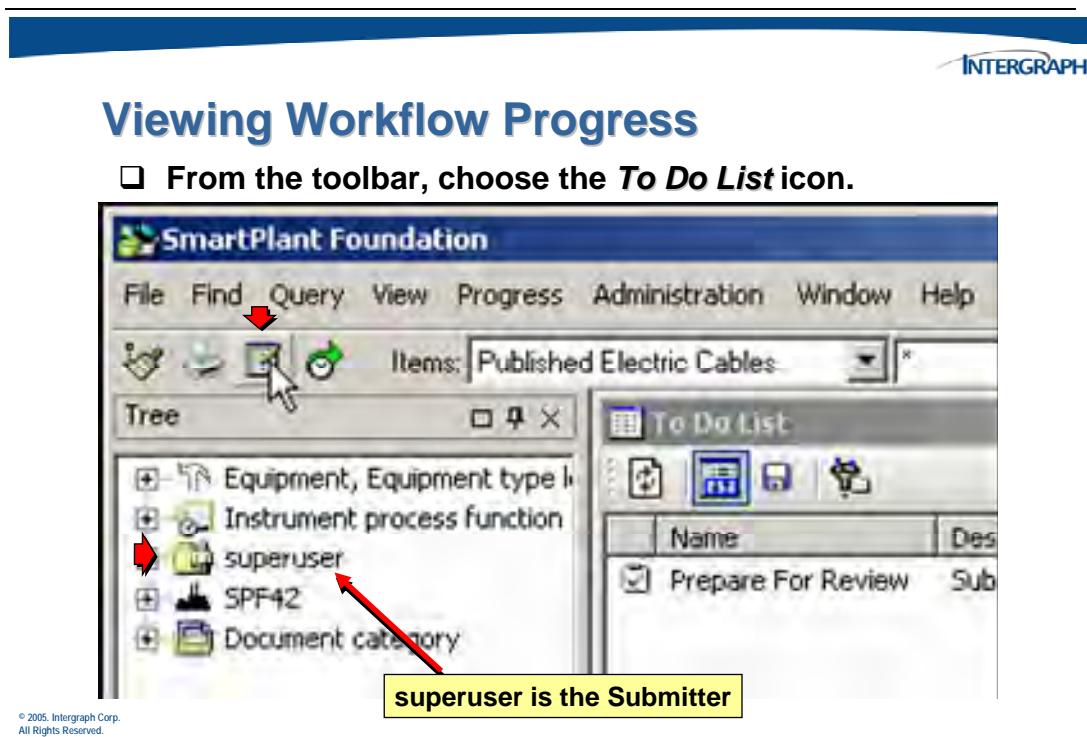
The *Attach and Edit Workflow* dialog will appear.



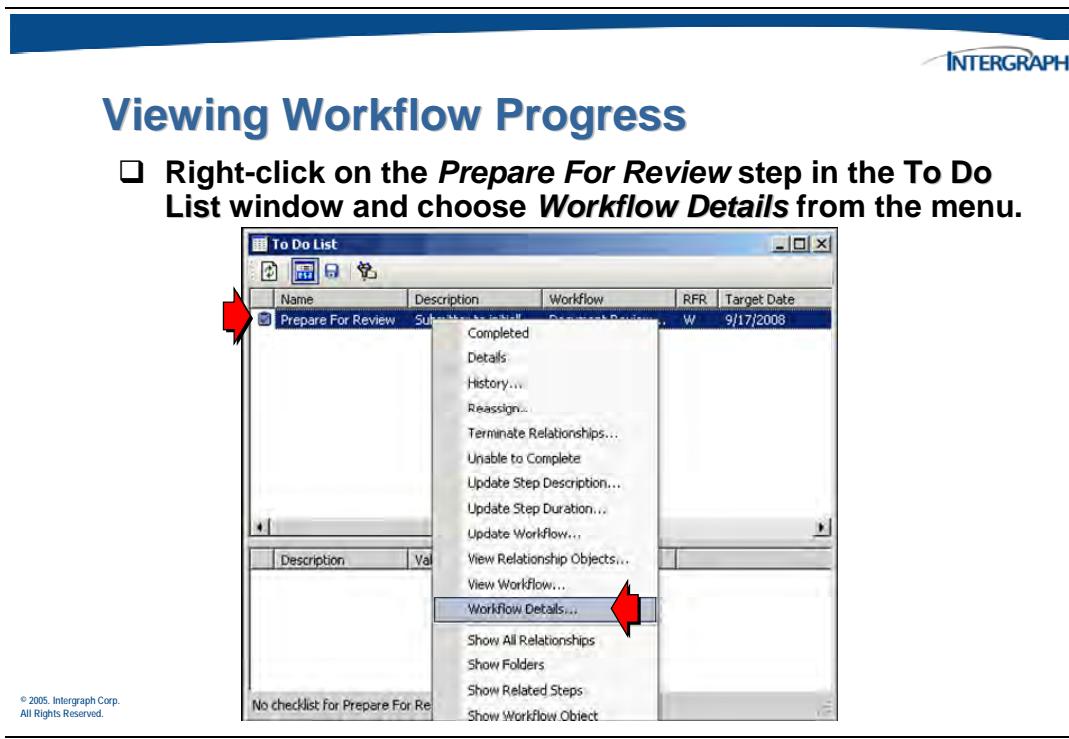
Attaching the workflow will also submit the document to the workflow.

## 4.1.2 Viewing an Active Workflow

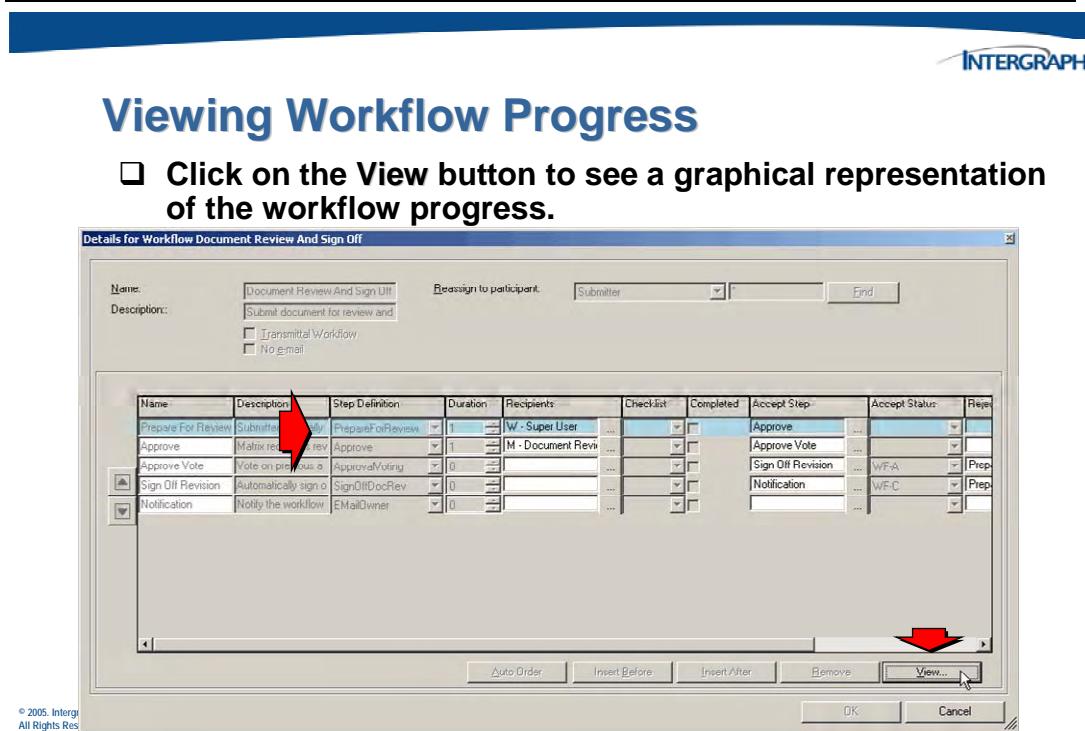
Once an object has been submitted to the workflow, the active workflow can be displayed graphically. The first recipient in the list for the selected workflow, *Document Review And Sign Off*, is the **Submitter**. That means that the active participant that submitted the object to the workflow will receive that task in their **To Do List** as well as an email notification.



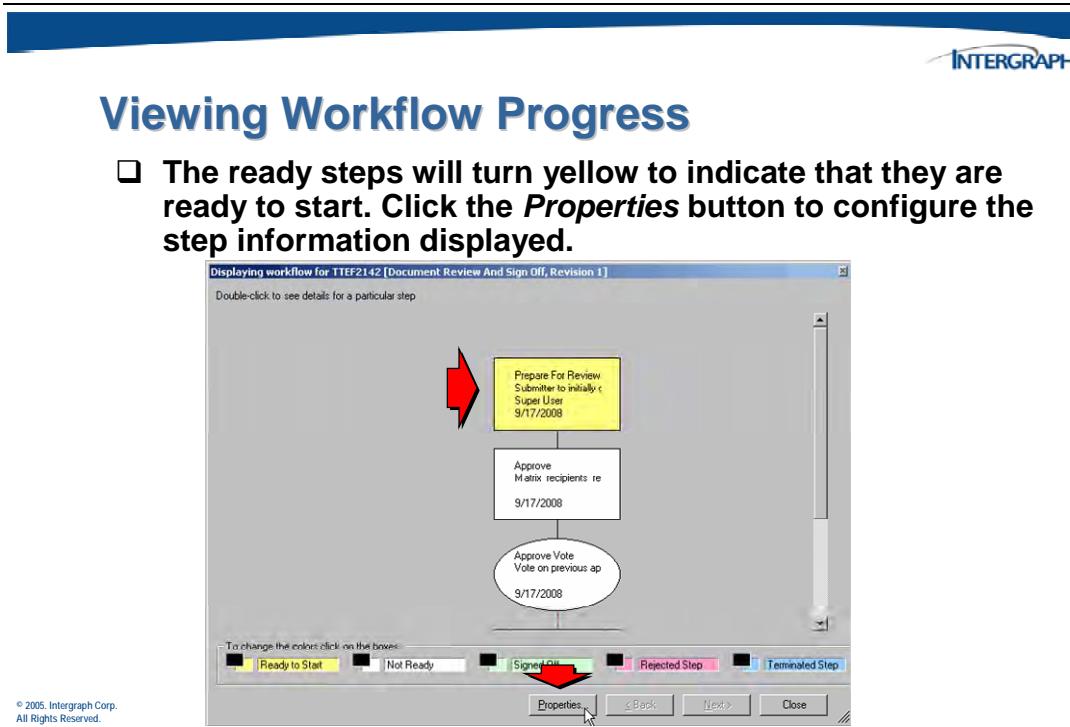
The **To Do List** will show the first step in the workflow, *Prepare For Review*.



The **Workflow Details** form for the **Document Review And Sign Off** workflow will appear.



A graphical workflow dialog will be displayed.



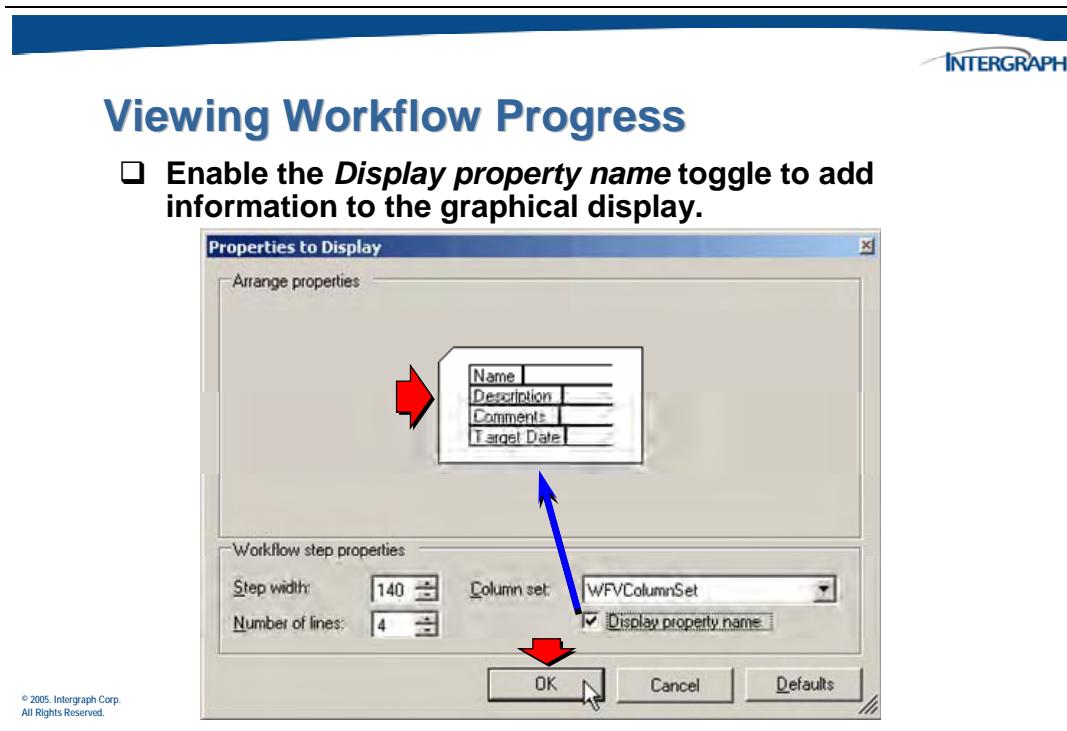
If this document has been submitted to multiple workflows, you can use the *Previous* and *Next* buttons to move through the attached workflows. To make changes or view details for steps, right-click the step in the *Displaying Workflow* dialog box.

In the graphical view of the workflow, the following colors indicate workflow states:

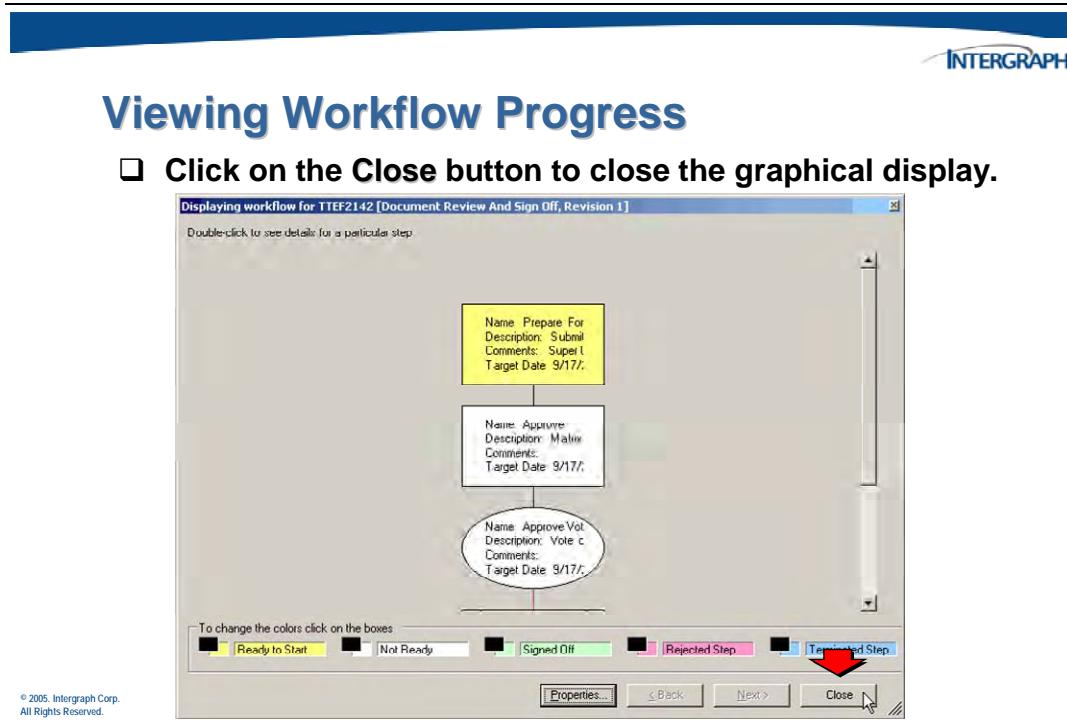
- Yellow** - The workflow step is ready to begin.
- White** - The workflow step is not ready to begin yet.
- Green** - The step has been signed off.
- Pink** - The step has been rejected.
- Blue** - The step has been terminated.

These are the standard, default colors, but you may change them if you like. Click on the small colored box beside the applicable label at the bottom to open a dialog box of color choices. The second small box, black by default, is the selected text color and may be changed the same way.

Clicking the *Properties* button opens the *Properties to Display* dialog.



The workflow step will now display the property names.





## Viewing Workflow Progress

Click on the Cancel button to close the Details window.

Details for Workflow Document Review And Sign Off

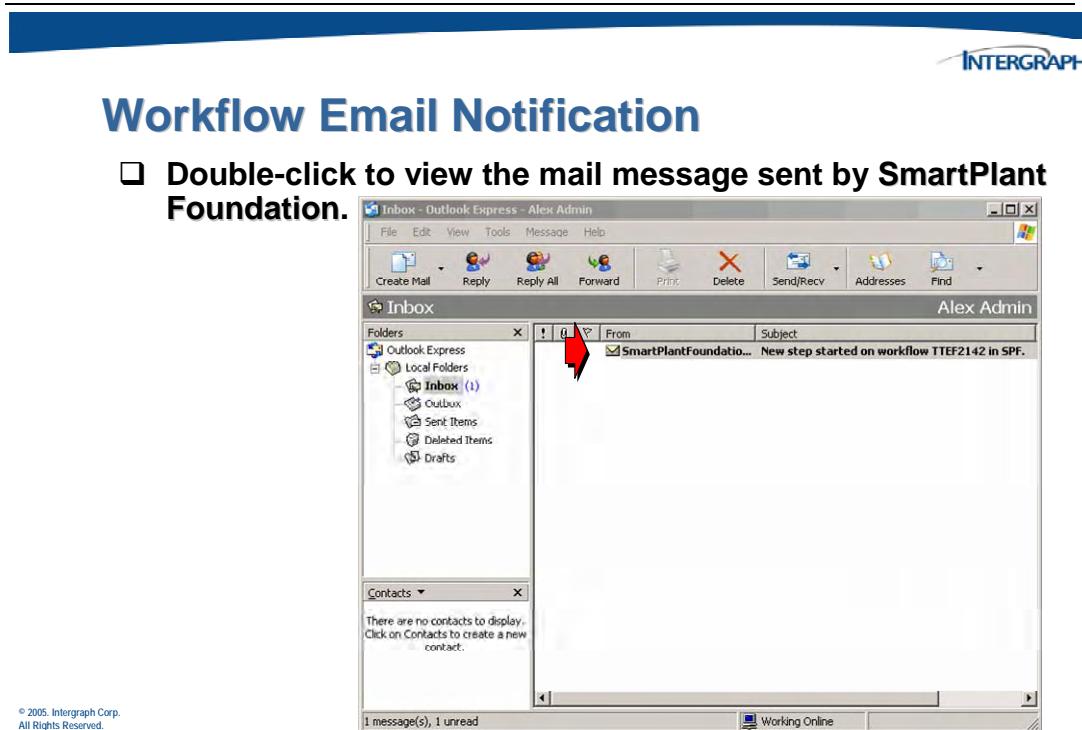
Name:	Description:	Step Definition	Duration	Recipients	Checklist	Completed	Accept Step	Accept Status	Reject
Prepare For Review	Submitter to initially	PrepareForReview	1	W - Super User M - Document Revie...	...	...	Approve	WF-V	Prep
Approve	Make revisions if ne...	Approve	0	W - Super User M - Document Revie...	...	...	Approve Vote	WF-V	Prep
Approve Vote	Vote on previous s...	ApproveVoting	0	W - Super User M - Document Revie...	...	...	Sign Diff Revision	WF-V	Prep
Sign Off Revision	Automatically sign o...	SignOffDocRev	0	W - Super User M - Document Revie...	...	...	Notification	WF-C	Prep
Notification	Notify the workflow...	EmailOwner	0	W - Super User M - Document Revie...	...	...			

Auto Order Insert Before Insert After Remove View  OK

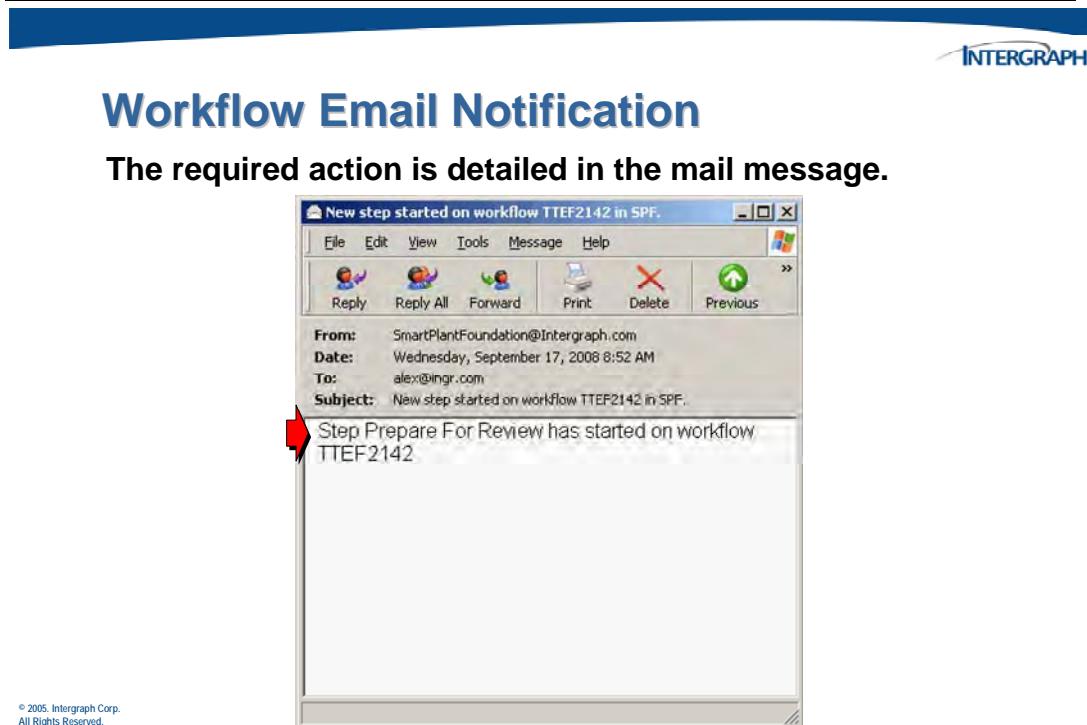
© 2005 All Rights Reserved

## 4.2 Workflow Email Notification

Submitting a document to a workflow will also send out an email notification. You may have to switch the email client to the correct user. The first user for this particular workflow will be **superuser** (whose email is set to *Alex Admin*).



The selected mail message will be opened.



## 4.2.1 The To Do List

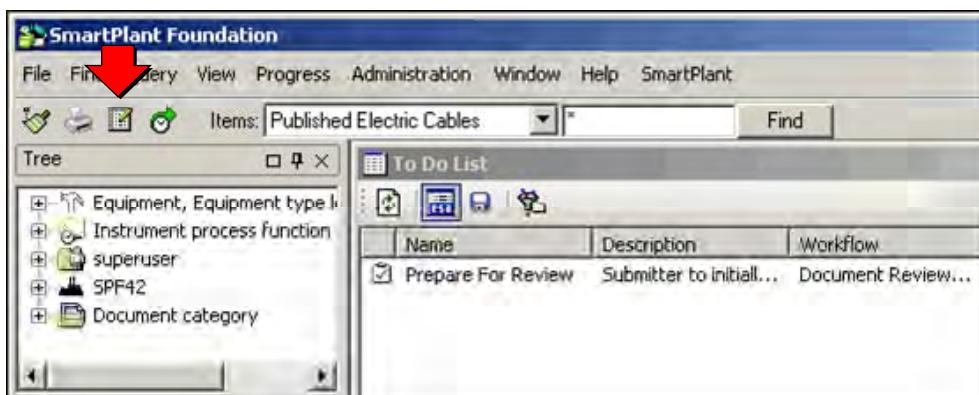
A workflow is made up of different steps with one or more users assigned to perform some kind of task within each step. In the **To Do List**, you can also view and complete checklists associated with workflow steps. You can also complete voting steps and mark other steps completed or unable to complete to update them.

The recipient for the first step in the workflow will log in to the SPF client and check the To Do List.



### Workflow To Do List

- From the toolbar, choose the **To Do List** icon.

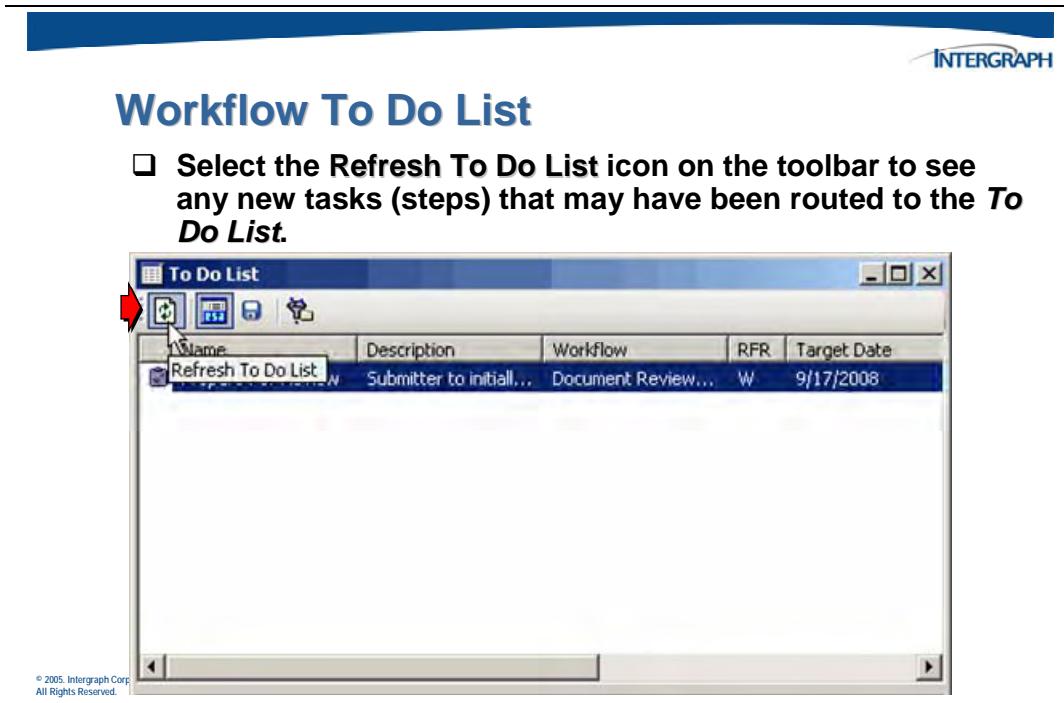


© 2005, Intergraph Corp.  
All Rights Reserved.

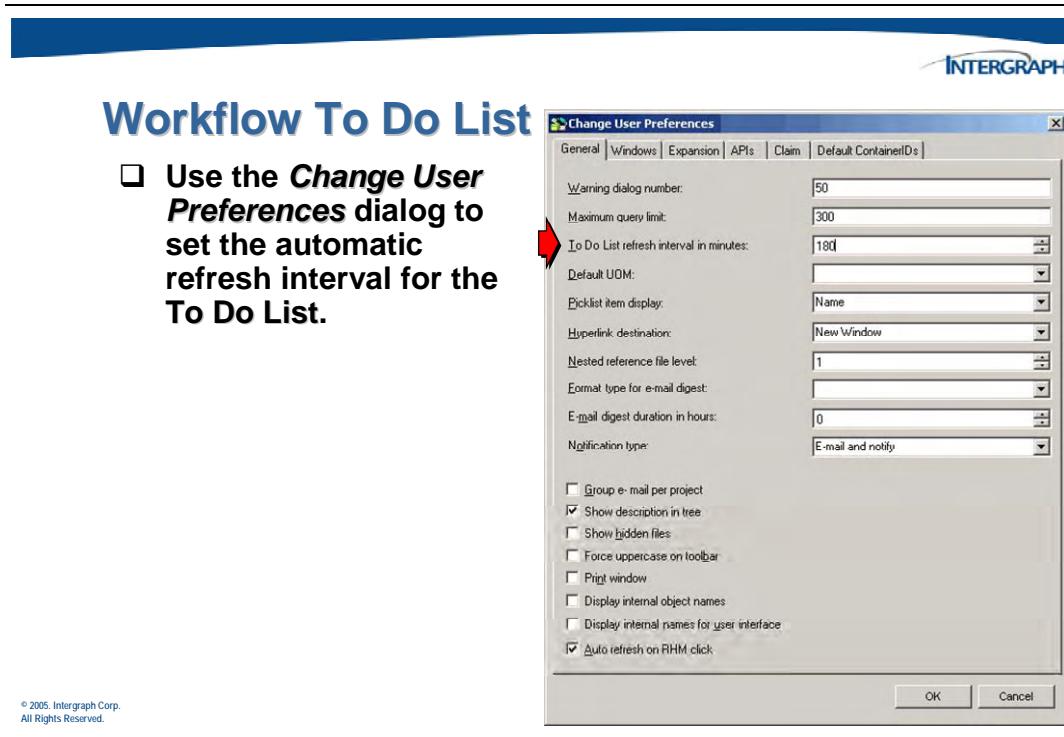
The list view displays a list of all workflow steps assigned to you. There are several types of steps, called step classes, which may appear in the To Do List. The following icons represent these steps:

Icon	Step Class	Description
	Info	A step that appears in your To Do List for your information only. If an information step appears in your To Do List, you are required to acknowledge it.
	Assignment	A step that assigns work to you. You may be required to complete a checklist before you can complete an assignment step.
	Approval	A step that requires you to vote. You may be required to complete a checklist before you can complete an approval step.

The *To Do List* window will show all the steps assigned to this user. Click the **Refresh** toolbar command to manually refresh the To Do List.



The ability to automatically refresh the To Do List can be configured with the *Change User Preferences* dialog.

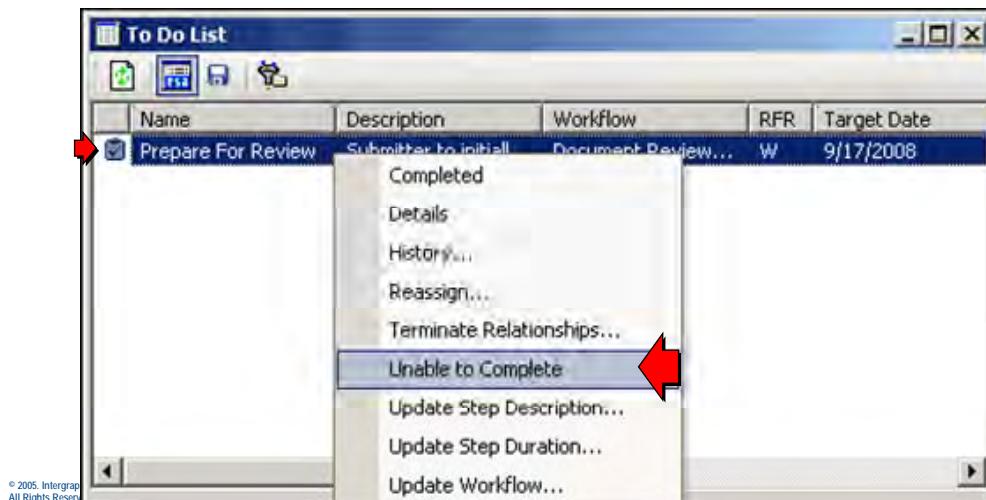


## 4.2.2 Completed/Unable to Complete

Since the first step of the workflow was an assignment step, the sign off responses are either **Completed** or **Unable to complete**. The **Unable to Complete** command allows you to indicate that you cannot complete the selected workflow step.

### Unable to Complete a Workflow Step

- ❑ Right-click on a workflow step, and select **Unable to Complete** from the pop-up menu.

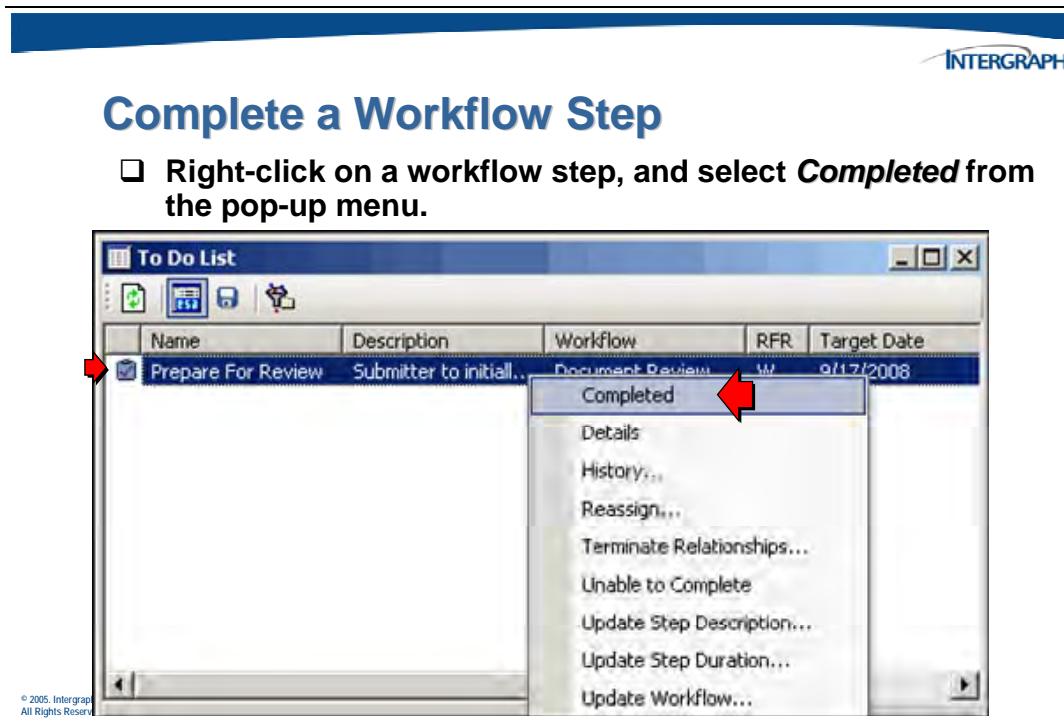


---

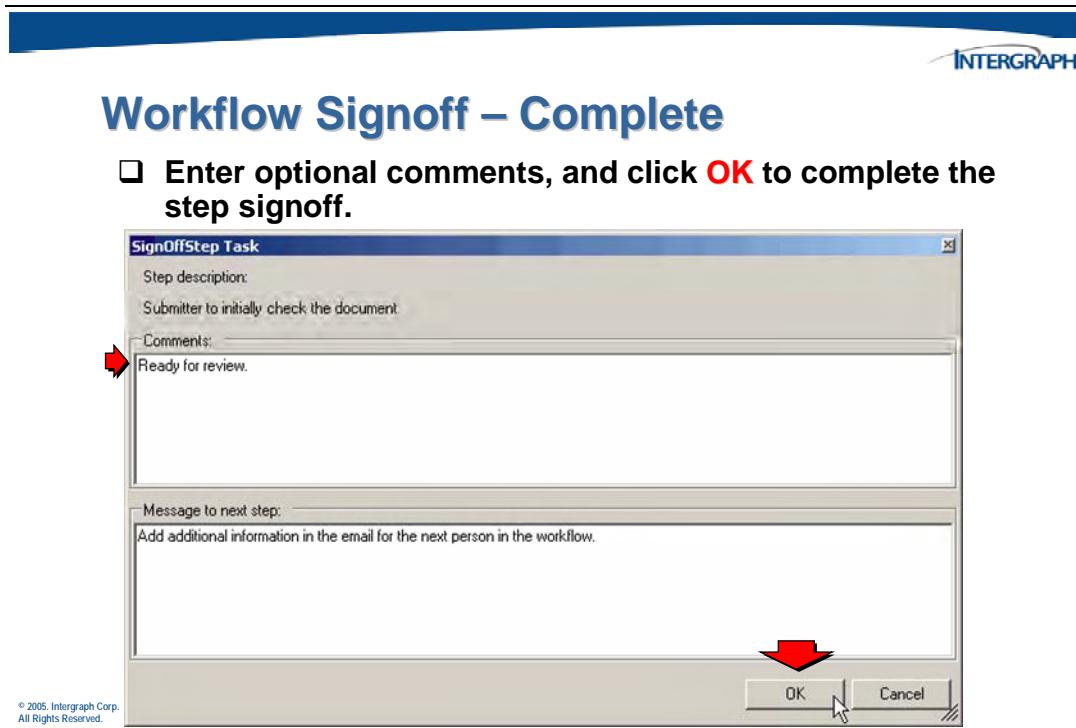
Type any comments in the **Comments** box of the *SignOff* dialog, and then click **OK**.

The software automatically removes the step from your *To Do List*, and the step moves through the defined **rejection** path, which can be another workflow or another step in the same workflow.

The **Completed** command allows you to mark the selected workflow step as completed and the step (*PrepareForReview*) can be signed off



A *SignoffStep Task* dialog appears, allowing you to capture comments about the completion of the step.

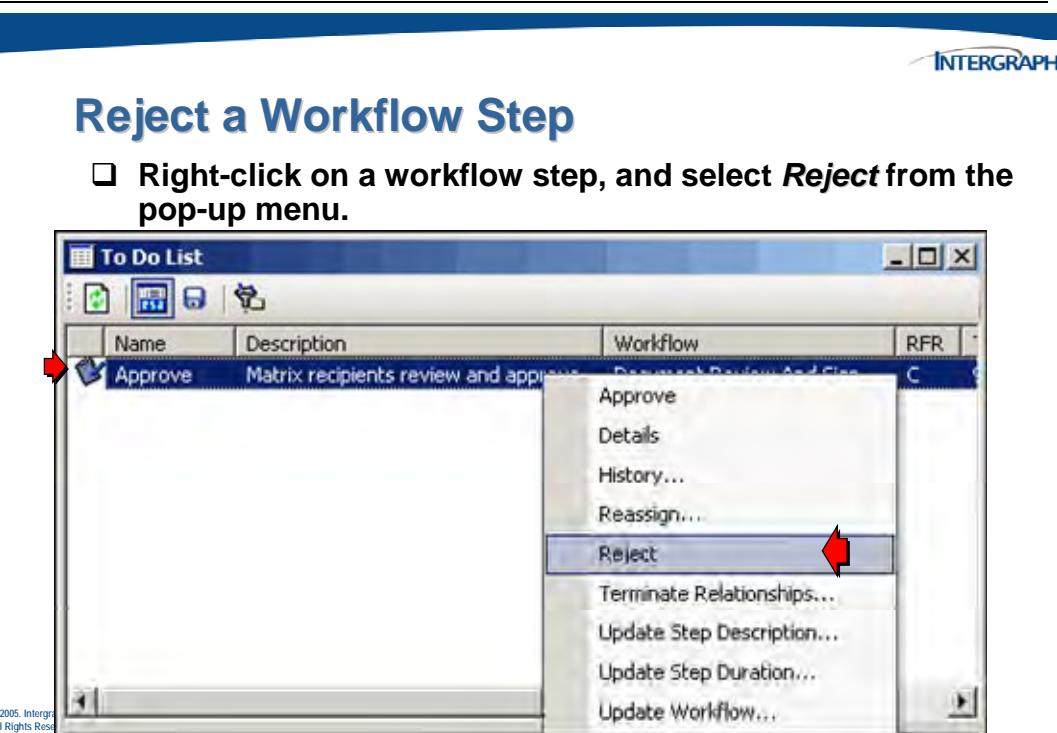


---

Type any comments in the **Comments** box of the *SignOff* dialog, and then click **OK**.

### 4.2.3 Rejecting a Workflow Step

The **Reject** command allows you to reject the selected workflow step.



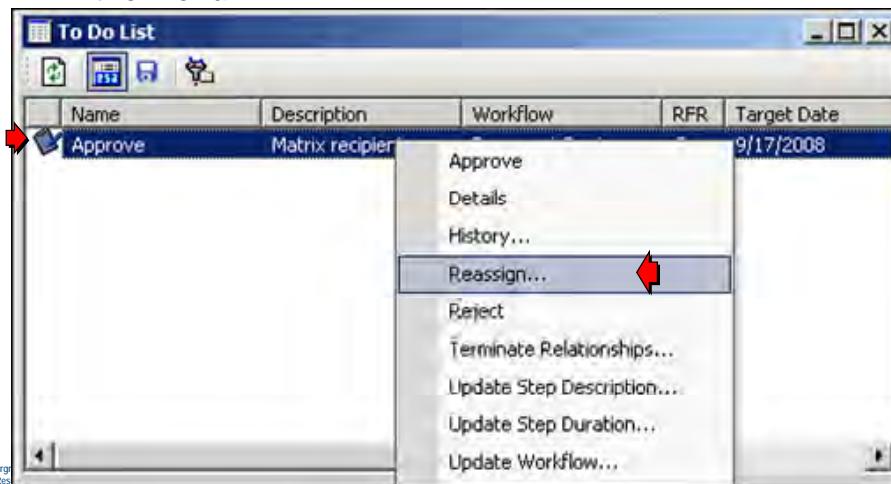
Type any comments in the **Comments** box of the *SignOff* dialog, and then click **OK**.

## 4.3 Reassigning a Workflow Participant

The **Reassign** command allows you to assign the selected workflow step to a different user or role. In the below example, the object has been revised and re-submitted to the *Document Review and Sign Off* workflow.

### ReAssigning a Participant

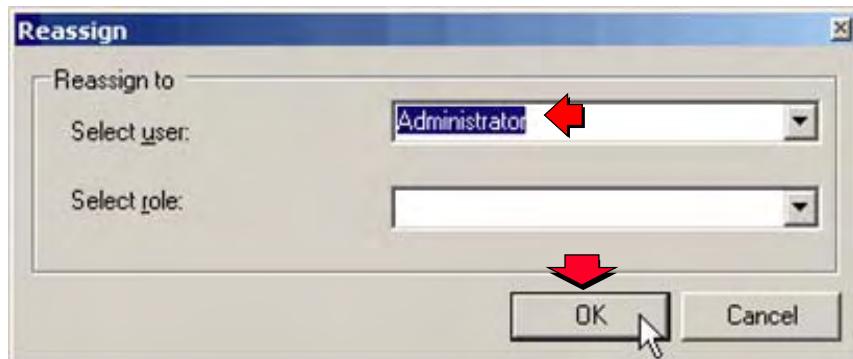
- Right-click on a workflow step, and select **ReAssign** from the menu.



In the *Reassign* dialog box, select the user or role to which you want to reassign the step.

## ReAssigning a Participant

- Select either a user or role and click **OK**.

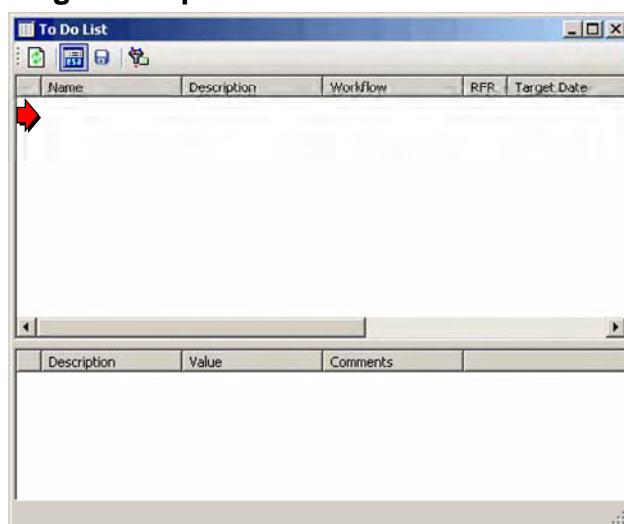


© 2005, Intergraph Corp.  
All Rights Reserved.

The software removes the reassigned step from the *To Do List*, and the step appears in the *To Do List* of the user or users (roles) to whom the step was assigned.

## ReAssigning a Participant

**The re-assigned step is removed from the *To Do List*.**



© 2005, Intergraph Corp.  
All Rights Reserved.



## ReAssigning a Participant

- Select the *File > Change User* command.



The *Logon Information* dialog will appear.

---



## ReAssigning a Participant

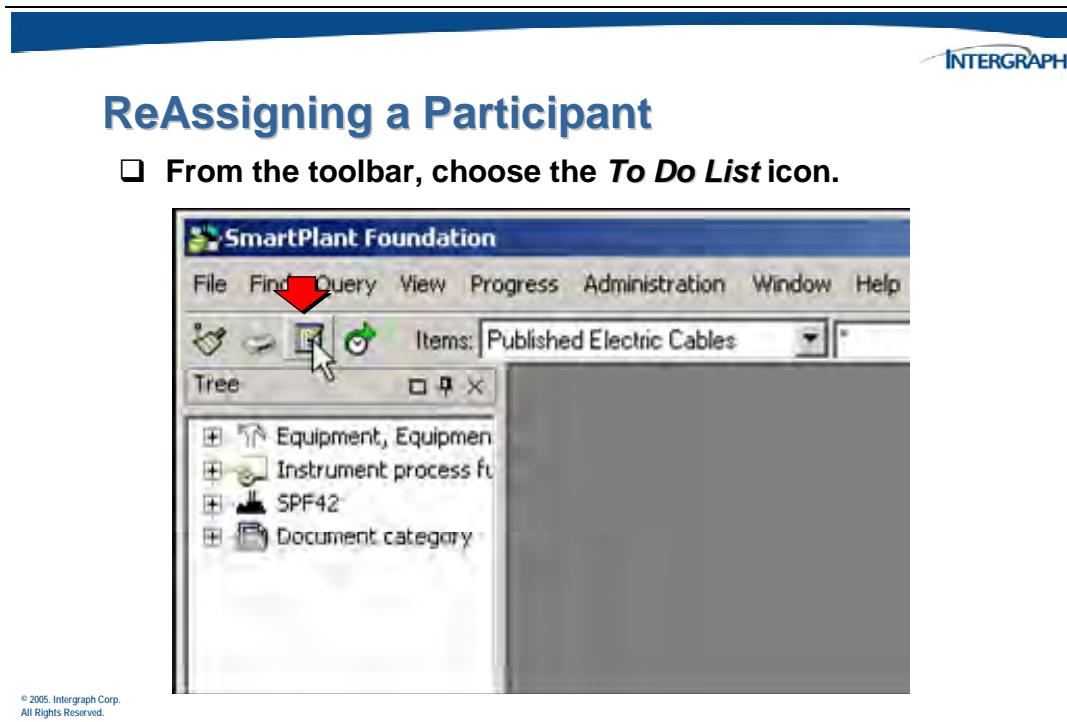
- Enter the new **User name** and **Password**.



© 2005, Intergraph Corp.  
All Rights Reserved.

---

The reassigned user will log in and open their *To Do List*.



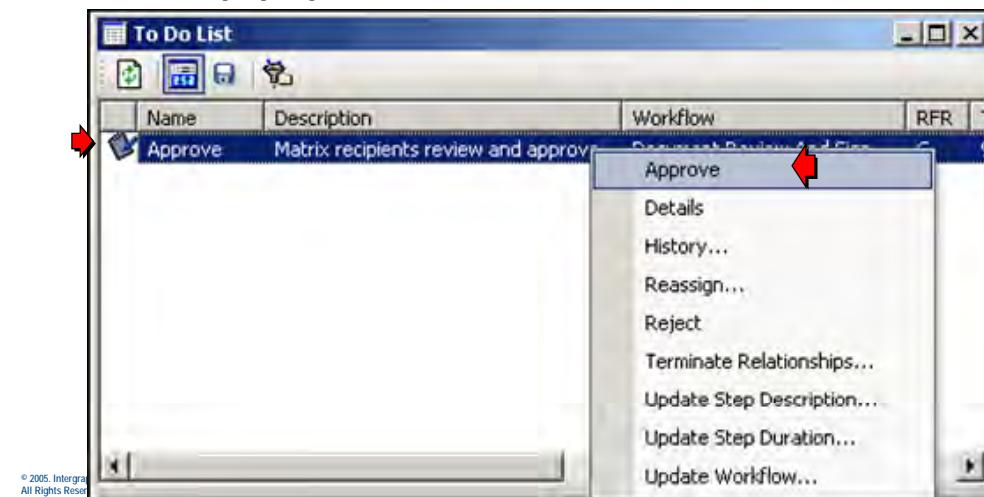
The user can now select workflow commands for the next step, such as the *Approve* command.

### 4.3.1 Approving a Workflow Step

The **Approve** command allows you to approve the selected workflow step.

#### Approve a Workflow Step

- Right-click on a workflow step, and select **Approve** from the pop-up menu.

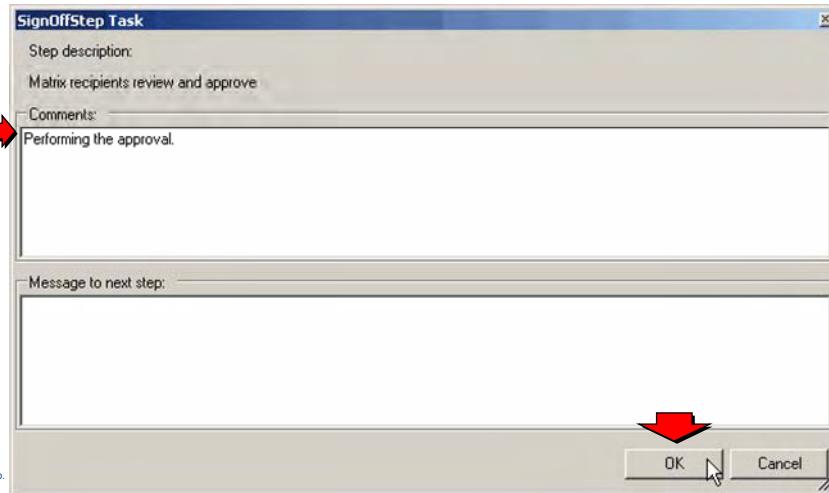


A *SignoffStep Task* dialog will appear so that this step can be *Approved* by the recipient.



## Workflow Signoff - Approve

- Enter an optional comment, and click **OK** to complete the step signoff.

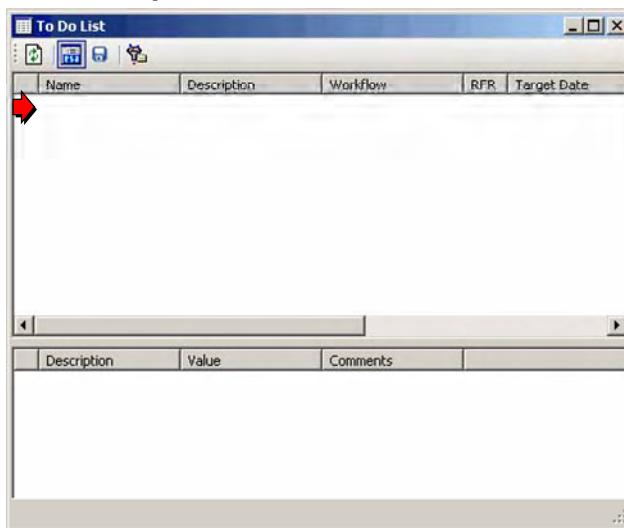


Since this is the last step in this workflow example, there are no more steps to be processed. The workflow is now completed.



## Workflow Completed

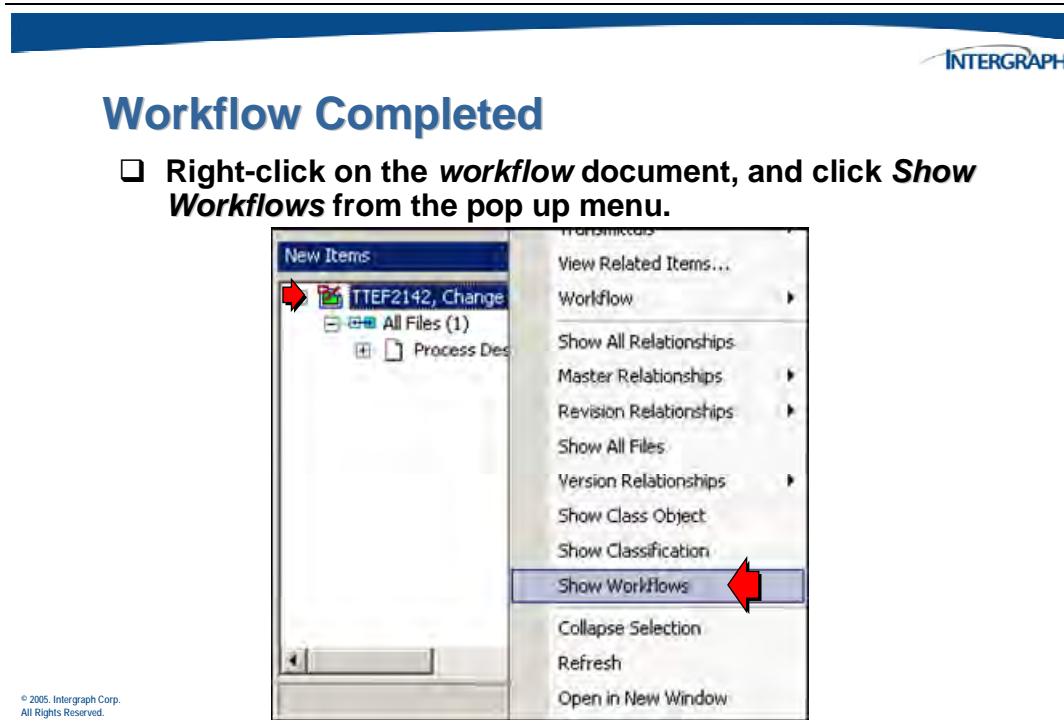
The Approved step is removed from the **To Do List**.



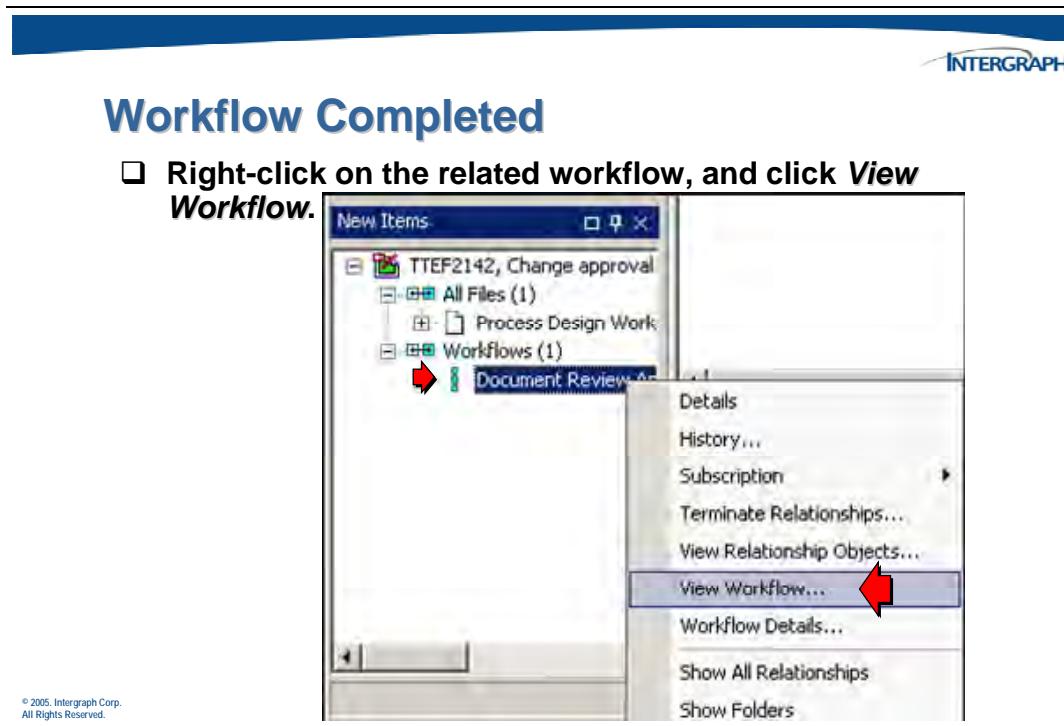
© 2005, Intergraph Corp.  
All Rights Reserved.

## 4.4 Show Graphical Workflow

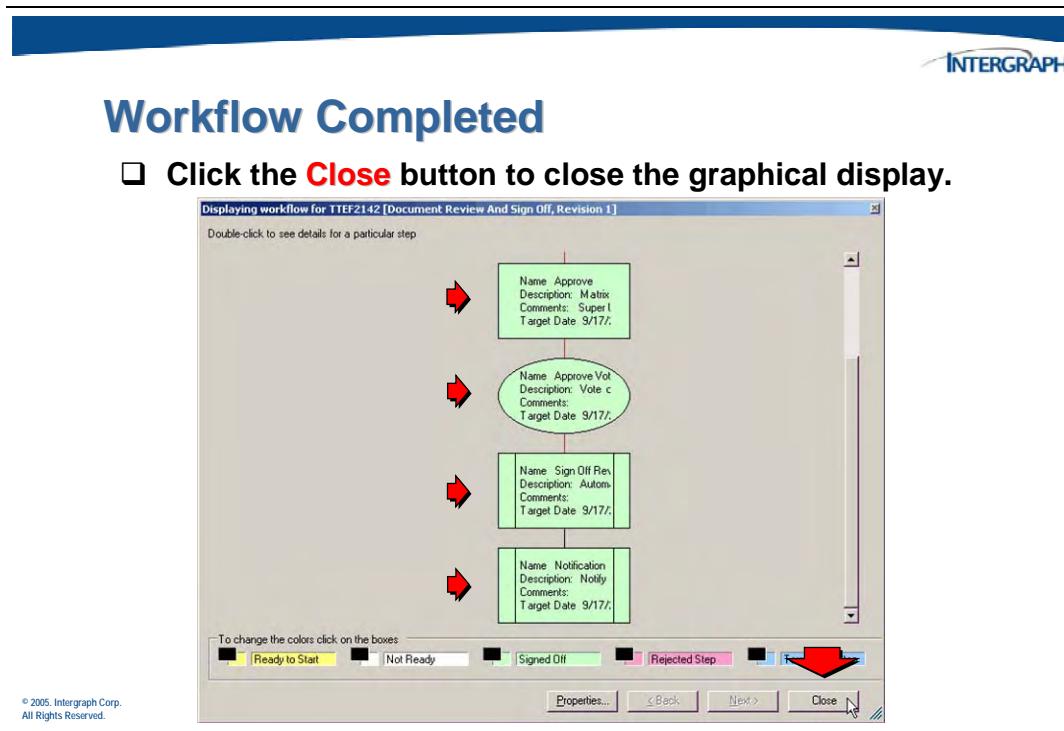
A graphical view of the workflow results can be displayed by clicking on the document that completed the workflow and using the **Show Workflow** shortcut command.



Next, use the **View Workflow** command to see final results of the workflow graphically.

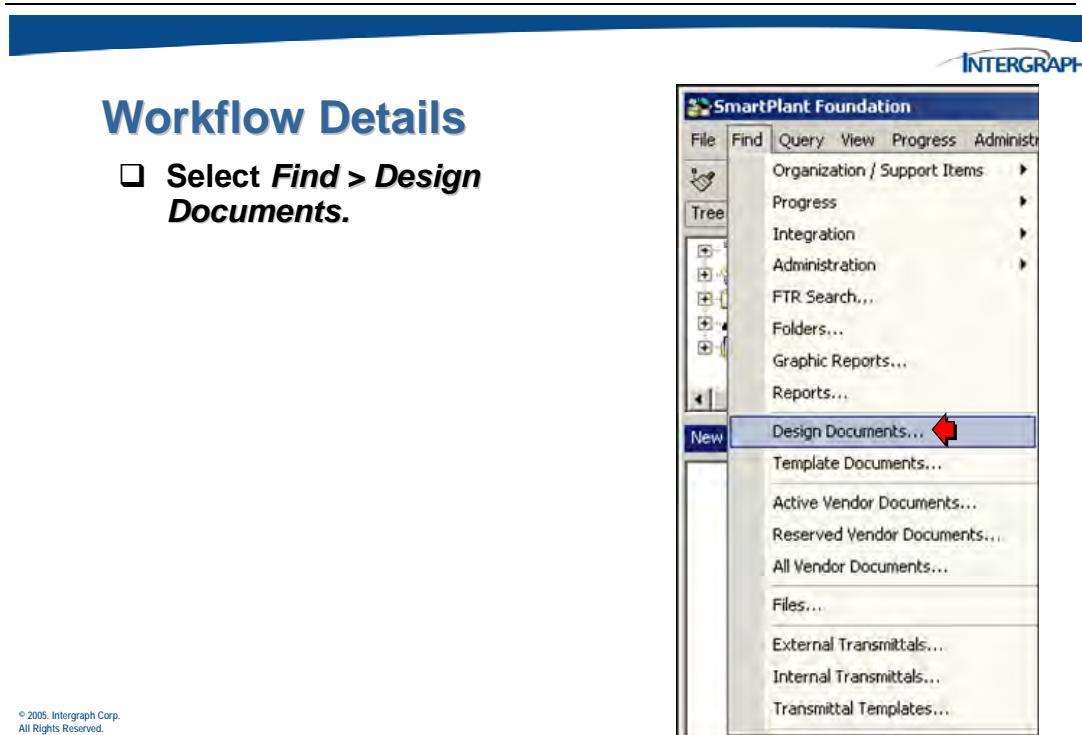


The graphical results will show all of the completed workflow steps.

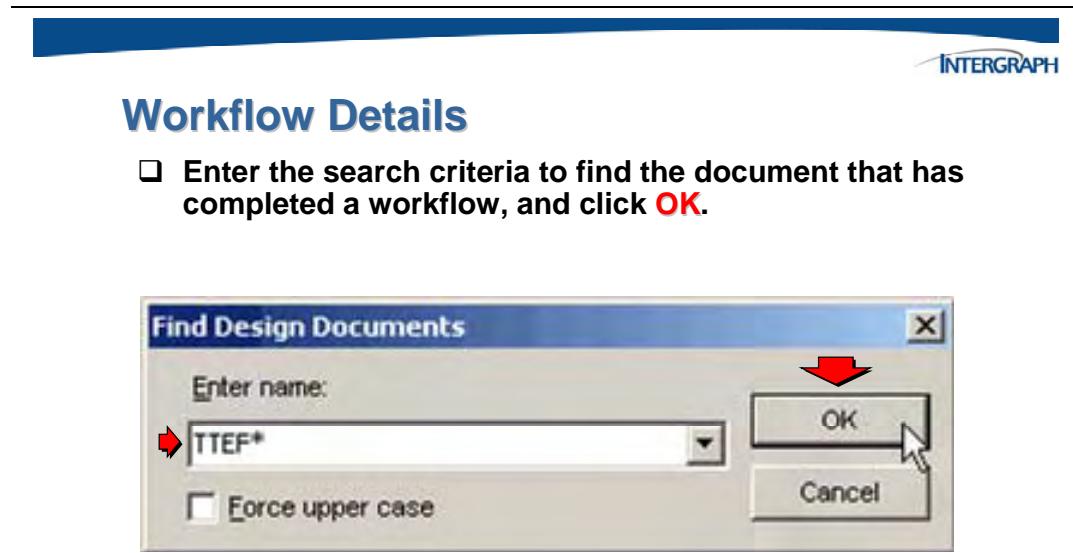


## 4.5 Workflow Details and History

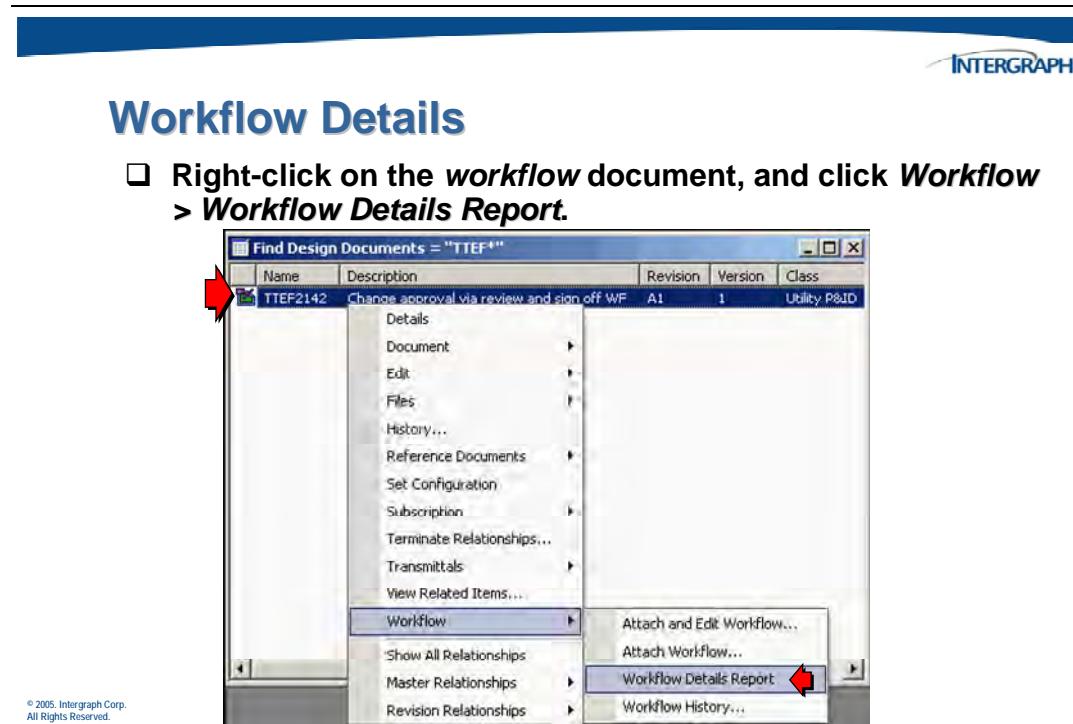
A *Workflow Details Report* can be generated to display the history of the workflow processing. First, perform a Find to locate a document that has completed a workflow.



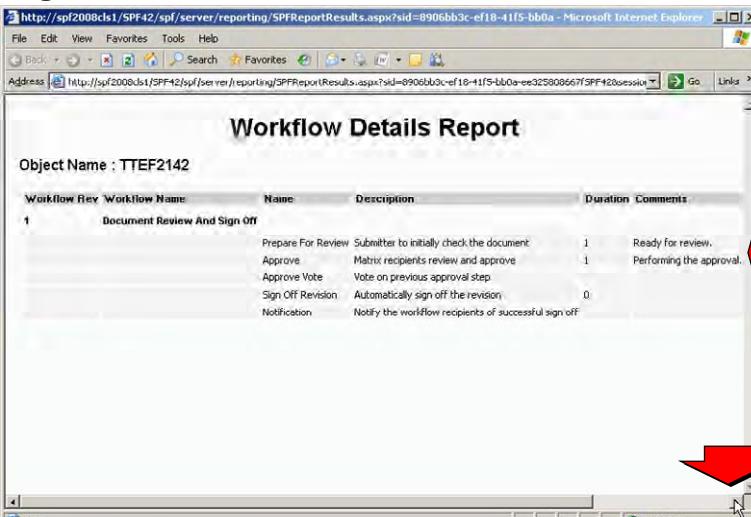
A *Find Design Documents* dialog will appear.



A *Find Design Documents* list view window will appear. From here, the user can generate a details report.



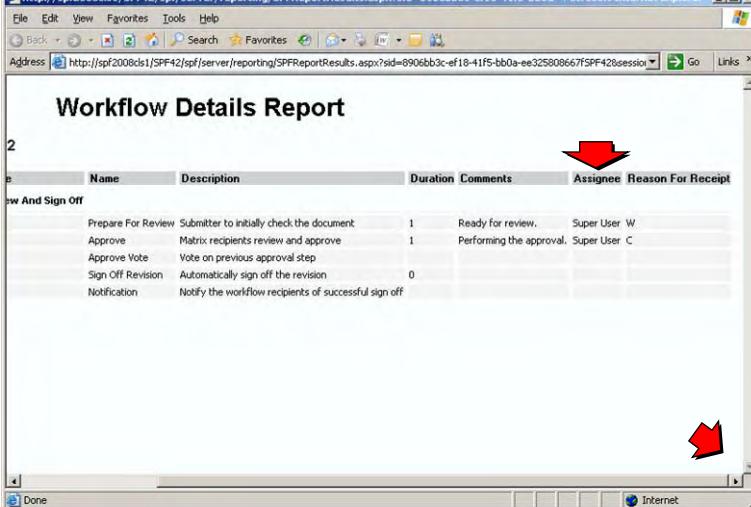
This report will display details about the finished workflow, such as the *Name*, *Step Names*, and *Assignees*.



The screenshot shows a Microsoft Internet Explorer window displaying the 'Workflow Details Report'. The title bar reads 'http://spf2008cls1/SPF42/spf/server/reporting/SPFReportResults.aspx?sid=8906bb3c-ef18-41f5-bb0a - Microsoft Internet Explorer'. The main content area is titled 'Workflow Details Report' and shows the object name 'TTEF2142'. Below this is a table with columns: Workflow Rev, Workflow Name, Name, Description, Duration, and Comments. The table lists six steps for a workflow named 'Document Review And Sign Off'. The scroll bar on the right side of the table is highlighted with a red arrow pointing downwards.

Workflow Rev	Workflow Name	Name	Description	Duration	Comments
1	Document Review And Sign Off	Prepare For Review	Submitter to initially check the document	1	Ready for review.
		Approve	Matrix recipients review and approve	1	Performing the approval
		Approve Vote	Vote on previous approval step		
		Sign Off Revision	Automatically sign off the revision	0	
		Notification	Notify the workflow recipients of successful sign off		

Comments made by recipients during sign off are also displayed in the report.

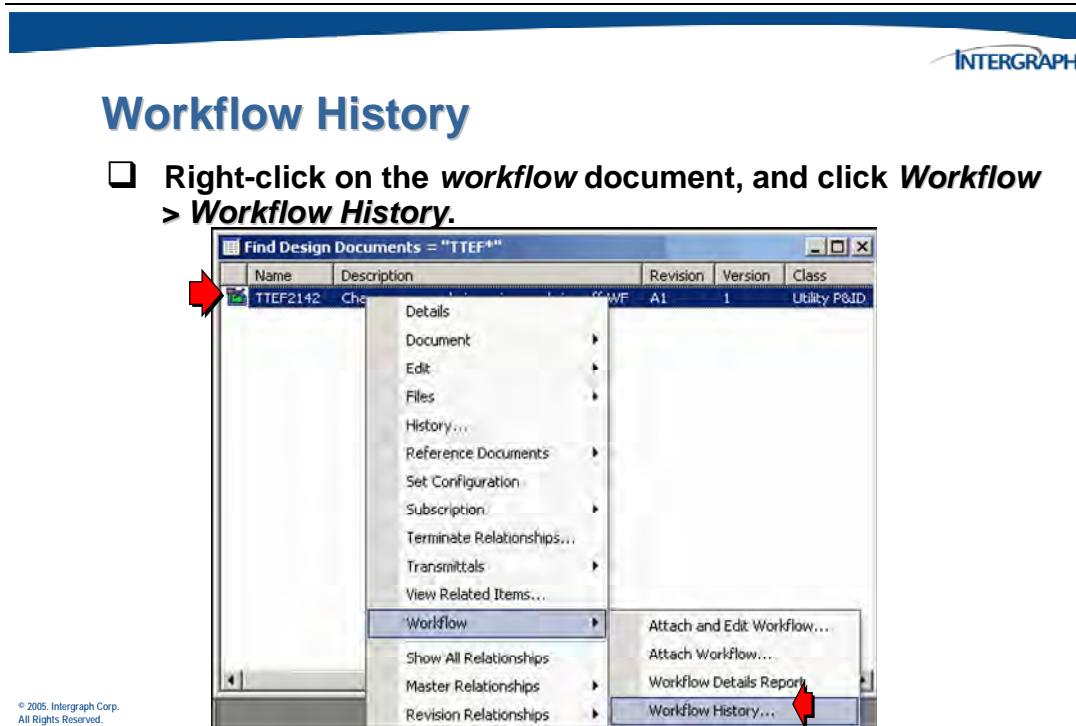


The screenshot shows a Microsoft Internet Explorer window displaying the 'Workflow Details Report'. The title bar reads 'http://spf2008cls1/SPF42/spf/server/reporting/SPFReportResults.aspx?sid=8906bb3c-ef18-41f5-bb0a - Microsoft Internet Explorer'. The main content area is titled 'Workflow Details Report' and shows the object name 'TTEF2142'. Below this is a table with columns: Workflow Rev, Name, Description, Duration, Comments, Assignee, and Reason For Receipt. The table lists six steps for a workflow named 'Document Review And Sign Off'. The scroll bar on the right side of the table is highlighted with a red arrow pointing downwards.

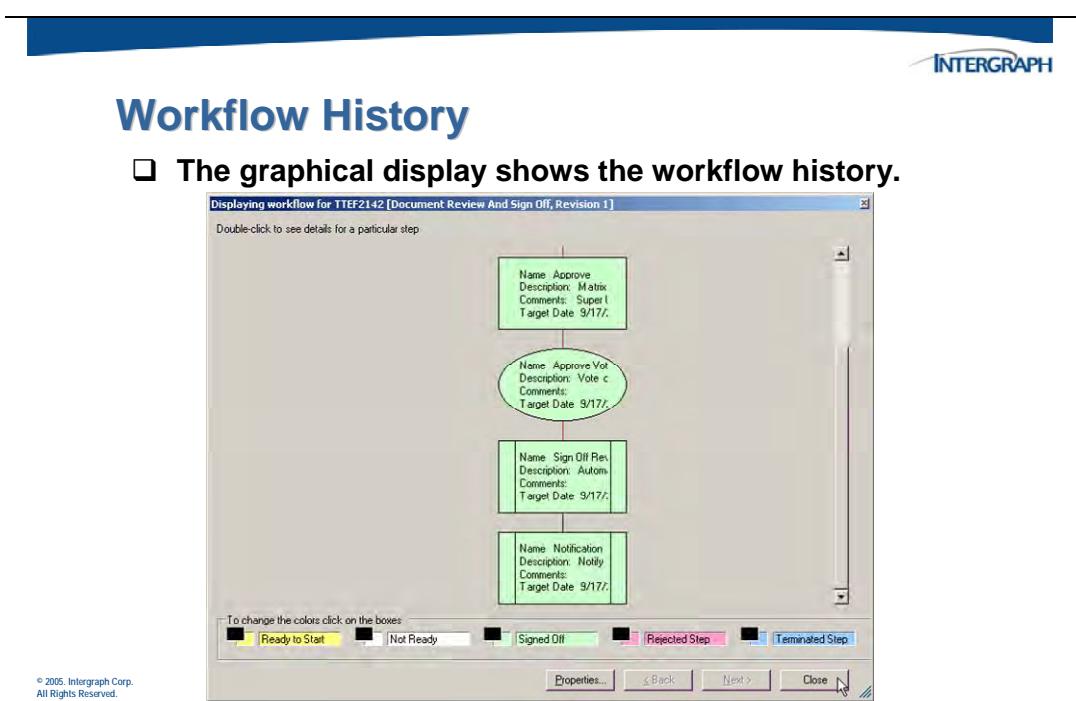
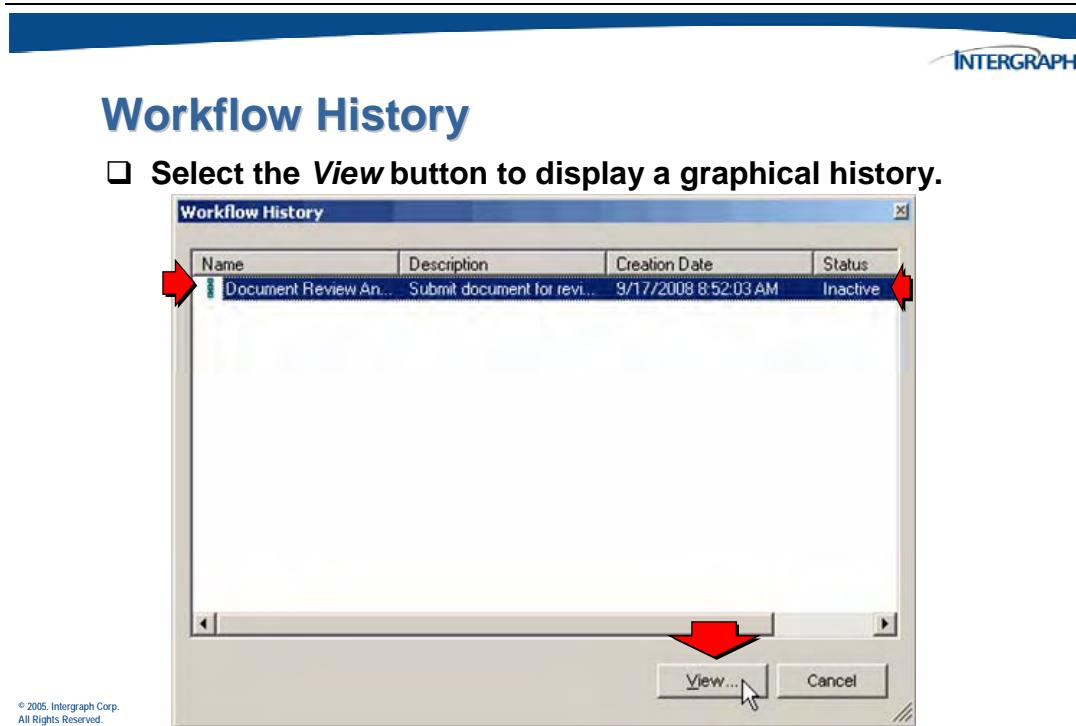
Workflow Rev	Name	Description	Duration	Comments	Assignee	Reason For Receipt
2	Document Review And Sign Off	Prepare For Review Submitter to initially check the document	1	Ready for review.	Super User W	
		Approve Matrix recipients review and approve	1	Performing the approval.	Super User C	
		Approve Vote Vote on previous approval step				
		Sign Off Revision Automatically sign off the revision	0			
		Notification Notify the workflow recipients of successful sign off				

## 4.5.1 Workflow History

The history of the workflow can be displayed by using the **Workflow History** command.



The *Status* field will indicate if the workflow is currently being used or if it has completed.



## **4.6 Activity – Using a Workflow in SmartPlant Foundation**

Complete the **Chapter 4 – Activity** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.



C H A P T E R

# 5

---

## SPF User Functionality



## 5. SPF User Functionality

In this chapter, we will discuss a variety of additional user features. These are basic functionalities commonly used by basic SPF users. The following pages cover the features listed below:

- **View and Markup functionality.** This feature provides the ability to view and make non-destructive markups using the SmartPlant Markup software, a complimentary product to SmartPlant Foundation delivered with SPF.
- **AdHoc Reporting.** The SPF reporting functionality allows you to create or run customer reports to retrieve information from the database. SPF is delivered with a number of basic, standard reports, which we will see how to use in this chapter. In later classes, you will learn how to modify these reports to include additional information or how to create reports of your own.
- **Email Notifications.** SPF allows you to register interest with objects in the database. The information in this chapter will show you how to register this interest, using subscriptions, so that you receive email notifications when certain things happen to objects in which you are interested, such as when documents are updated. You will also see how to manage those subscriptions once you create them.

## 5.1 Viewing and Marking up Files

In the Desktop Client, you can view design files attached to document revisions using the ***View and Markup*** command. This command displays the selected file, allows you to provide comments for a file using SmartPlant Markup, and, when applicable, displays properties of a selected object in the *Properties* window.



### Viewing and Marking Up Files

- You can view design files attached to document versions using the ***View and Markup*** command.
- View and Markup*** displays the selected file in SmartPlant Markup, where you can provide comments and annotations to the file.
- When applicable, you can view not only the file, but also properties of a selected object. This information is displayed in the ***Properties*** window.
- With multiple files attached to a document versions, you can select the specific file/files that you want to view.

© 2008, Intergraph Corp.  
All Rights Reserved.

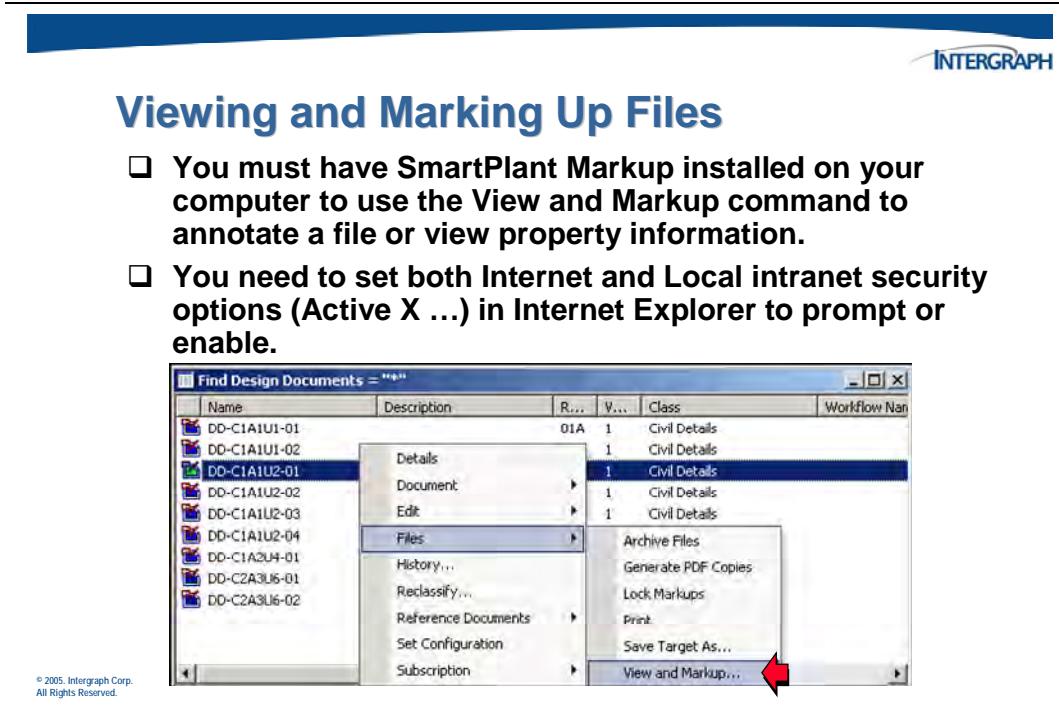
If you run the ***View and Markup*** command on a document revision with multiple files attached to it, the software prompts you to select the specific file that you want to view.

In the non-integration model, you can also use the ***View and Markup*** command to view files independently of the revisions to which they are attached by searching for design files using the ***Find > Files*** command. In the integration model, you can only view files associated with document revisions.

#### Important:

- You must have SmartPlant Markup installed on your computer to use the ***View and Markup*** command to add annotations in the Desktop Client.
- The types of files that are viewable with this command will depend on whether you have installed the optional additional viewer with SmartPlant Markup. Please refer to your SmartPlant Markup documentation for more information about the difference between SmartPlant Markup and SmartPlant Markup Plus.
- For SmartPlant Markup to work properly, you need to set both Internet and Local intranet security options in Internet Explorer to prompt or enable. To access these

options, click **Tools > Internet Options** in Internet Explorer and then make changes on the **Security** tab.



First, perform a *Find* or *Query* to see a list of documents to use for viewing. These documents should have electronic files attached to them in order to use the viewing command.

Right-click the document revision for which you want to view the associated design file.

If there are multiple design files associated with the selected document revision, select the check boxes beside the files that you want to open in SmartPlant Markup.

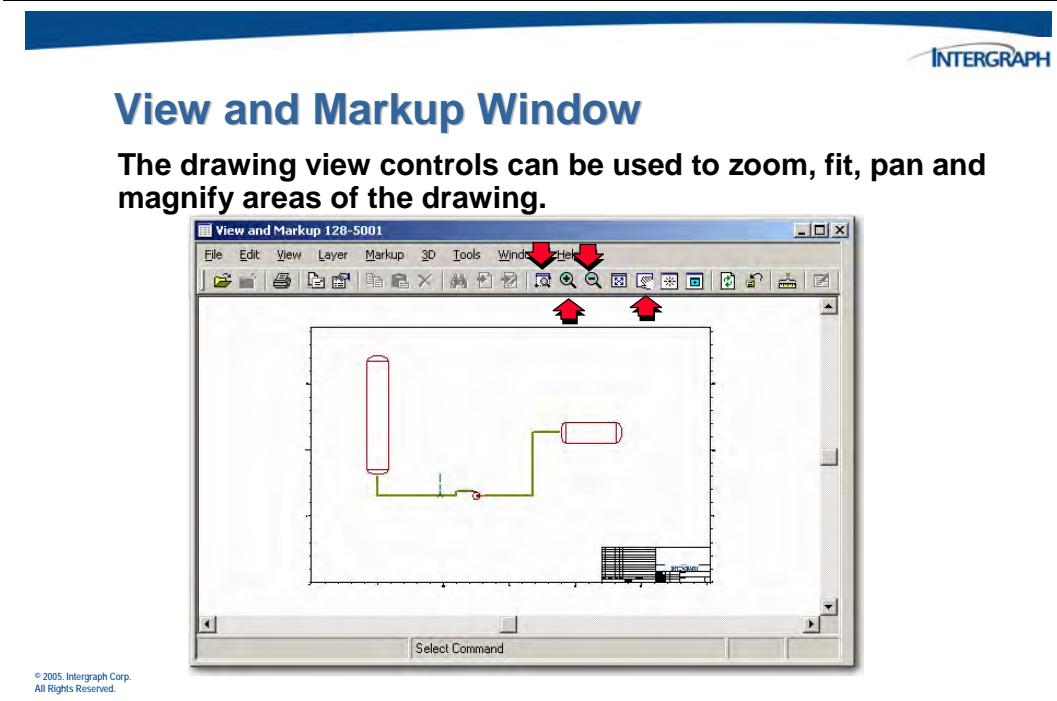
If you select multiple files for viewing, the Desktop Client opens a new SmartPlant Markup window outside the SmartPlant Foundation Desktop Client for each file that you selected.

The **View and Markup** command requires that you install the **Navigation and Reporting** components on the SmartPlant Foundation server. If these components are not installed, the file displays in **SmartPlant Markup**, if SmartPlant Markup is installed on your client computer. If SmartPlant Markup is not installed, then the file displays in the default viewer for the file type.

#### Note:

- AutoCad 2004 files require the CSI viewer in order to view correctly. The CSI view is included with SmartPlant Markup Plus. To view this file type, you must select to install the CSI viewer when installing SmartPlant Markup.

You can closely view a file by using **Zoom In**, or, if you need to look at the overall picture, use **Zoom Out**. There are also **Fit**, **Window Area**, **Window Center**, **Rotate**, **Reverse**, and **Measure** commands to modify your view of the file.



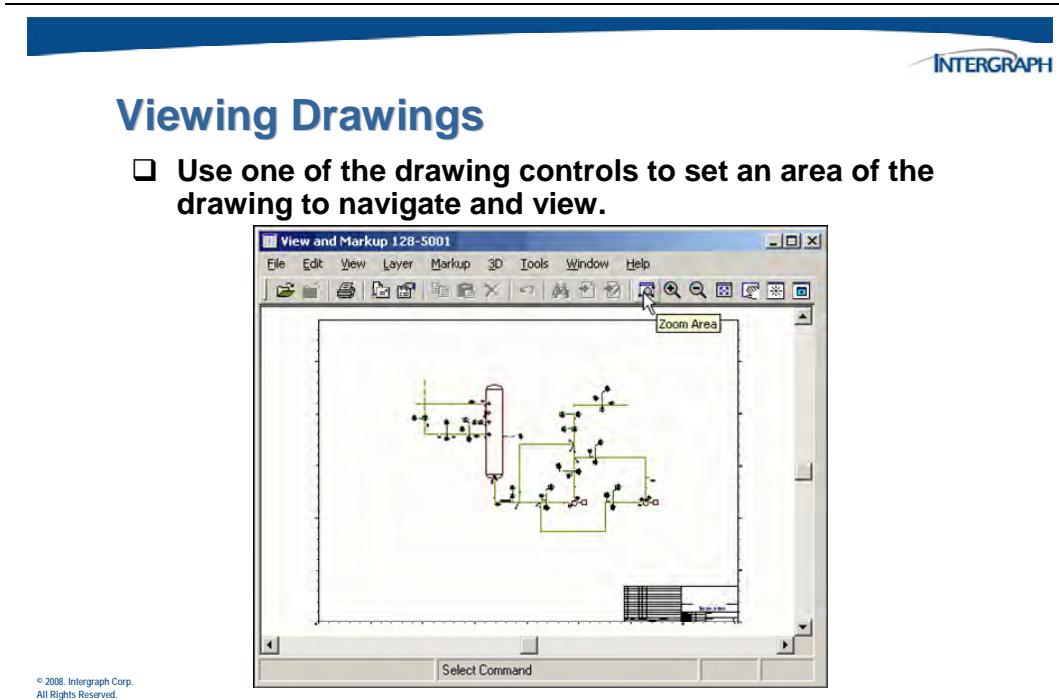
## 5.1.1 Viewing Object Properties

For certain types of documents, such as files that are published into SmartPlant Foundation, you can view not only the attached file, but also data attached to objects displayed in that file. This information is available through the ***View and Markup*** command.

Perform a search to locate a document with an attached drawing to be viewed.

A *Find* list view window will appear with the results of the search. Select ***Files > View and Markup*** from the pop-up menu.

The drawing will appear within a *View and Markup* window.

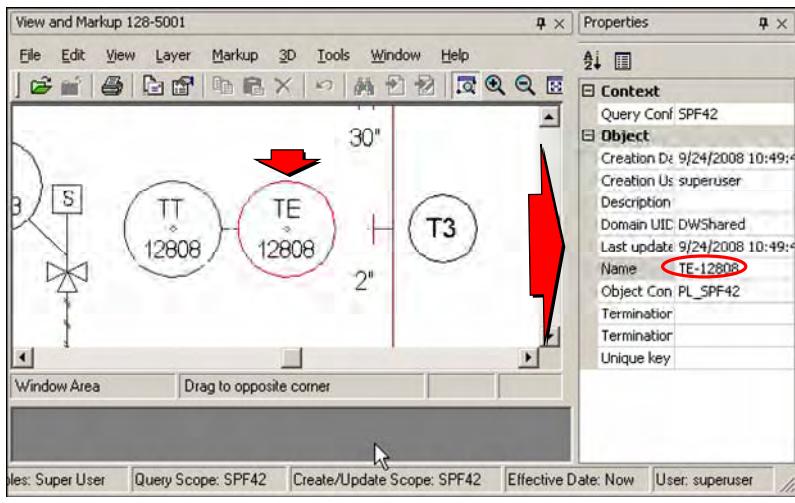


To get more information about an object in a drawing, you can click the object in the drawing to display properties for the object in the *Properties* window. The *Properties* window must be displayed to view the properties of the object.



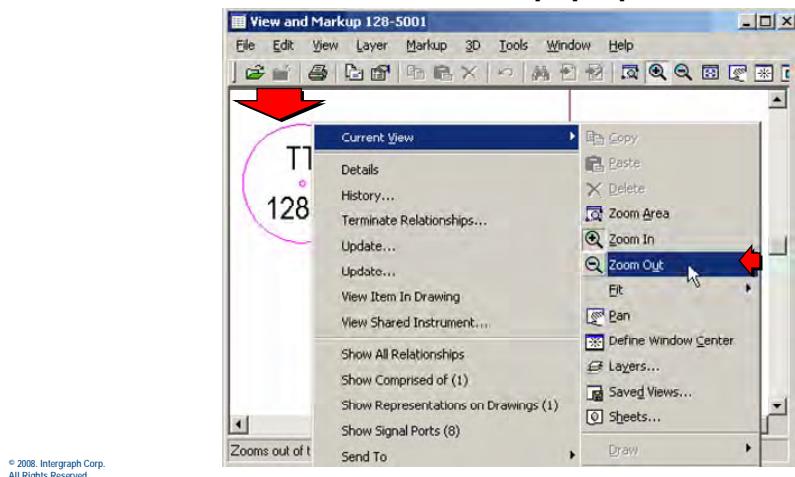
## Viewing Drawings

- Highlight an object in the drawing to display its properties.**



## Viewing Drawings

- Right-click on an object in the drawing, and select *Current View > Zoom Out* from the pop-up menu.**

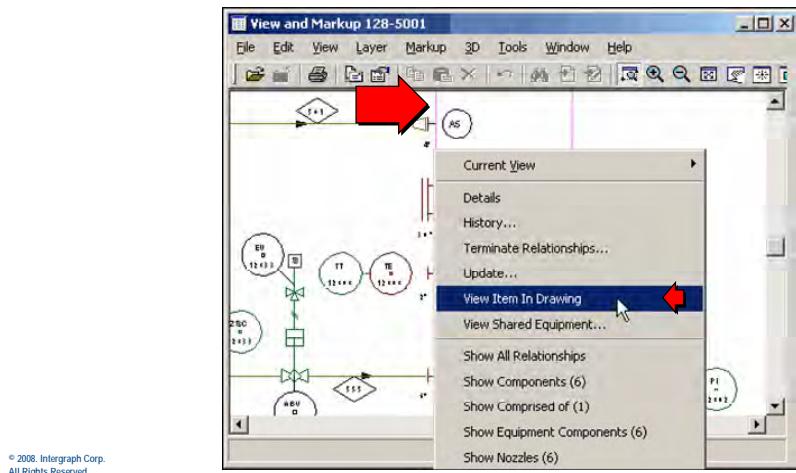


To view relationships and invoke methods on the object, right-click the object in the drawing, and then click the appropriate command on the shortcut menu. The shortcut menu commands for each object contain most of the same commands that you see when you right-click the object in a tree or list view in the Desktop Client.



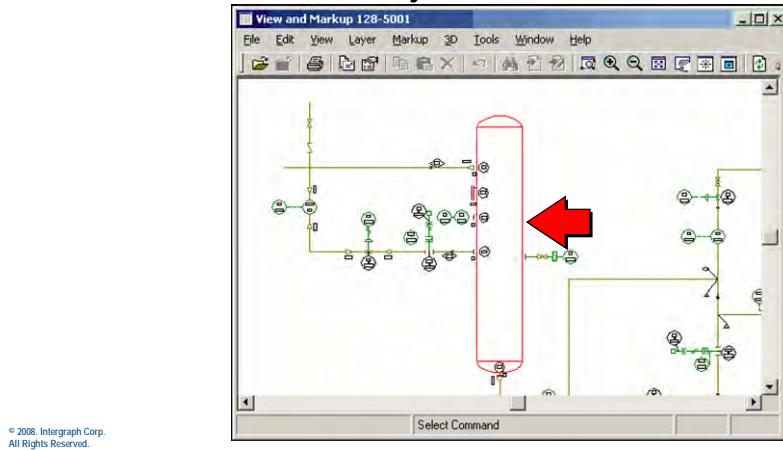
## View an Item in a Drawing

- Right-click on an object in the drawing, and select **View Item in Drawing** from the pop-up menu.



## View an Item in a Drawing

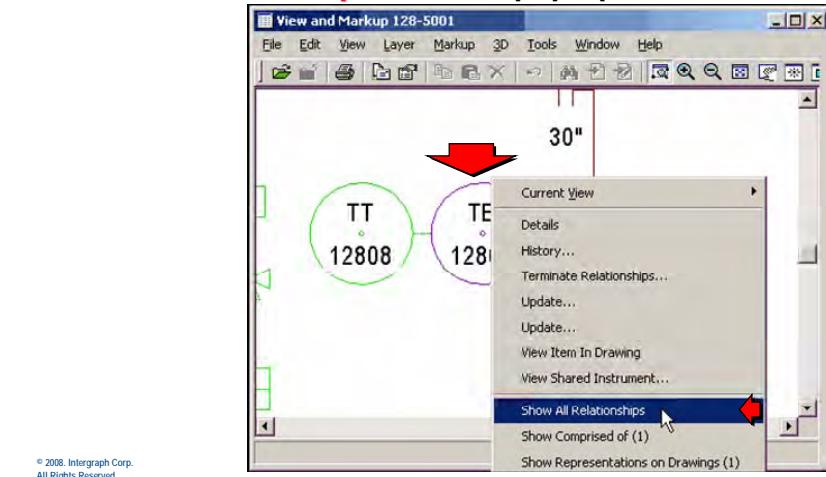
The view zooms in or out to focus on the selected object.  
Zooming out to show an entire object or zooming in to show details of a smaller object.





## Viewing Drawings

- Right-click on an object, and select **Show All Relationships** from the pop-up menu.



To expand relationships and invoke methods associated with an object, right-click the object in the drawing, and then click the appropriate command on the shortcut menu.



## Viewing Drawings

- A **Show All Relations** window will appear, showing the related objects.

Name	Description	Class	Creation Date	Cre
② TE-12808		PIDInstrument	9/24/2008 10:11:00 AM	supr
② 1		SPFTEFShar...	9/24/2008 10:11:00 AM	supr
② 2		SPFTEFShar...	9/24/2008 10:11:00 AM	supr
② 3		SPFTEFShar...	9/24/2008 10:11:00 AM	supr
② 4		SPFTEFShar...	9/24/2008 10:11:00 AM	supr
② 5		SPFTEFShar...	9/24/2008 10:11:00 AM	supr
② 6		SPFTEFShar...	9/24/2008 10:11:00 AM	supr
② 7		SPFTEFShar...	9/24/2008 10:11:00 AM	supr
② 8		SPFTEFShar...	9/24/2008 10:11:00 AM	supr

© 2008, Intergraph Corp.  
All Rights Reserved.

## 5.1.2 Adding Markups

When viewing files with the ***View and Markup*** command, you can make annotations to the files as Markups. Markups are comments or images that you place over the file on a non-destructive layer that can be viewed by others later. Each file can have any number of markup layers attached to it.

Before you can add an annotation of any sort, you must first create a markup layer using the ***Layer > Create*** command. Once you click this command, the ***Markup Elements*** toolbar becomes active. This section provides a brief overview of those tools.

---



### Markup Toolbar

**Click**      **To**



Key in text comments over your detail file.



Create an arrow with a line and text attached to it (leader).



Create a line markup element.



Create an arc markup element.



## Markup Toolbar

**Click**      **To** (cont.)



Create a line in freehand mode.



Create a rectangle.



Create a filled rectangle.

© 2005. Intergraph Corp.  
All Rights Reserved.

---

---



## Markup Toolbar

**Click**      **To** (cont.)



Create an ellipse.



Create a filled ellipse.



Create a free sided shape.



Create a filled free sided shape.

© 2005. Intergraph Corp.  
All Rights Reserved.

---



## Markup Toolbar

**Click**    **To** (cont.)



Places a hot spot in the active layer.



Key in text that pops up in a dialog box.



Key in a Waveform file name for audio annotation.



Key in an avi file name for video annotation.

© 2005. Intergraph Corp.  
All Rights Reserved.

---

---



## Markup Toolbar

**Click**    **To** (cont.)



Allows you to place a saved symbol into the layer.



Allows you to select elements in the markup layer.

© 2005. Intergraph Corp.  
All Rights Reserved.

---

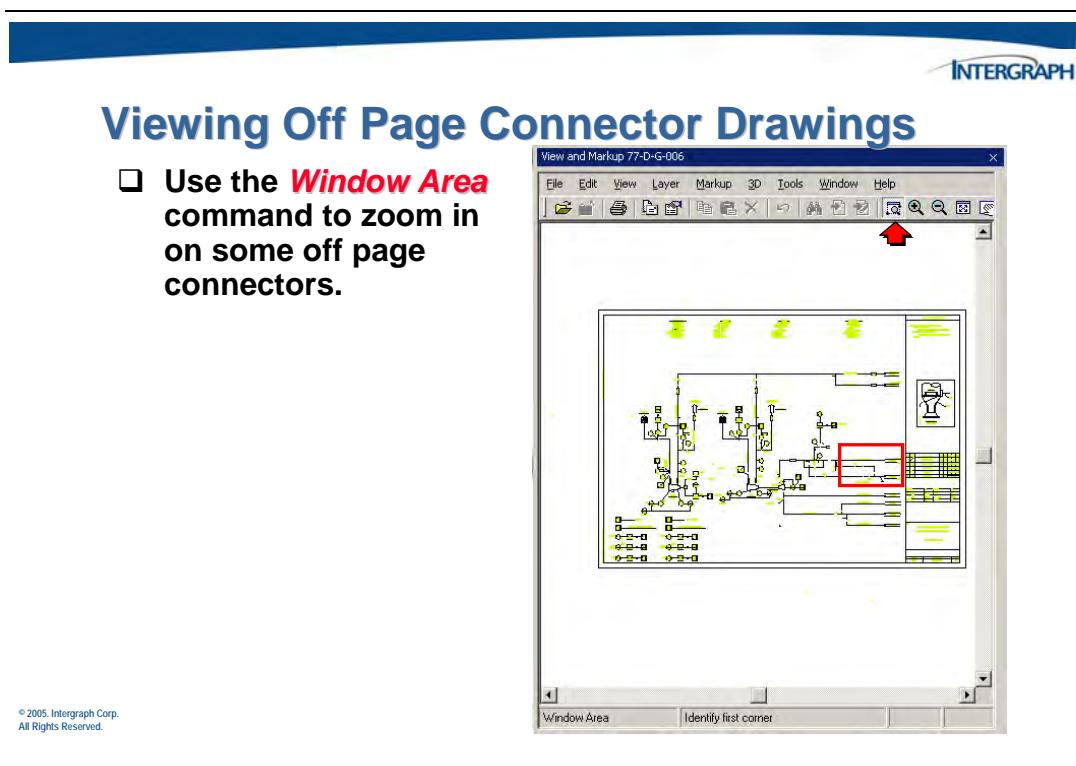
### 5.1.3 Viewing Off Page Connector Drawings

Some drawings, P&IDs for example, are split into multiple drawings. SmartPlant Foundation allows you to view a different drawing that is connected to the drawing currently in the view. In the following example, being able to query and navigate a drawing that has off page connectors will be demonstrated. (Note: Not all of the off page connector drawings used in this example have been loaded.)

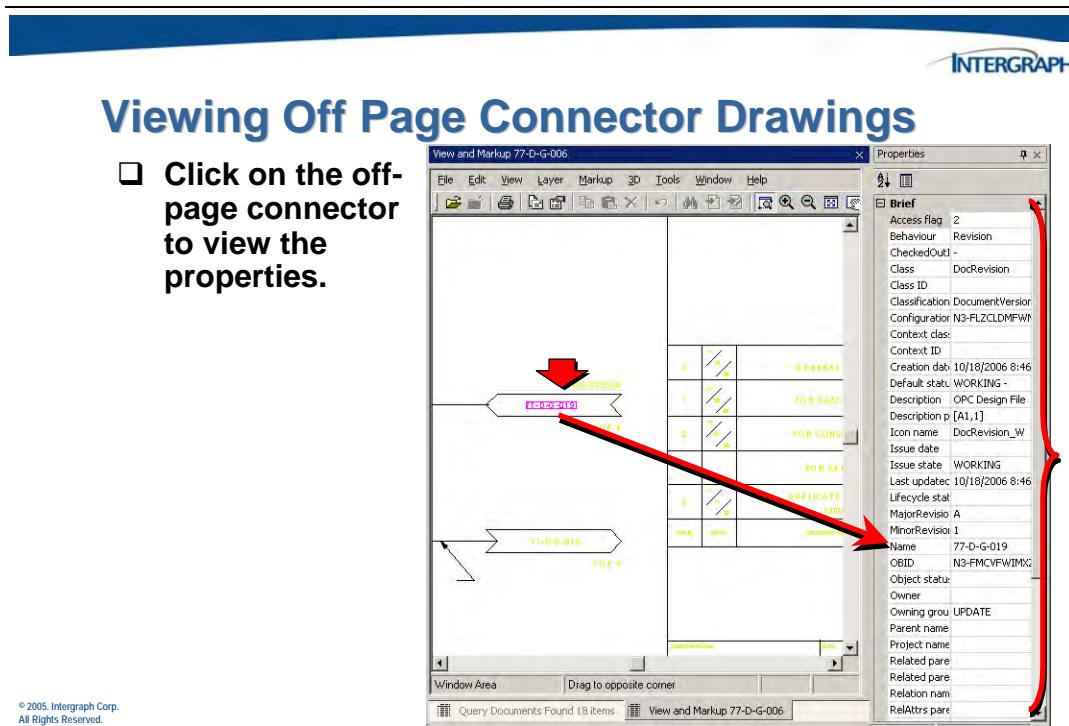
First, perform a search to locate a drawing that has off page connectors. Select **Find > Query > Documents** from the menu and enter the appropriate search criteria.

As previous, right click the item in the list view window and select **Files > View and Markup**.

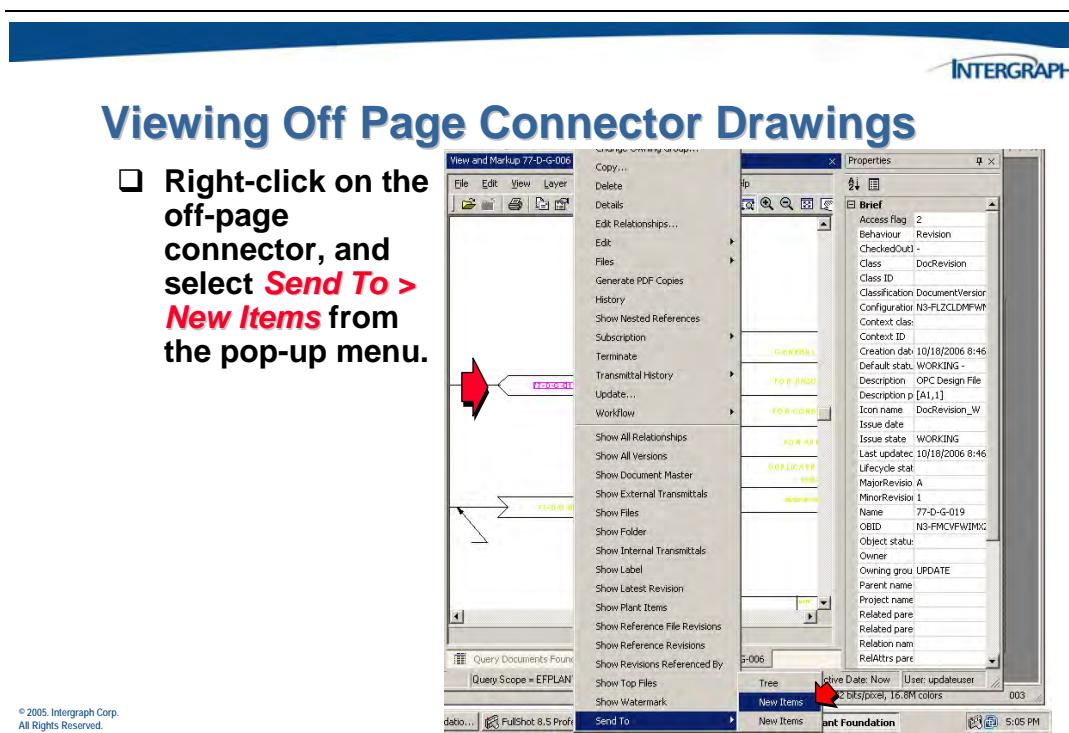
Locate some off page connectors (in the lower right corner) in this drawing view.



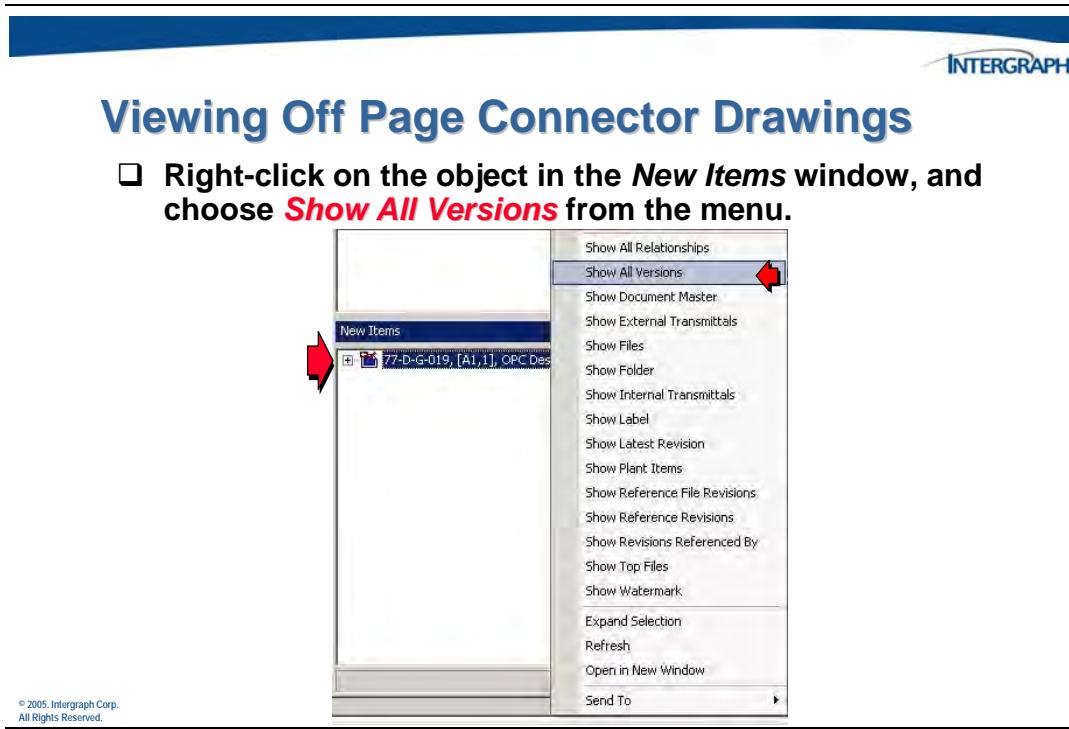
The properties associated with the connector object can be displayed.



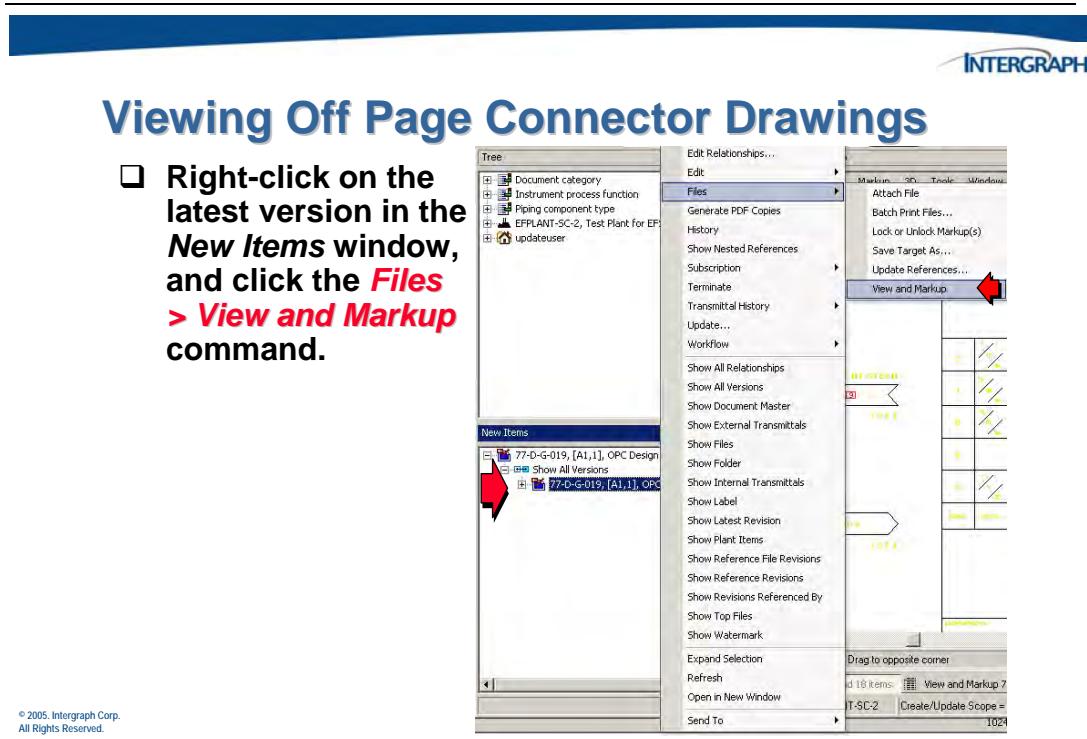
Next, view the object associated with the selected off page connector.



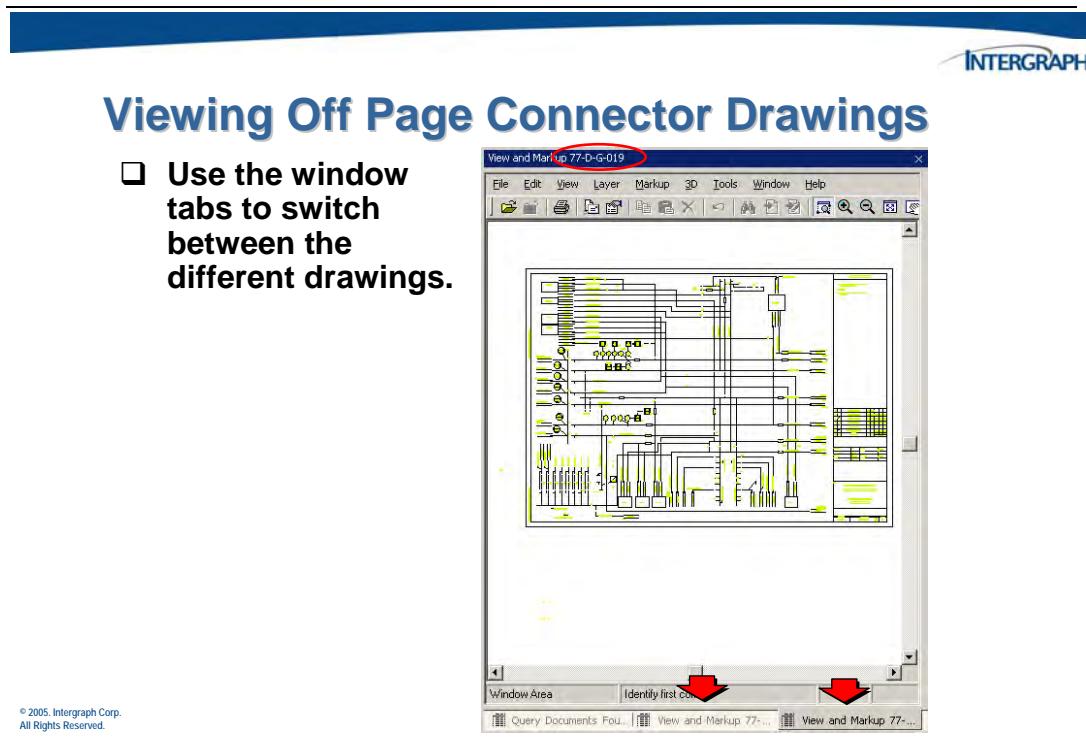
The **Document Master** will be displayed in the *New Items* window.



The tree will expand to display the related document versions.



The off page connector drawing will be displayed in the *View and Markup* view.



## 5.2 Activity – File Viewing and Markup

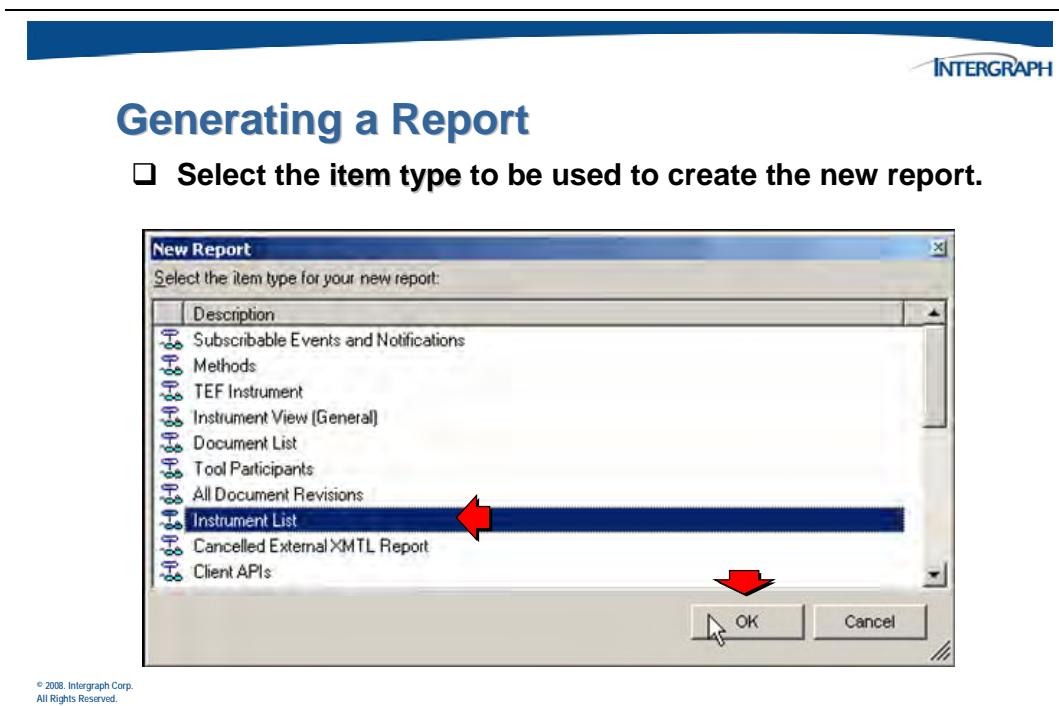
Complete the **Chapter 5 – Activity 1** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.

## 5.3 Creating a Report

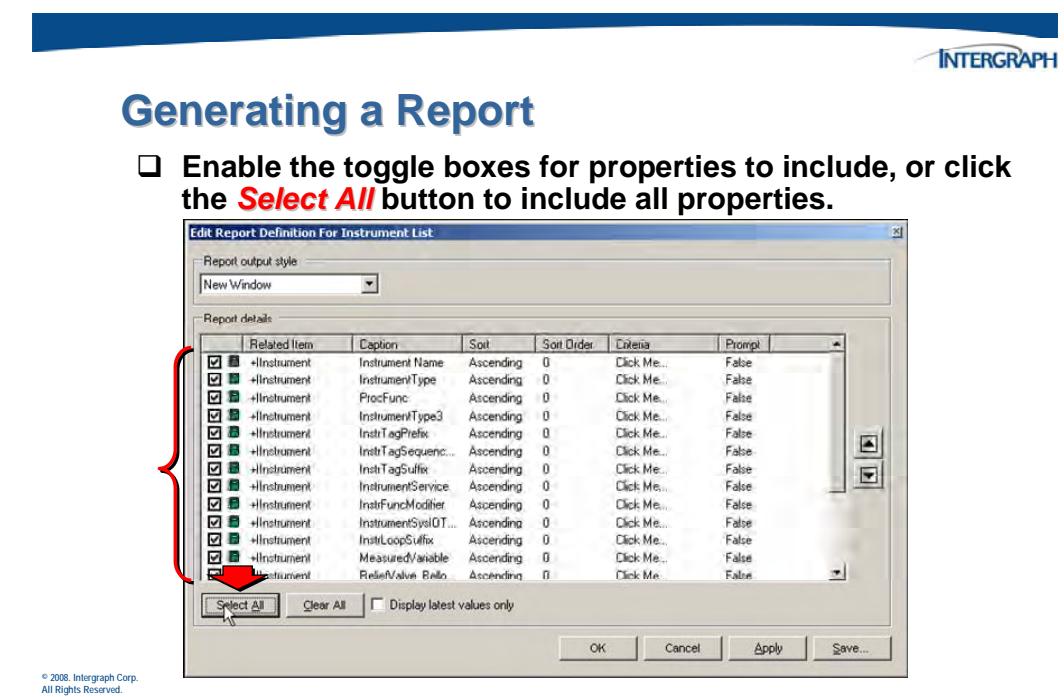
Once the system administrator has set up the necessary definitions, the user can login to the Desktop client to generate a report. The available properties to be reported on cannot be changed, but the user can choose a subset of the properties from the definition types to be included in each iteration of a report generated.

Select **File > New > Report** from the menu bar.

The *Report* dialog will appear and list the View Definitions available.



Select **Instrument List**, and click **OK**. The *Edit Report Definition* dialog appears.



Select the specific properties you want to include, or click the **Select All** button.

**Select All** – Selects ALL definitions.

**Clear All** – Clears ALL selected definitions.

**Up and Down Arrows** – Moves the highlighted selection up or down in the list. The order in which properties appear in the list is the order in which they will appear in the report.

**OK** – Runs the report, and closes the dialog.

**Cancel** – Cancels the report.

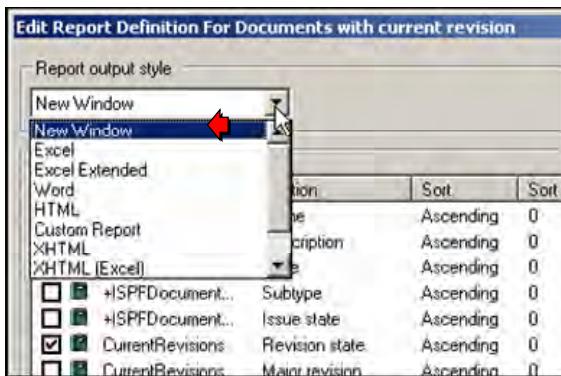
**Apply** – Runs the report and does not close the dialog.

**Save** – Saves the report so it can be recalled and used again later.



## Generating a Report

- In the *Report output style* field, choose the destination for the report.**



© 2005, Intergraph Corp.  
All Rights Reserved.

The **Report output style** select list allows you to choose the format in which you want to create the report. Choose from the following options: a new window, and Excel spreadsheet, a Word document, or an HTML page. You can also use the **Custom Report** option to send information to a third-party reporting application, such as Crystal Reports.

**New Window** – Creates a window within the client to display the data.

**Excel** – Allows you to view the report results in an Excel spreadsheet. When you select this option, you must choose a template to be used when formatting the information in Excel. The SPFDevTemplate.xls template is delivered with the product.

**Note:**

- With SmartPlant, the Default setting will not work. You must select a specific template.
- The list of available templates generated from the Excel files found in the Excel Templates directory for the applicable SmartPlant Foundation site.

**Excel Extended** – This option works almost exactly like the **Excel** option. However, if a property returned includes multiple values, this option will break each of those values into its own Excel cell, rather than placing them all in the same cell and delimiting them, as is done with the **Excel** option.

**Note:**

- The cases where you will need to use **Excel Extended** are very rare. Most reports will look exactly the same using the **Excel** or **Excel Extended** options.

Both the wording of this new stuff and the formatting may need some cleaning. I was just throwing something in here.

**Word** – Creates a report formatted into a Word document.

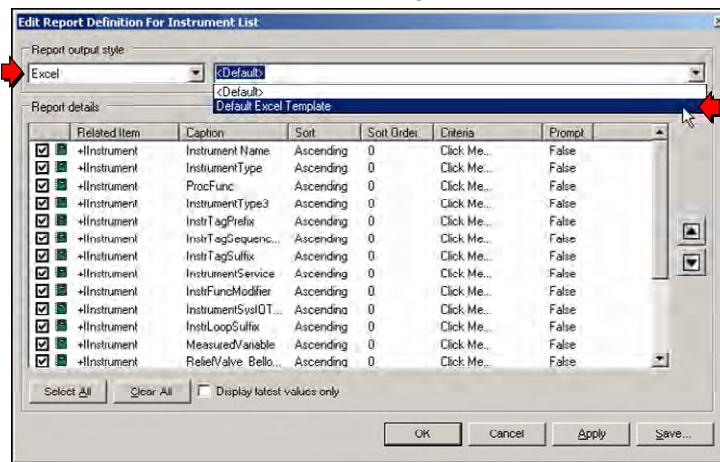
**HTML** – Creates a web-based report.

**XHTML** – Creates a web-based report as a result of an XSL transformation of an XML document.

---

## Generating a Report

- Some options for the **Report output style** field require the additional selection of a template.



© 2008, Intergraph Corp.  
All Rights Reserved.

---

### 5.3.1 Report Options

Users running reports can change any of the column captions and data sorting, as well as supply search criteria on a subset of data to be included in the report. The options you have when customizing a report are described here. Further customization of reports is covered in later classes.



#### Report Options

Filter options on the **Edit Report** dialog are **Caption**, **Sort**, **Sort Order**, **Criteria**, and **Prompt**.

- Caption** – You can change the **Caption** of the column, so that it has a different value displayed in the results.
- Sort** – Sort a column **Ascending** or **Descending** order.
- Sort Order** -- Select the order by which the columns will be sorted.
- Criteria** – You can use logical filters on the data to filter your output ( Like \* or Equals 04 ).
- Prompt** – Allows you to create a report using a criteria that you provide at run time.

The **Caption** field shows the column names that will appear in the report.

**Report Options**

Change the **Caption** of the column from the displayed default to a user-defined caption.

Related Item	Caption	Sort	Sort Order	Criteria	Prompt
+Instrument	Instrument Name	Ascending	0	Click Me...	False
+Instrument	InstrumentType	Descending	0	Click Me...	False
+Instrument	ProcessFunction	Descending	0	Click Me...	False
+Instrument	InstrumentType3	Ascending	0	Click Me...	False
+Instrument	InstlTagPrefix	Ascending	0	Click Me...	False
+Instrument	InstlTagSequence	Ascending	0	Click Me...	False
+Instrument	InstlTagSuffix	Ascending	0	Click Me...	False
+Instrument	InstrumentService	Ascending	0	Click Me...	False
+Instrument	InstlFuncModifier	Ascending	0	Click Me...	False
+Instrument	InstrumentSyst01	Ascending	0	Click Me...	False
+Instrument	InstlLoopSufix	Ascending	0	Click Me...	False
+Instrument	MeasuredVariable	Ascending	0	Click Me...	False
+Instrument	ReliefValve_Bello...	Ascending	0	Click Me...	False

© 2008, Intergraph Corp.  
All Rights Reserved.

The sort order for report data can be customized. Sort one or more columns in Ascending or Descending order. Additionally, you can specify the order in which the columns will be sorted. In this example, the Unique ID will be the first field listed in the report, but the items in the report are sorted alphabetically by type and then by process function.

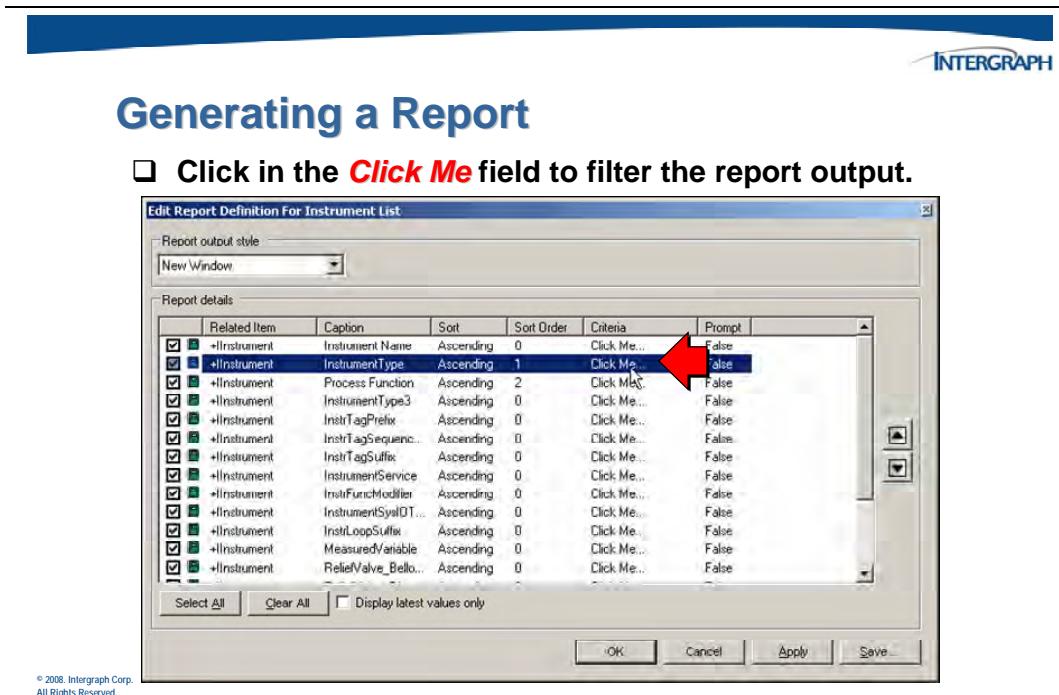
**Report Options**

Select one or more sort orders to determine the order that rows will be sorted on the report output.

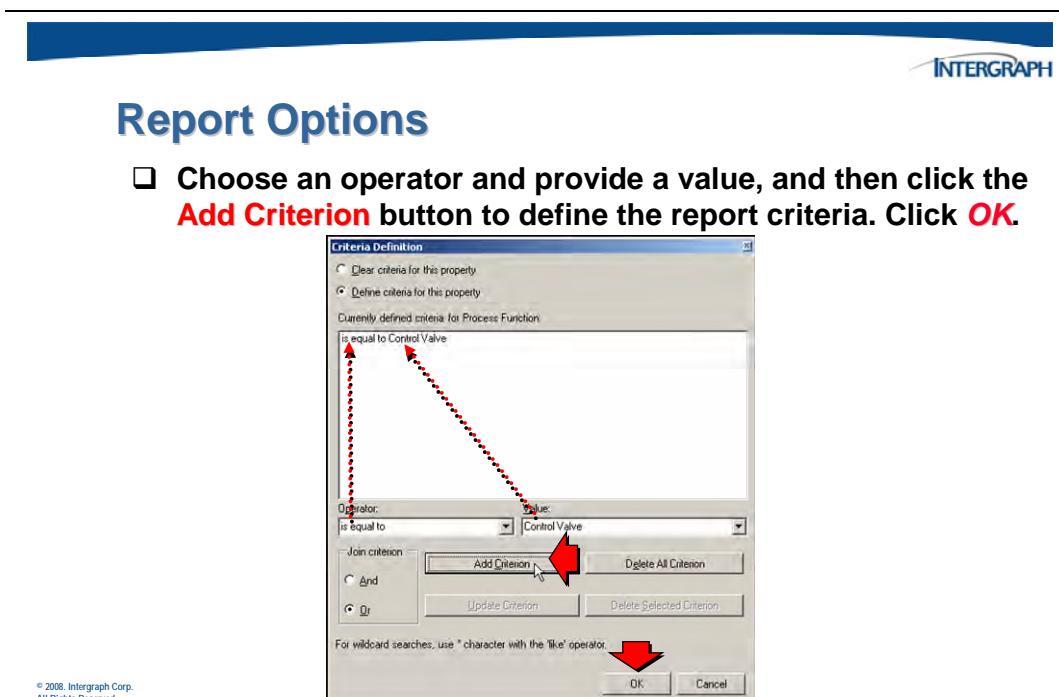
Related Item	Caption	Sort	Sort Order	Criteria	Prompt
+Instrument	Instrument Name	Ascending	0	Click Me...	False
+Instrument	InstrumentType	Descending	1	Click Me...	False
+Instrument	ProcessFunction	Descending	2	Click Me...	False
+Instrument	InstrumentType3	Ascending	0	Click Me...	False
+Instrument	InstlTagPrefix	Ascending	0	Click Me...	False
+Instrument	InstlTagSequence	Ascending	0	Click Me...	False
+Instrument	InstlTagSuffix	Ascending	0	Click Me...	False
+Instrument	InstrumentService	Ascending	0	Click Me...	False
+Instrument	InstlFuncModifier	Ascending	0	Click Me...	False
+Instrument	InstrumentSyst01	Ascending	0	Click Me...	False
+Instrument	InstlLoopSufix	Ascending	0	Click Me...	False
+Instrument	MeasuredVariable	Ascending	0	Click Me...	False
+Instrument	ReliefValve_Bello...	Ascending	0	Click Me...	False

© 2008, Intergraph Corp.  
All Rights Reserved.

The Criteria field allows you to define the content of the data returned from the database. Click on the ‘Click me’ tag in the line of the property for which you want to set a criteria.



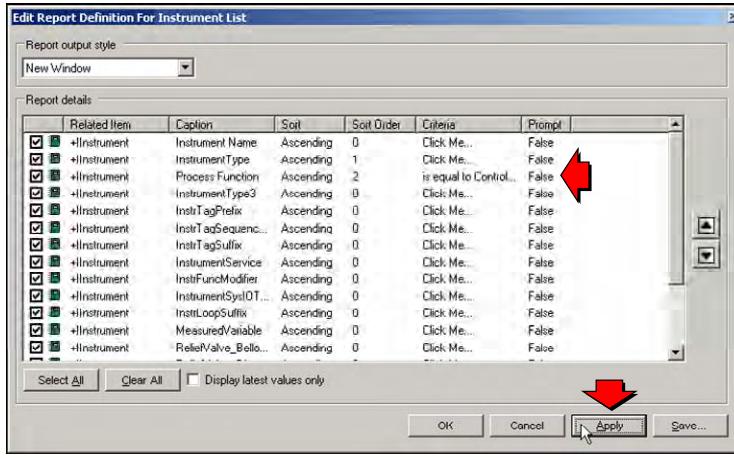
The *Criteria Definition* dialog box appear. On this dialog box, you can provide the criteria that must be met for an item to be returned by the report. Choose an operator and provide a value, and then click the *Add Criterion* button to define the report criteria. Click **OK**.





## Report Options

- With the report criteria defined, click **OK** or **Apply** to generate a new report.



© 2008 Intergraph Corp.  
All Rights Reserved.

Once you have customized the information you will receive from the report, click the **OK** or **Apply** button to run it.



## Generating a Report

- The resulting report displays.

Results of Adhoc Report SPF42						
	Instrument Name	InstrumentType	Process Function	InstrumentType3	InstrTagPrefix	InstrTagSequen...
②	CV-12819		Control Valve	UNIT	12819	
②	CV-12814		Control Valve	UNIT	12814	
②	ABV-12831	CV	Control Valve	Control valve	UNIT	12831
②	ABV-12833	CV	Control Valve	Control valve	UNIT	12833
②	ABV-12832	CV	Control Valve	Control valve	UNIT	12832
②	CX-00501	CV	Control Valve	Control valve		501
②	ABV-12830	CV	Control Valve	Control valve	UNIT	12830
②	ABV-12827	CV	Control Valve	Control valve	UNIT	12827
②	CX601	CV	Control Valve	Control valve		
②	ABV-12815	CV	Control Valve	Control valve	UNIT	12815

© 2008 Intergraph Corp.  
All Rights Reserved.

## 5.3.2 Saving a Report

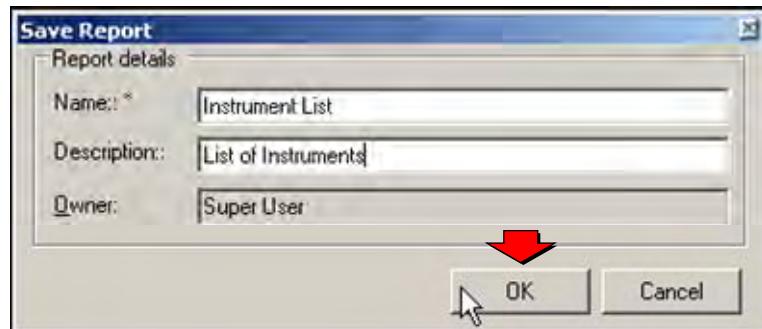
If you have created a report that you will need to use again later, or even often, you can save the configuration. Set the values and options that you want to use, and then click the **Save** button.

You should always run a report once, using the **Apply** button, before saving it. The **Apply** button allows you to view the results of the current selections without closing the *Report Definition* dialog box. Once you have viewed the results, return to the *Report Definition* dialog box and either save the report or modify it, as necessary based on the result you viewed.

When the Save dialog appears, provide a name and description for the saved report.

### Saving a Report

- Provide a name and description for the new report, and click **OK** to save it.



When you click OK, the new report is saved to the database. It will be placed in the *New Items* windows temporarily, but you can find it again later. Use the **Find > Reports** command to search for saved reports.

In the *Find Reports* dialog box, provide any necessary criteria to search for the report.

---



## Running a Saved a Report

- On the *Find Reports* dialog box, provide any criteria for finding the report you want to execute, and then click **OK**.



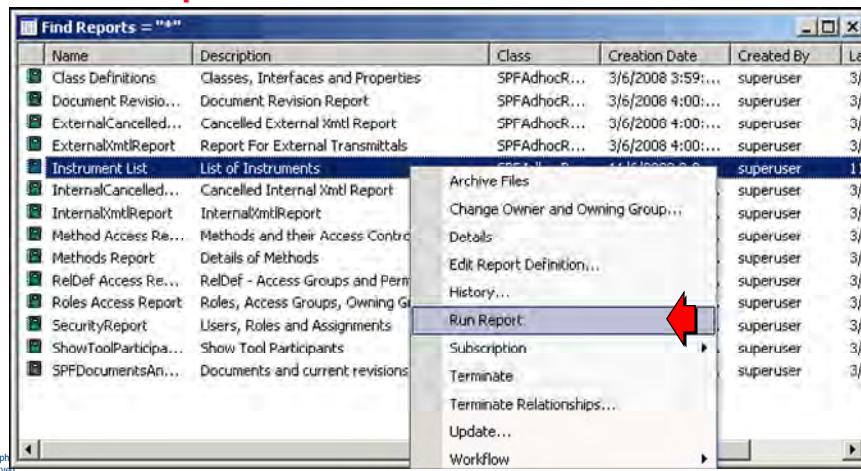
---

© 2005, Intergraph Corp.  
All Rights Reserved.

All reports that meet the specified criteria will be returned in the list.

## Running a Saved a Report

- Right-click on the report you want to execute, and click **Run Report**.



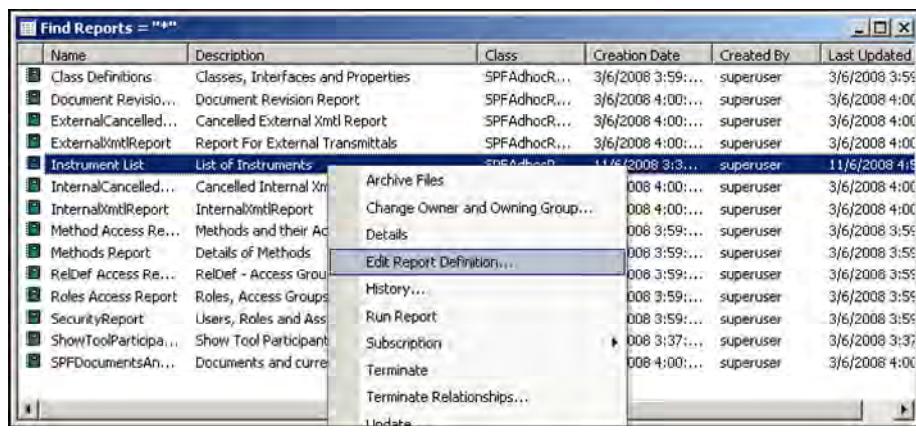
Click **Run Report** on the report's short cut menu to run the saved report.

If you need to make changes to a report that you have saved, find the report, and use the **Edit Report** command from the short cut menu.



## Editing a Saved a Report

- You can make changes to a saved report. Right-click on the report to edit, and click **Edit Report Definition**.



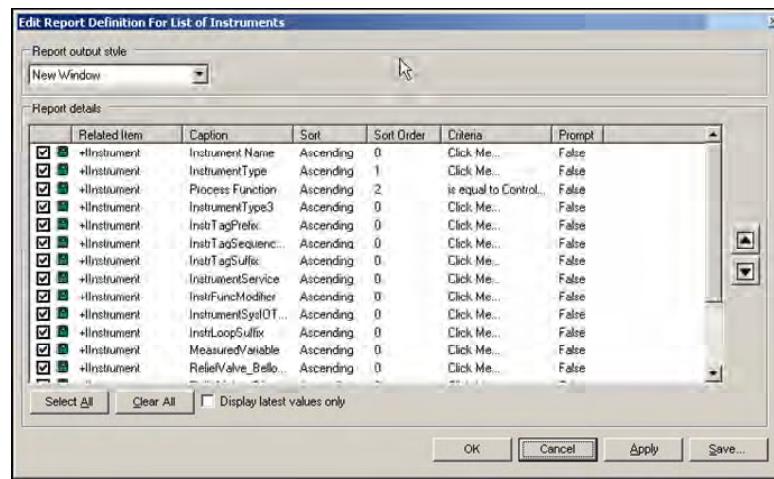
© 2008, Intergraph Corp.  
All Rights Reserved.

The *Edit Report Definition* dialog box appears. From there, you can modify the saved report.



## Editing a Saved a Report

- The **Edit Report Definition** dialog box displays.



© 2008, Intergraph Corp.  
All Rights Reserved.

Use the ***Prompt*** option with a saved report to create an adhoc report for only the information with a specific value for a property, specified at runtime.

The screenshot shows the 'Edit Report Definition For List of Instruments' dialog box. In the 'Report details' section, there is a grid table with columns: Related Item, Definition, Sort, Sort Order, Criteria, and Prompt. The 'Prompt' column contains values like 'True', 'False', and 'is equal to Control...'. A red arrow points to the 'True' entry in the first row. Another red arrow points to the 'Apply' button at the bottom right of the dialog box. The dialog box also includes 'OK', 'Cancel', and 'Save...' buttons. A copyright notice at the bottom left reads: © 2008, Intergraph Corp. All Rights Reserved.

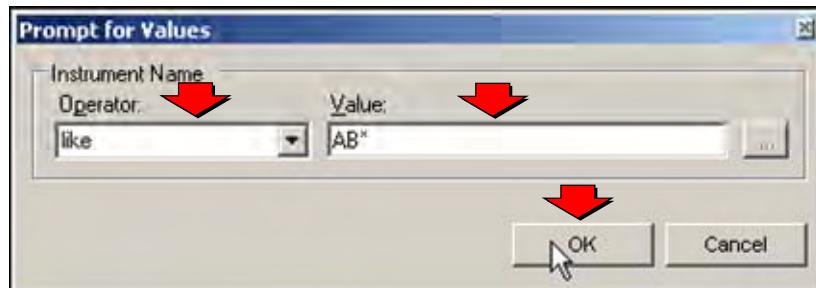
If you have activated the ***Prompt*** option for a field, you are prompted to provide a value for that property.

The screenshot shows the 'Prompt for Values' dialog box. It has fields for 'Instrument Name' and 'Operator:' (with a dropdown menu showing 'equals', 'not equal to', 'greater than or equal to', and 'greater than'). A red arrow points to the 'Value:' input field. Another red arrow points to the dropdown menu under 'Operator:'. The dialog box includes 'OK' and 'Cancel' buttons. A copyright notice at the bottom left reads: © 2008, Intergraph Corp. All Rights Reserved.



## Running a Saved a Report

- Choose an operator and a value to be used to return results, and then click **OK** to run the report.



© 2008, Intergraph Corp.  
All Rights Reserved.

Click **OK** to return a report with results that match the criteria you provided.

---



## Running a Saved a Report

- The resulting report displays.

Instrument Name	InstrumentType	Process Function	InstrumentType3	InstrTagPrefix	InstrT
② ABV-12831	CV	Control Valve	Control valve	UNIT	12831
② ABV-12815	CV	Control Valve	Control valve	UNIT	12815
② ABV-12827	CV	Control Valve	Control valve	UNIT	12827
② ABV-12830	CV	Control Valve	Control valve	UNIT	12830
② ABV-12833	CV	Control Valve	Control valve	UNIT	12833
② ABV-12832	CV	Control Valve	Control valve	UNIT	12832

© 2008, Intergraph Corp.  
All Rights Reserved.

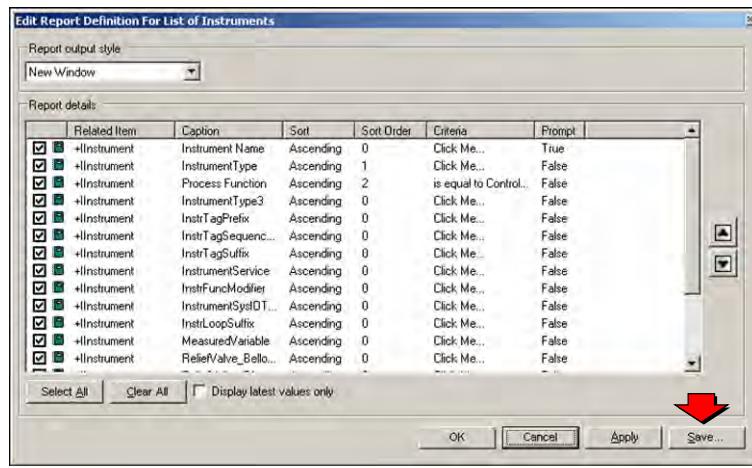
---

After testing all of the changes to the report, save the report for use later.



## Editing a Saved Report

- After testing the changes, click **Save** to save your changes.



## 5.4 Activity – Creating Reports

Complete the **Chapter 5 – Activity 2** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.

## 5.5 Subscribing to Change Notifications

In the Desktop Client, you can register your interest in specific actions for objects to receive e-mail notification when that action is performed on that object. For example, if you want to be notified every time a particular document is checked out, you can subscribe to the check out action for that object.



### Subscribe/Unsubscribe Overview

- In SPF you can register your interest in specific actions for objects to receive e-mail notification when that action is performed on that object (subscribe).
- You can also subscribe to changes for other objects, not just documents.
- SPF allows you to *Subscribe*, *Unsubscribe*, *Query* and *View Subscription* lists.

## 5.6 Subscriptions and Notifications

In the Desktop Client, users can register their interest in specific events for objects or object classes to receive notifications when that event is performed for that object or class. Object subscriptions are where a user requests a notification when one or more events occur on an object under specified conditions.



### SPF Subscriptions and Notifications

**Subscription is the process by which a specified task is executed once a subscribed event has occurred.**

**This task can be:**

- Notification, either via *Email* or the *SPF Client Inbox***
- Logging to a file**
- External application DLL (stubbed in for future functionality)**

**There are two basic types of subscription:**

- Object subscription**
- Class subscription**

---

© 2008, Intergraph Corp.  
All Rights Reserved.

Subscriptions can be created and managed at the *object* or *class* level. However, **log** subscriptions can only be created at class level.

Examples of events and subscriptions:

- To be notified when a selected document revision is signed off.
- To be notified when a selected document revision is signed off with a status of “Final”.

Subscriptions are configuration specific such that when the events occur on objects, the notifications are only sent in the configuration in which they were created.



## SPF Subscriptions and Notifications

In **object subscriptions** the object has a relationship between the object and the subscription.

With **class subscription** you store the interface on the subscription. Otherwise the process is the same as for object subscriptions.

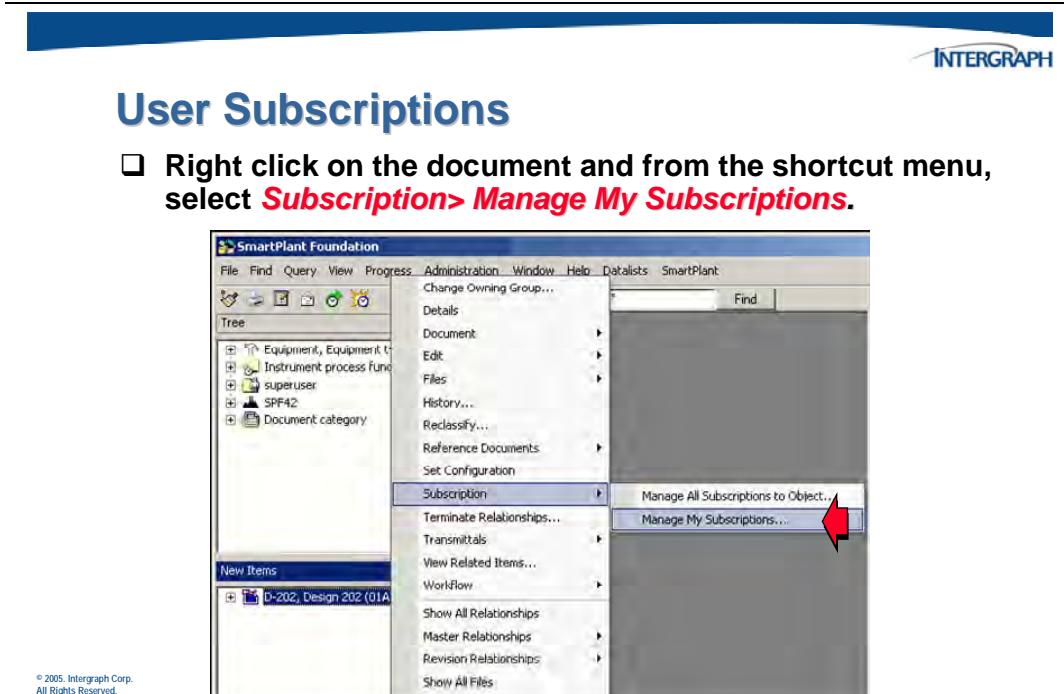
Object subscriptions can be created for:

- The current user (Manage My Subscriptions).
- Other users or roles (Manage All Subscriptions to Object).

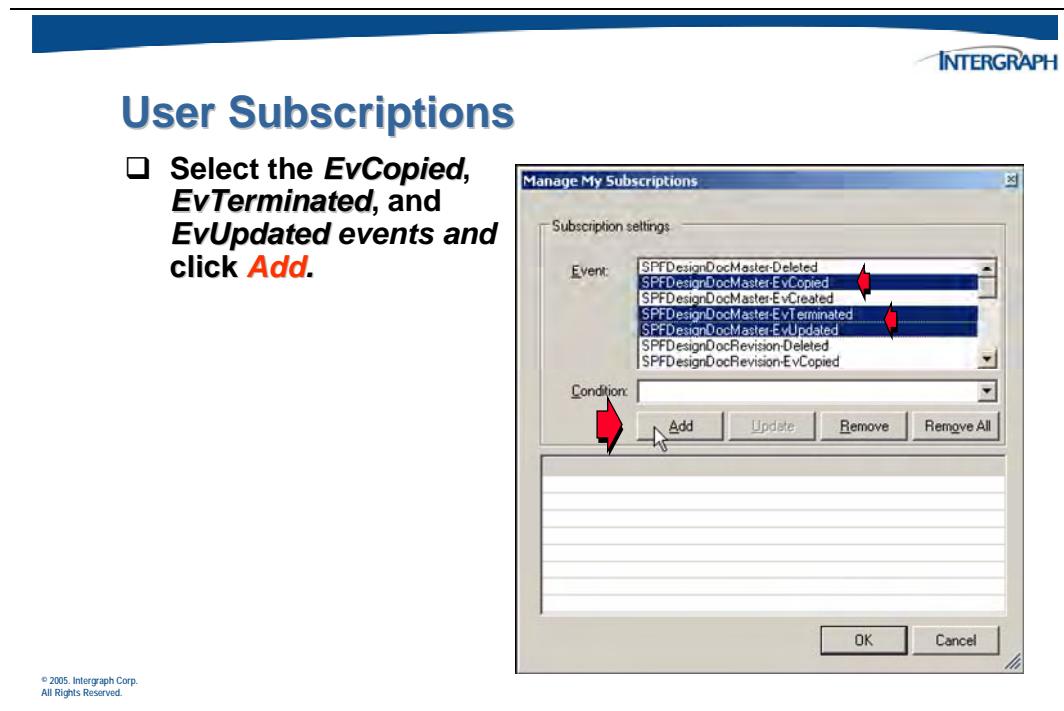
## 5.6.1 User Defined Subscriptions

The *Manage My Subscriptions* menu option enables the current user to create and manage their subscriptions to the selected object. This functionality is available as a user command on the object.

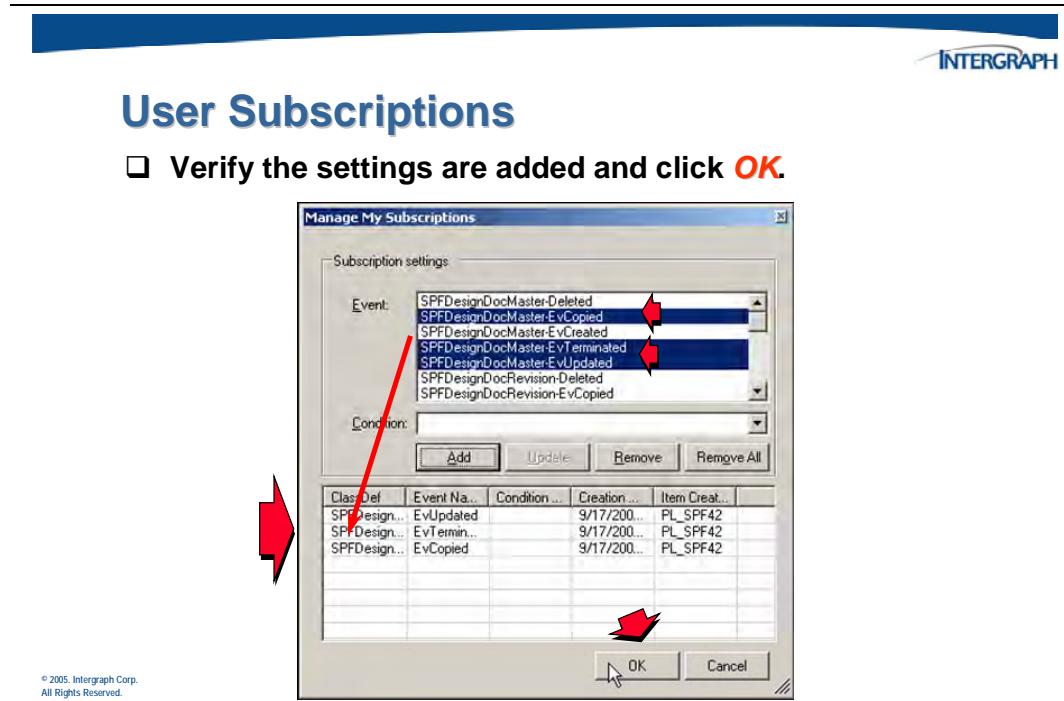
Use the **Find** command to locate an existing object or create a new object instance. In the following example, instance **D-202** of a new Design Document has been created.



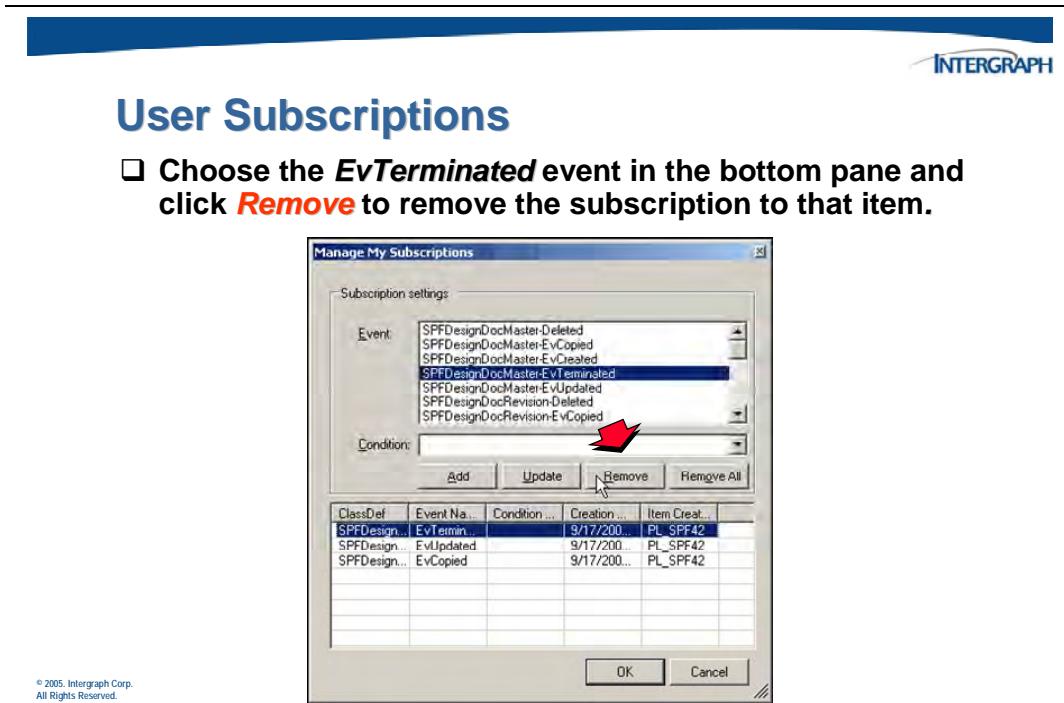
The *Manage My Subscriptions* form will appear.



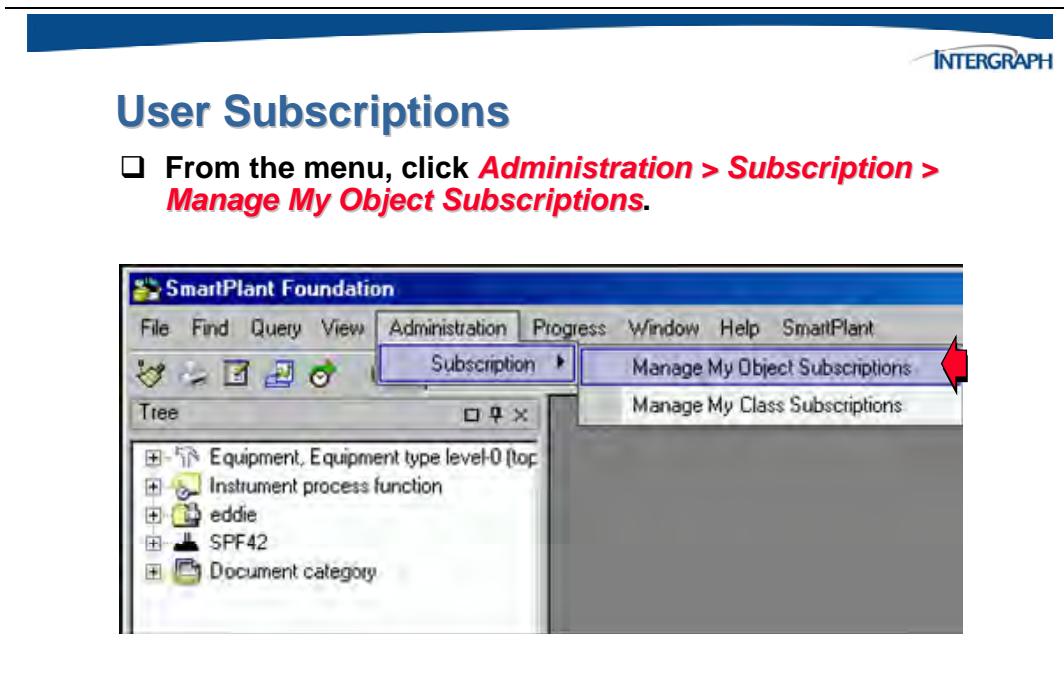
To set an optional condition, click the **Condition** drop down list button and select a condition from the displayed list. If multiple objects are selected, the event and/or condition is added for all selected objects.



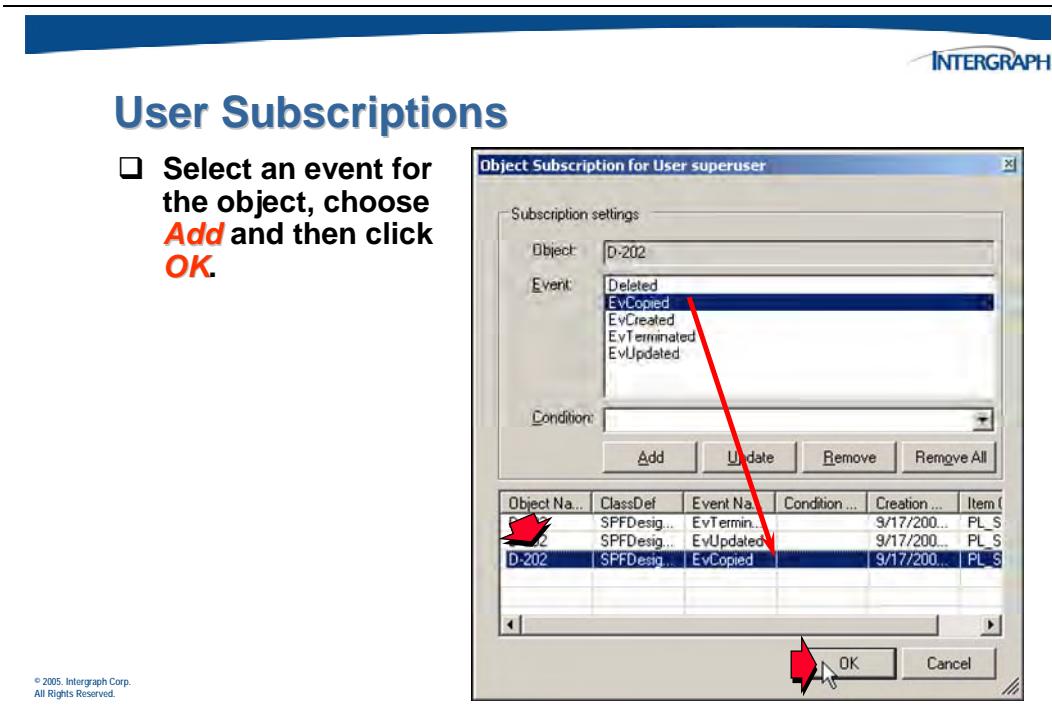
If a user's subscription needs to be changed, they can unsubscribe from an event for an object.



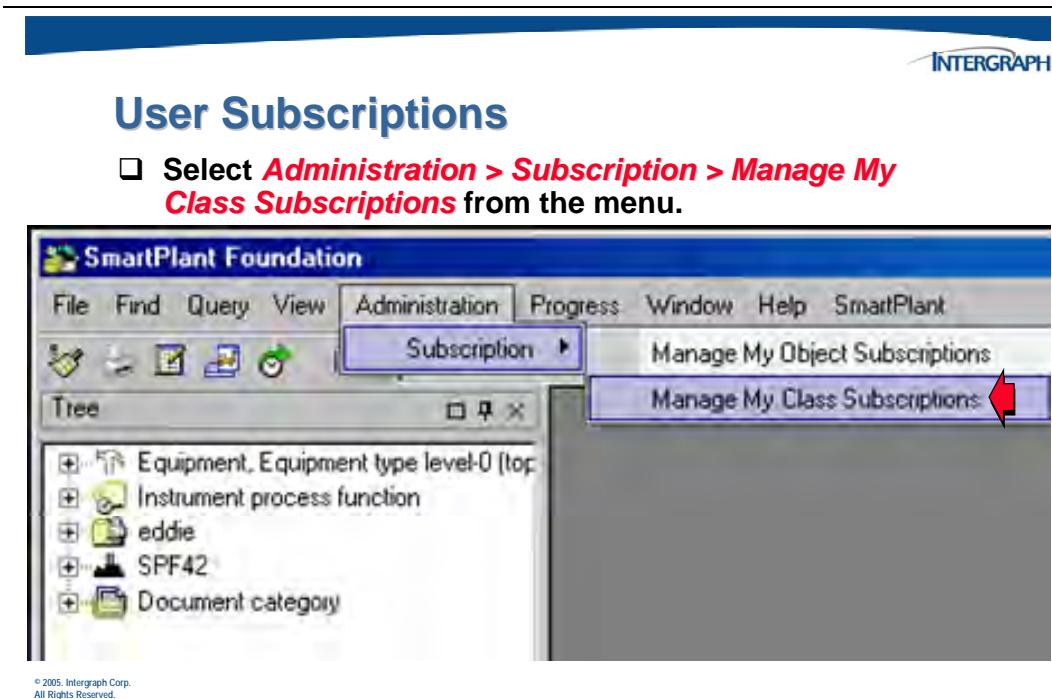
Object subscriptions can be managed from the **Administration > Subscriptions** menu. The process for creating new subscriptions and managing subscriptions is similar.



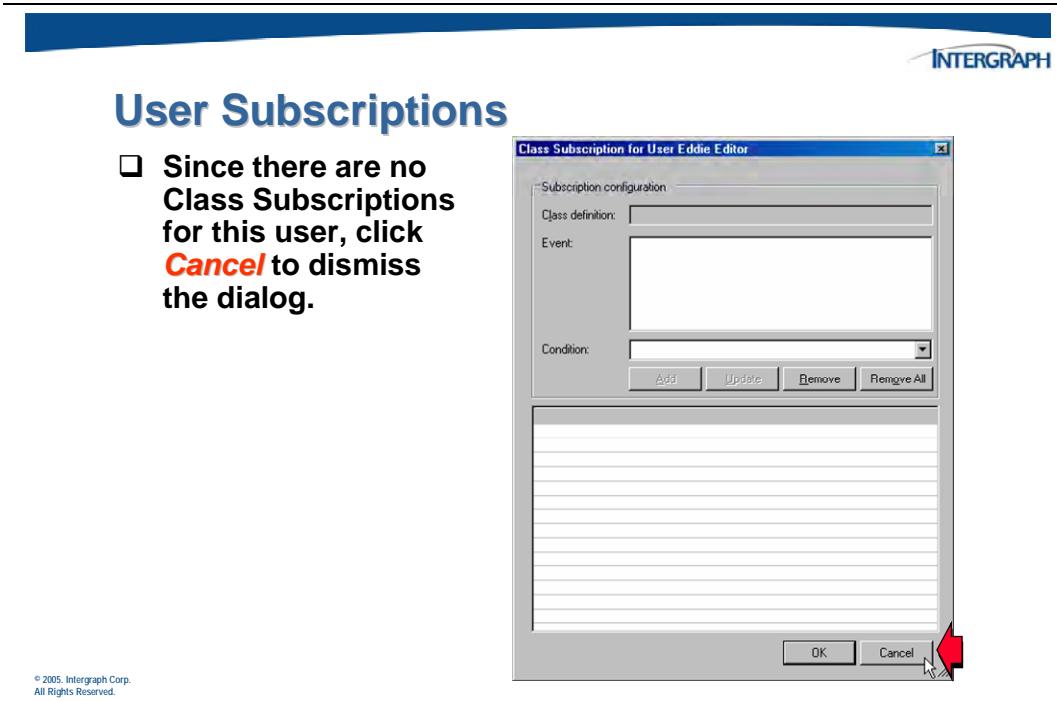
To add or change a subscription for an object, select an object from the bottom pane of the *Object Subscription for User* dialog.



*Manage My Class Subscriptions* displays a list of object classes to which the current user is subscribed.

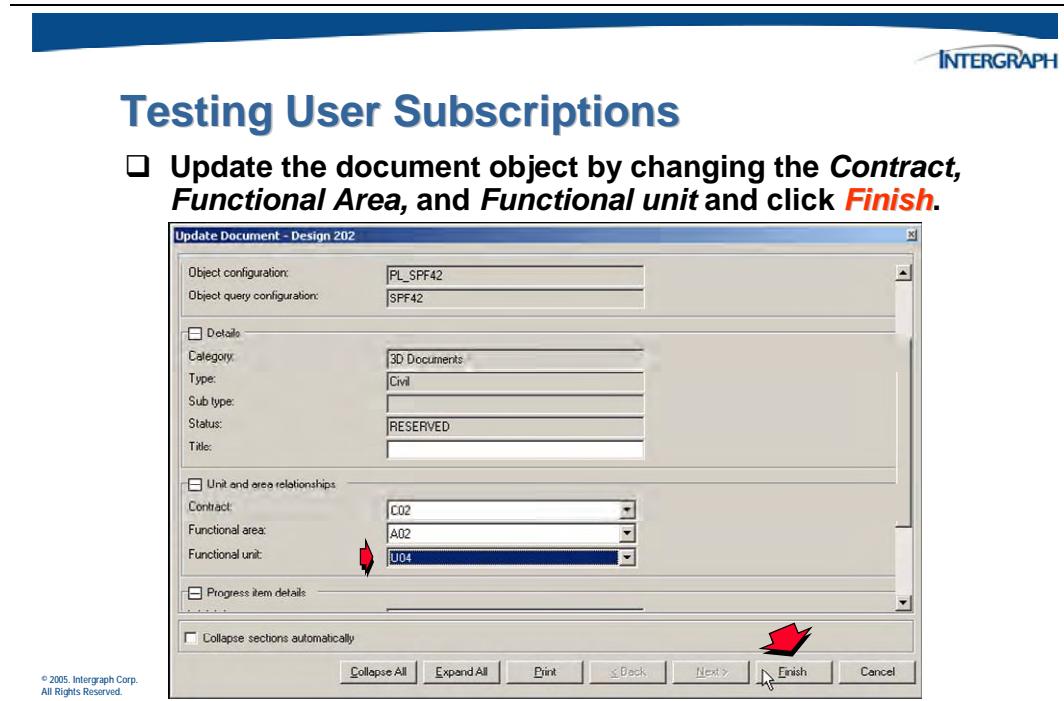


If the user has no existing subscriptions, no classes are displayed in the dialog box, and no subscriptions can be added.

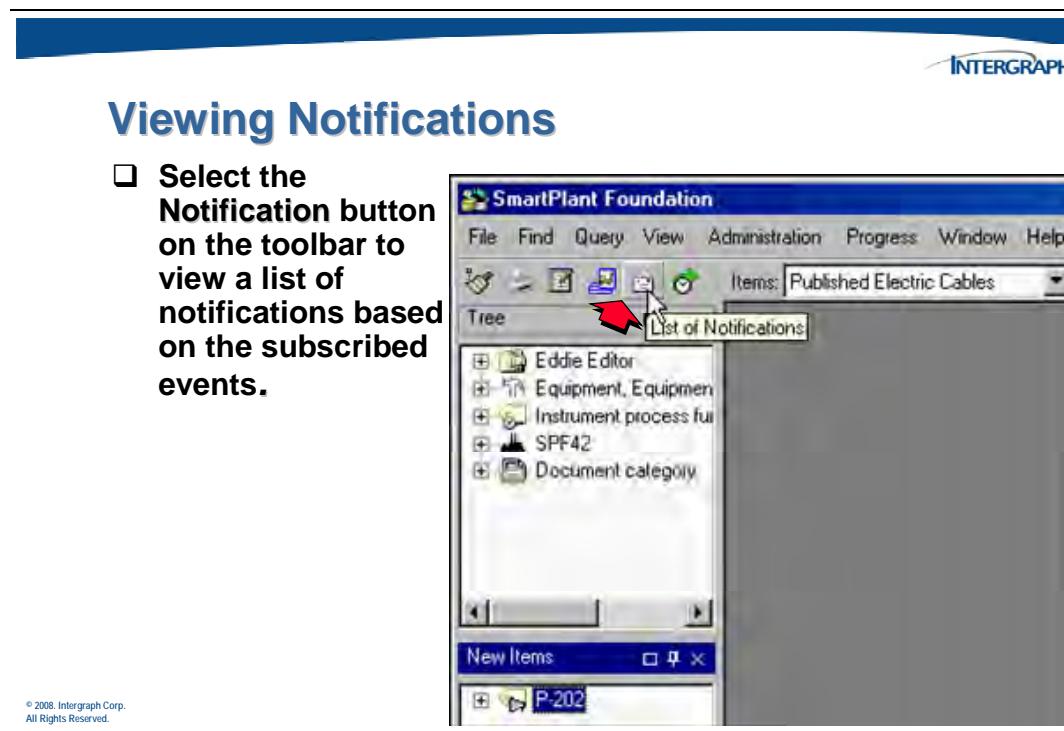


Next, test the subscription by updating a subscribed object and making some kind of change.

Right click on the document and from the shortcut menu, select **Document > Update Document**. Make some changes to one or more property values for the **D-202** object instance.



View the result of the subscription to the update (EvUpdated) event.

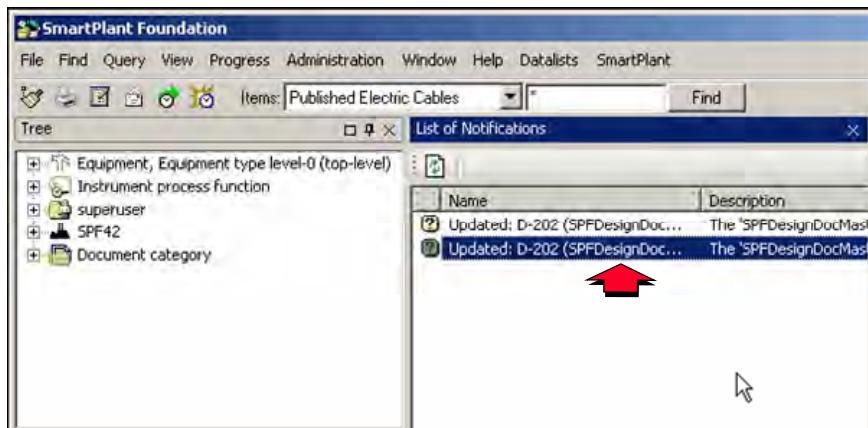


Using the **Notification** button is an alternative to using email and is only available if configured for the user.

A *List of Notifications* list view window will appear.

## Viewing Notifications

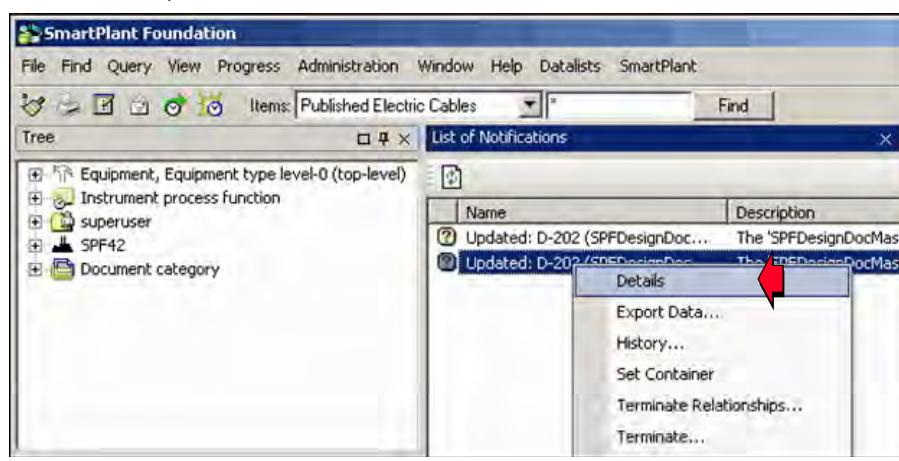
- Select the notification displayed for the updated document.



Use the **Details** command to see more specific information for this event.

## Viewing Notifications

- Right click on the notification and from the shortcut menu, select **Details**.



The information from the description field will be displayed in the form title bar.

---



## Viewing Notifications

View the information for the notification then click **Cancel** to close the form.

Details - The 'SPFDesignDocMaster' object called 'D-202' was updated by 'superuser'.

Main details

Name:	Updated: D-202 (SPFDesignDocMaster)
Description:	The 'SPFDesignDocMaster' object called 'D-202' was
Container ID:	

Notification Object optional interfaces

Report notification:	<input checked="" type="checkbox"/>
----------------------	-------------------------------------

Notification details

User:	<a href="#">Super User, Super User</a>
-------	--

General details

Last updated date:	9/17/2008 1:47:54 PM
Creation date:	9/17/2008 1:47:54 PM
Creation user:	superuser

Collapse sections automatically

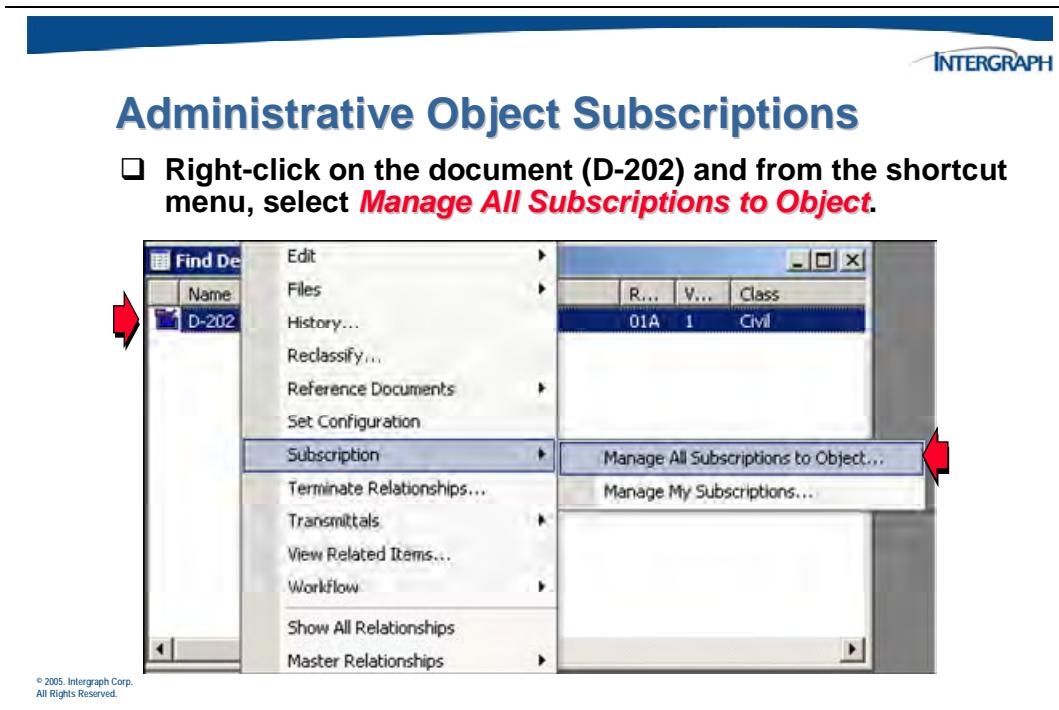
© 2008, Intergraph Corp.  
All Rights Reserved.

---

## 5.6.2 Administrative Object Subscriptions

An administration user can manage object subscriptions on behalf of other users. The **Manage All Subscriptions to Object** command is used by an administration user to review and modify any of the subscriptions to an object (across users). It is available on the shortcut menu of objects that realize the *ISPFSubscribableItem* interface, and displays a list of subscriptions that any user has created to this object.

In this example, an administration user, *superuser*, will make an object subscription on behalf of other users. Find or create an object instance.

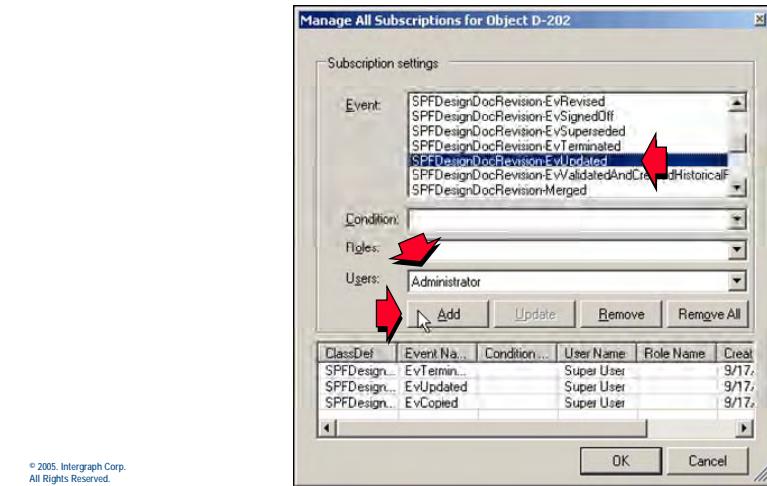


This option is used to create and manage the subscriptions of all users to the selected object.



## Administrative Object Subscriptions

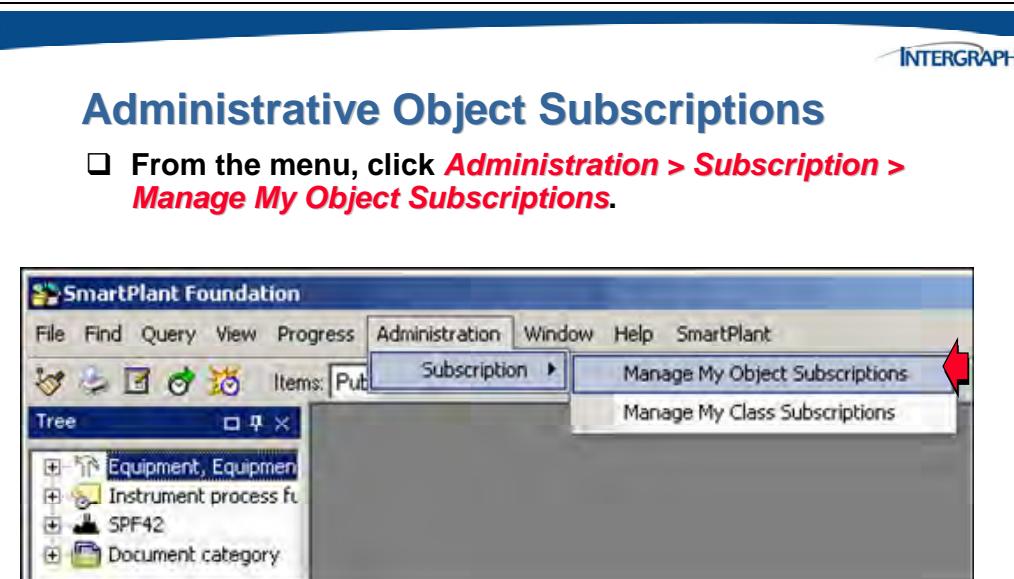
- Choose one or more events and either a *user* or *role*, then **Add**. Click **OK**.



To create a new object subscription the following fields are used:

- Choose an **Event**, which is required.
- Choose a **Condition**, which is optional.
- Choose a **User** or **Role**, which is required when creating a subscription.

Log into the system as the user *administrator* and select **Administration > Subscription > Manage My Object Subscriptions**.



The *Object Subscription for User administrator* form will appear.

## Administrative Object Subscriptions

- Click on an object (1) in the bottom pane of the form to see (2) the object subscription information, then click **Cancel**.

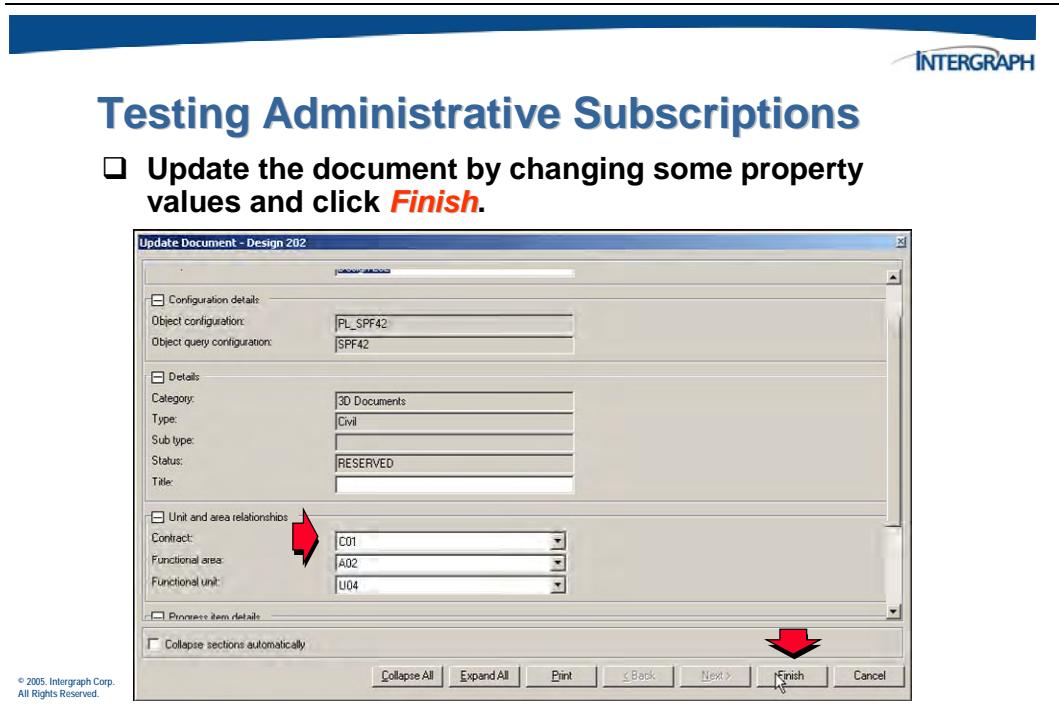
The dialog box is titled "Object Subscription for User administrator". It contains a "Subscription settings" section with fields for "Object" (set to D-202), "Event" (set to EvUpdated), and "Condition". Below this is a table with one row:

Object Na...	ClassDef	Event Na...	Condition ...	Creation ...	Item C...
D-202	SPFD... Design...	EvUpdated		9/17/200...	PL_S...

Red numbers 1 and 2 are overlaid on the table row and the event dropdown respectively. Red arrows point from these numbers to specific parts of the dialog: number 1 points to the first column of the table, and number 2 points to the "Event" dropdown menu which lists Deleted, EvCopied, EvCreated, EvTerminated, and EvUpdated, with EvUpdated selected.

As before we want to test the object subscription. Use the find command to display instances of the *Design Document* class. Then select **Document > Update Document** from the shortcut menu.

The *Update* form will appear.



After the update is complete, review the notification information for this change.



## Testing Administrative Subscriptions

- Select the **Notification** button on the toolbar to view the notifications.



## 5.7 Activity – Subscriptions and Notifications

Complete the **Chapter 5 – Activity 2** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.



# 6

C H A P T E R

---

## Document Management



## 6. Document Management

In this chapter, we discuss the following user features related to document management:

- **Document checkout and checkin.** Once files are stored in the vault, you must check them out to make changes to them. This chapter will show you how to check a document out to make changes and then check it back in once you are done. This system allows you to keep a master set of documentation on a central file server and have access to working copies for modification purposes.
- **Reference Files.** The management of reference files is an important part of document management. The procedures for working with reference files are covered in this chapter.
- **Document Signoff and Revision.** In the course of a document's life, it might be updated many times. Some of these updates will be released, or signed-off. This chapter covers how to sign-off and release documents and how to revise a released document so that it may be updated again.

## 6.1 Working with Reference Files

In SmartPlant Foundation, certain file types, such as MicroStation files, AutoCAD files, and Word files, can reference other files. Files that reference other files are called master files. The files referenced by master files can be manipulated separately or reused. File types that allow reference files include MicroStation, AutoCAD, Word, Excel, PowerPoint, Solid Edge, EMS, and SmartSketch files.



### Working with Reference Files

- File types that allow reference files include MicroStation, AutoCAD, Word, Excel, PowerPoint, Solid Edge, EMS, and SmartSketch files.**
- Files that reference other files are called master files.**
- SmartPlant Foundation tracks the relationships between these reference files and the master.**
- Reference relationships are created between files when a master document is created and files are attached.**
- Reference relationships can also be created when the master file is checked back in after a checkout and files are attached.**

© 2005. Intergraph Corp.  
All Rights Reserved.

---

SmartPlant Foundation tracks the relationships between these reference files and master files in order to keep the files associated during check in, check out, viewing, and other SmartPlant Foundation operations. This is done by creating reference relationships between the files. Reference relationships are created between files when a master document is created and files are attached and when the master file is checked back in after a checkout. These relationships are created because the user can add or delete reference files while the master file is checked out.

When a file is attached or checked in, SmartPlant Markup reads the headers of all files, extracts the reference file names, and supplies the reference file names to SmartPlant Foundation. As a result, relationships defined in the native application are honored in SmartPlant Foundation.

**Important:**

- SmartPlant Markup must be installed on the SmartPlant Foundation server for reference file relationships to be created.
- When a user checks out or views files that have references, SmartPlant Foundation provides copies of the reference files along with the master file to the user's computer.



## Working with Reference Files

- SmartPlant Markup must be installed on the SmartPlant Foundation server for reference file relationships to be created.**
- When a user checks out or views files that have references, SmartPlant Foundation copies the reference files along with the master file to the user's computer.**
- Reference files may contain links to other reference files (Nested Reference Files).**
- The system administrator may configure SmartPlant Foundation to process these nested reference files when performing file operations.**
- The maximum number of nested reference files allowed in these operations is set in the User Preferences.**

© 2005, Intergraph Corp.  
All Rights Reserved.

---

Reference files may contain links to other reference files. The system administrator may configure SmartPlant Foundation to process these nested reference files when performing check in, check out, viewing, and other operations on the master file. The maximum number of nested reference files allowed in these operations is set per user in the User Preferences. The maximum number can also be set system wide by the administrator in *SmartPlant Foundation Options*.

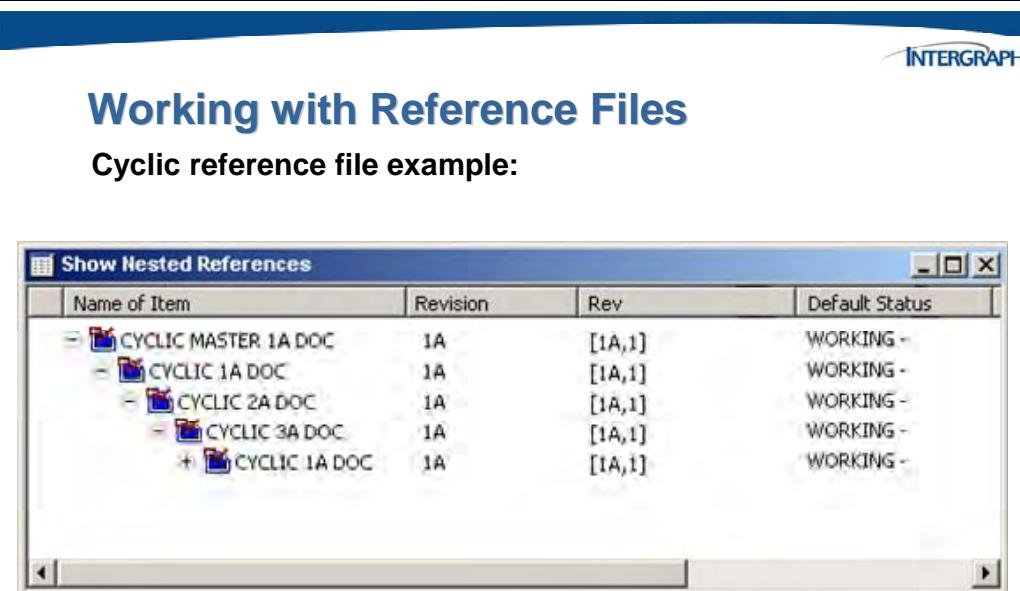
The system administrator may also configure SmartPlant Foundation to allow files to reference themselves, or to reference each other in a cyclical relationship. In other words, document B may be referenced by document A, and document A may be referenced by document B.



## Working with Reference Files

- The system administrator may also configure SmartPlant Foundation to allow files to reference themselves or to reference each other in a cyclical relationship.**  
**Example: document B may be referenced by document A, and document A may be referenced by document B.**
- A warning message will occur when you attach a file to a document and the file references another file that is not already part of SmartPlant Foundation.**

In another cyclical relationship example, the 3A document is a reference file of 2A, which in turn is a reference file for 1A. However, document 1A is also a reference file for document 3A.



© 2005, Intergraph Corp.  
All Rights Reserved.

#### Note:

- You will receive a warning message when you attach a file to a document and the file references another file that is not already part of SmartPlant Foundation. You must continue the process of attaching the file, and, once the other file has been added to SmartPlant Foundation, create the relationship to between the two files. SmartPlant Foundation automatically recognizes existing relationships between files already in the database, but not files that are not in the database.

## 6.1.1 File Type Matrix for Reference Files

Before you start creating reference files, you need to understand what file types can be associated as reference files to master files. The following table illustrates what types of reference files (listed down the left side of the table) can be associated with master files of a specific type (listed along the top of the table). For some types of files, specific versions of the software or configurations are required. That information is also provided in the table.

	<b>Microsoft Word</b>	<b>Microsoft Excel</b>	<b>Microsoft PowerPoint</b>	<b>Linking Types</b>
<b>Microsoft Word</b>	OK	OK	Master file should be created using Office XP or a later version.	All
<b>Microsoft Excel</b>	OK	OK	Master file should be created using Office XP or a later version.	All
<b>Microsoft PowerPoint</b>	OK	OK	Master file should be created using Office XP or a later version.	All
<b>NotePad</b>	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	All
<b>JPEG</b>	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	All
<b>BMP</b>	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	All
<b>PDF</b>	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	Master file should be created using Office XP or a later version. The <b>Link</b> and <b>Display as icon</b> check boxes should be activated while creating references.	All

## 6.1.2 Update Maintain Relations Attribute on Reference Files

Right-click the master design file for which you want to update the maintain relations attribute for reference files. Master design files are those that have reference files associated with them.

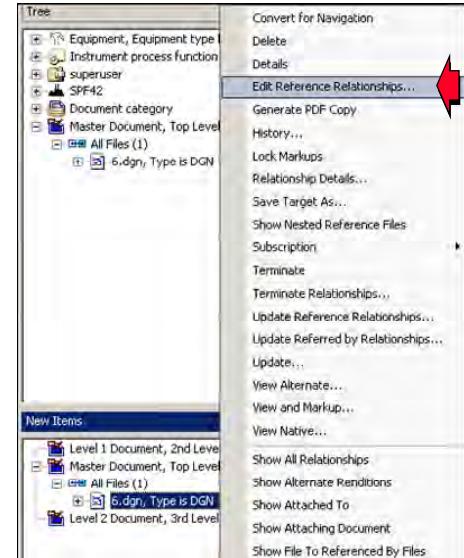
The following procedure describes how to specify the way reference file relationships should be managed:

- To display the master file, right-click the document revision with which the file is associated, and then click **Show All Files** on the shortcut menu.
- Right-click on a master file, and choose **Show Referenced Files** from the pop-up menu.
- Right-click the reference file for which you want to update the maintain relations attribute, and choose **Edit Reference Relationship** from the pop-up menu.



## Update Maintain Relations Attribute

- Right-click on the master design file for which you want to update the maintain relations attribute, and click **Edit Reference Relationships** from the pop-up menu.
- Master design files are those that have reference files associated with them.

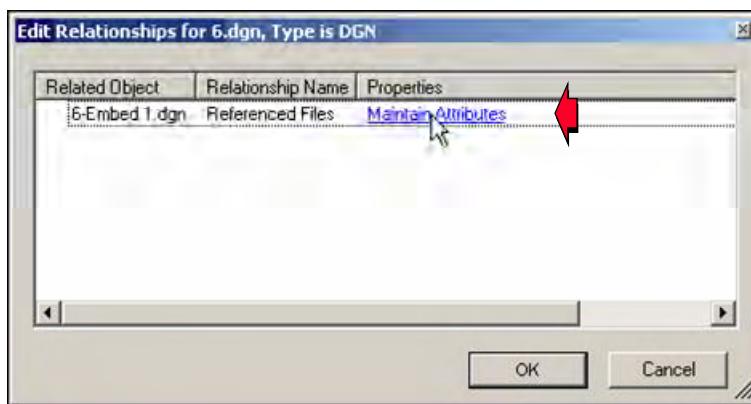


© 2008, Intergraph Corp.  
All Rights Reserved.



## Update Maintain Relations Attribute

- From the Edit Relationships dialog, click **Maintain Attributes**.

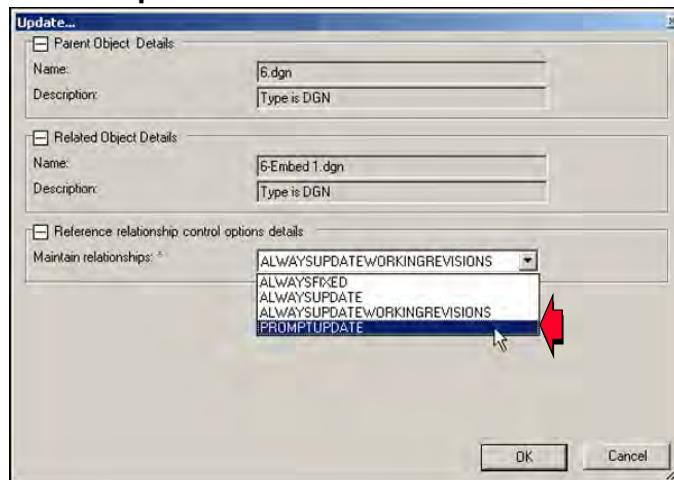


© 2005, Intergraph Corp.  
All Rights Reserved.



## Update Maintain Relations Attribute

- Select the action that you want to occur to the relationship between the revision and its reference files.



In the **Maintain Relations** list, choose how you want to manage the relationship between the revision and its reference files during document sign off if newer revisions of reference files exist in SmartPlant Foundation.



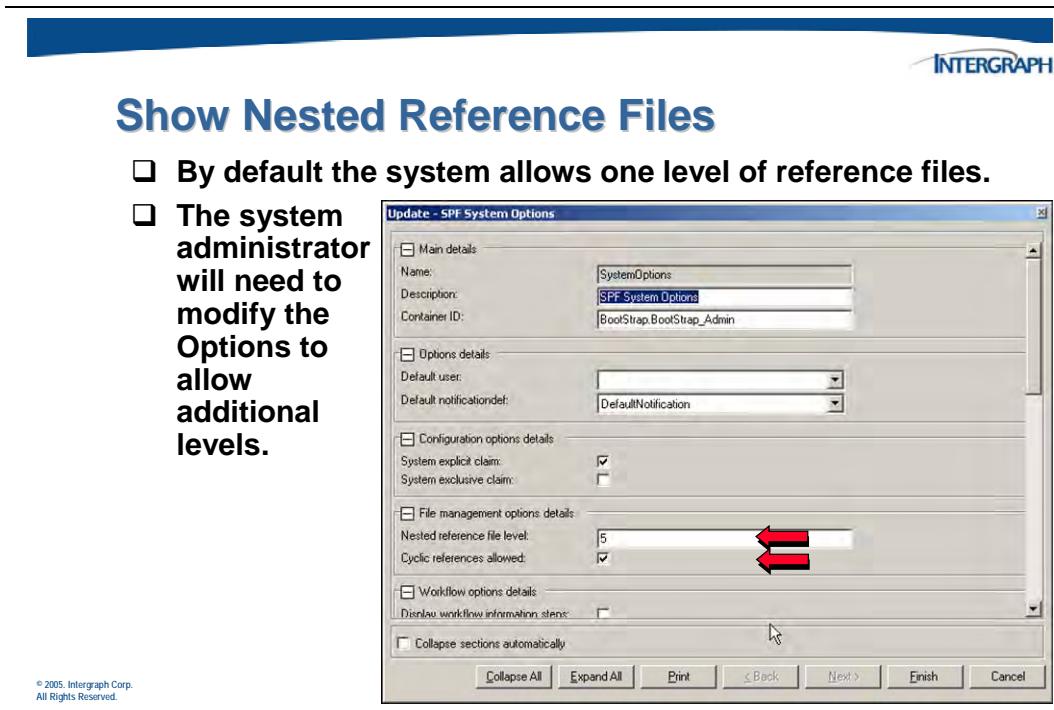
## Update Maintain Relations Attribute

- Always Fixed - Relationships between older revisions of reference files remain the same.
- Always Update - Automatically updates reference files to the latest revision when you sign off the document revision with which reference files are associated.
- Always Update Working Revisions – Automatically updates relationships to versions of the latest working revisions.
- Prompt Update - Requires user input when an updated revision of a reference file exists.

### 6.1.3 Nested Reference Files Commands

Commands exist allowing you to view a list of the nested reference files associated with an object. The commands are available when you right-click on a document or file in the tree view. Nested references occur when a document is defined as a reference file for another document that is a reference file for another.

By default the system is setup to support one level of reference – meaning you can view the Master and its reference files. If your configuration requires a deeper reference tree, the system administrator will need to modify the SmartPlant Options for the system.





## Nested Reference Files Commands

- Show Nested References** – Shows document revisions that are reference files for a selected document. This command is available when you right-click a document, and click **Reference Documents > Show Nested References**.
- Show Referenced Files** – Shows the files that are reference file for a selected file. This command is available when you right-click a file, and click **Show Referenced Files**.

© 2005, Intergraph Corp.  
All Rights Reserved.

---



## Nested Reference Files Commands

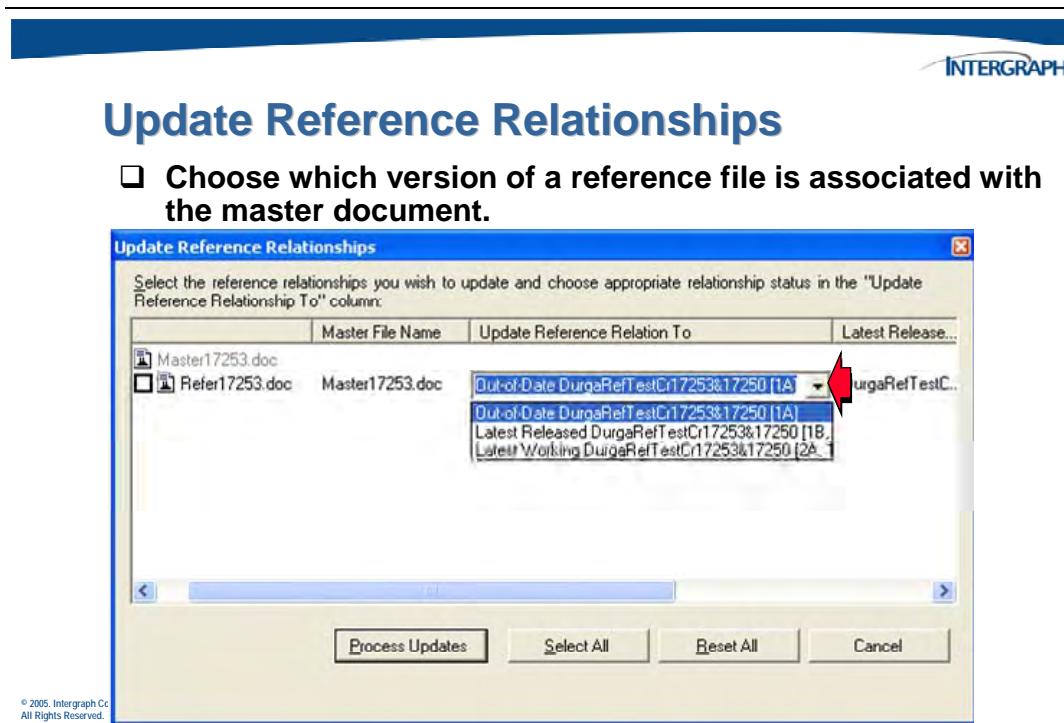
- Update Reference Relationships** – Allows you update out-of-date reference relationships on a master document. This command is available when you right-click a document, and click **Reference Documents > Update Reference Relationships**.
- Update Referred by Relationships** - Allows you update out-of-date reference relationships on a referenced document. This command is available when you right-click a document, and click **Reference Documents > Update Referred by Relationships**.

© 2005, Intergraph Corp.  
All Rights Reserved.

---

## 6.1.4 Update Reference Relationships Dialog Box

The ***Update Reference Relationships*** dialog allows you to choose what version of a reference file is associated with the master document.



The following fields are found on the *Update Reference Relationships* dialog:

- Name** - Displays the name of the master document and a list of any reference files associated with it.
- Master File Name** - Displays the name of the master document.
- Update Reference Relationship To** - Select the version of the reference file to which you want to create a relationship for the master document. You can choose from the out-of-date version, the latest released version, or the latest working version of the reference file.
- Process Updates** - Updates any relationships to reflect the selections you made on this dialog box.
- Latest Released Revision** - Displays the name of the latest revision that was released for distribution.
- Latest Working Revision** - Displays the name of the latest revision that has been created but was not yet released for distribution.
- Parent Revision Name** - Displays the name of the parent revision.

## 6.2 Activity – Working with Reference Files

Complete the **Chapter 6 – Activity 2** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.

## 6.3 Document Check in and Check out

When you create a document master and first revision, the document is automatically checked in. When a document is checked in, the vault owns the document and users cannot make changes to the document without checking it out. The owning group for the revision determines the vault where a document belongs.



### Document Check In / Check Out Overview

- Two users cannot check out and make changes to a document at the same time.**
- You can use the Undo Checkout command to relinquish your claim to the document, so that other users can check it out and modify it.**
- When checking in a document, any attached files are removed from your local directory and copied to the vault.**
- When a document is checked in, other users can make changes to it. To do so, they must check out the document.**
- You can also use the Check In command to save changes to attached files without actually relinquishing control of the document or its attached files. (Not available in current version).**

© 2008, Intergraph Corp.  
All Rights Reserved.

---

When you need to make modifications to a document in the Desktop Client, you can check out the document. Checking out the document creates a new version of the document in SmartPlant Foundation and copies the files attached to that new version of the document to a local directory that you specify for editing. Checking out a document also marks the original document as superseded. The software maintains the relationship between the copy of the document you check out and the original so that other SmartPlant Foundation users can see that you have the document checked out.



## Document Check In / Check Out Overview

- Two users cannot check out and make changes to a document at the same time.**
- You can use the Undo Checkout command to relinquish your claim to the document, so that other users can check it out and modify it.**
- When checking in a document, any attached files are removed from your local directory and copied to the vault.**
- When a document is checked in, other users can make changes to it. To do so, they must check out the document.**
- You can also use the Check In command to save changes to attached files without actually relinquishing control of the document or its attached files.**

© 2005 Inter graph Corp .  
All Right sResived.

Two users cannot check out and make changes to a document at the same time. If you decide not to modify a document that you have checked out, you can use the Undo Checkout command to relinquish your claim to the document so that other users can check it out and modify it.

When you cancel a check out, the software deletes the local version of attached files that were copied when the object was checked out, discarding any changes you might have made to the files.

After you have edited the document, you can return it to the vault by checking it in. When you check in a document, any attached files are removed from your local directory and copied to the vault. When a document is checked in, other users can make changes to it.

You can also use the Check In command to save changes to attached files into SmartPlant Foundation without actually relinquishing control of the document or its attached files.

### 6.3.1 Check Out a Document

Perform a search to locate documents that are to be checked out.

---



#### Check Out a Document

- To use the Check Out command, the following conditions must be met:
  - All of the selected documents must be checked in
  - The default status of the document must be working.
  - You must be a member of the owning group to which the document belongs.
  - The revise state must be blank.

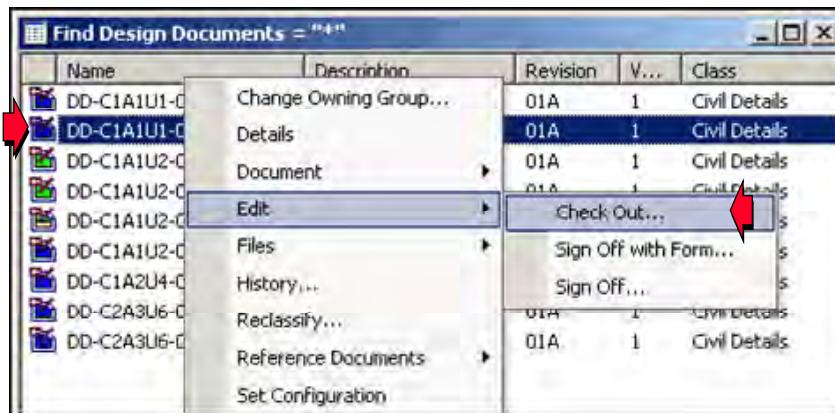
© 2008 Intergraph Corp.  
All Rights Reserved.

---



#### Check Out a Document

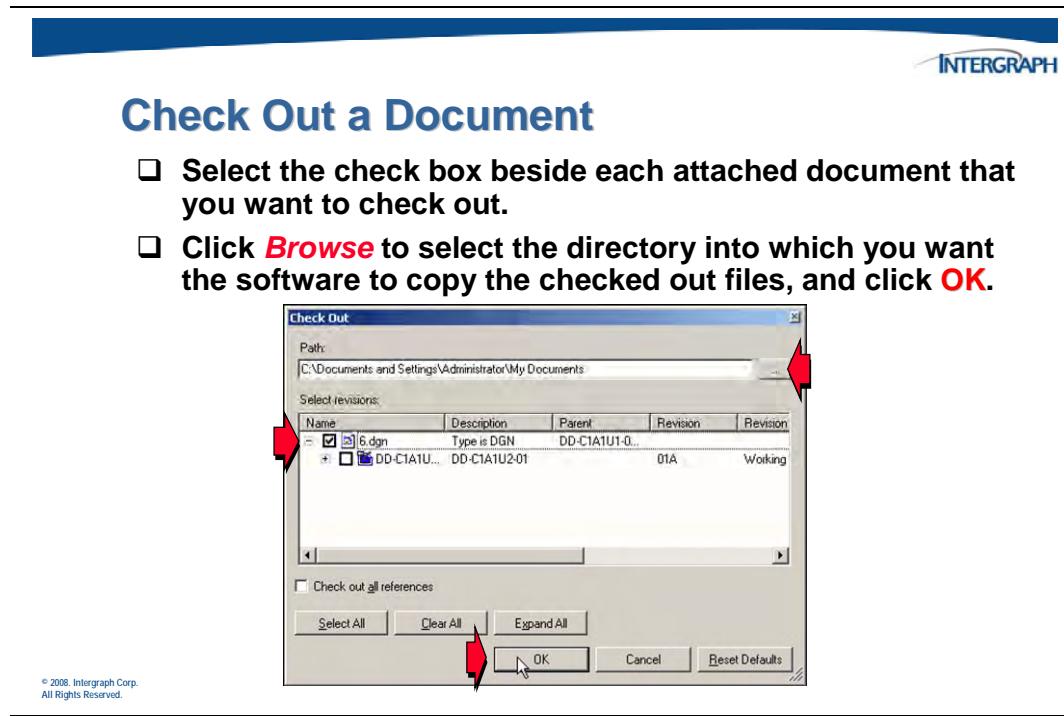
- Right-click the document revision or revisions that you want to check out, and click **Edit > Check Out** from the pop-up menu.



© 2005, Intergraph Corp.  
All Rights Reserved.

---

The *Check Out* dialog will appear.

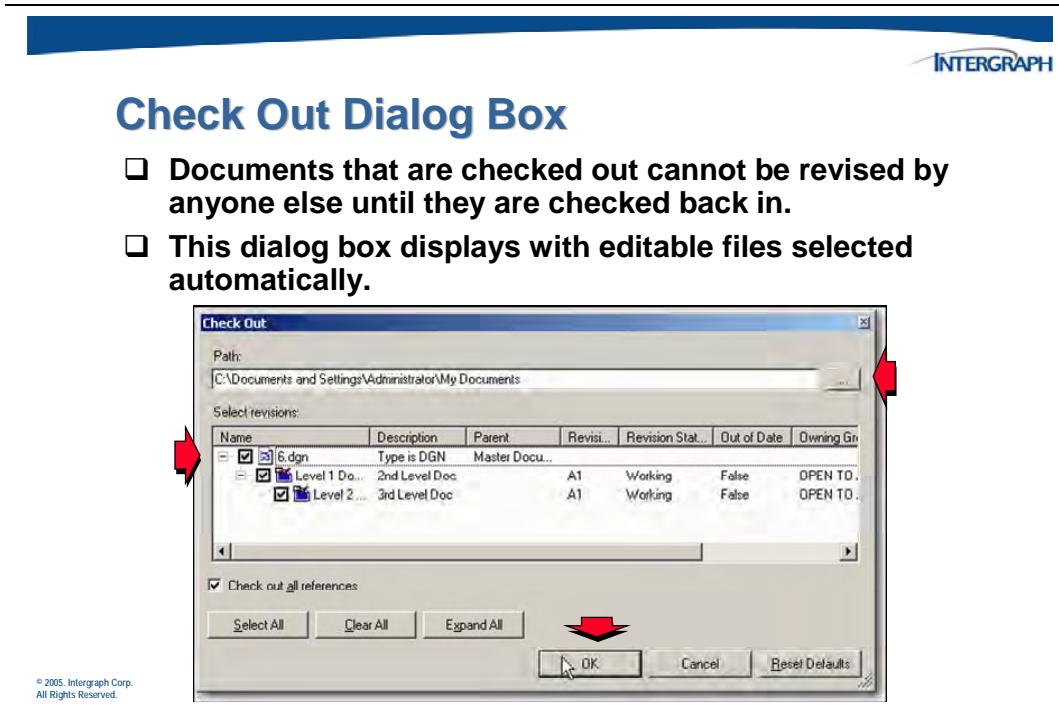


## Check Out a Document

- ❑ When you check out an object, the software creates a new version of the document revision object.
- ❑ The software gives the new document the next version number.
- ❑ The new version is copied locally to your machine, and the previous version is marked superseded.
- ❑ When you check out files that have references, the software copies the reference files along with the master file to your local computer.
- ❑ When you check out a document, any existing markups to files attached to the document are automatically copied forward with the checked out document.

## 6.3.2 Check Out Dialog

This *Check Out* dialog is displayed when the Check Out command is selected. A file for which the text is grayed out in the *Select revisions* view is not available for checkout.



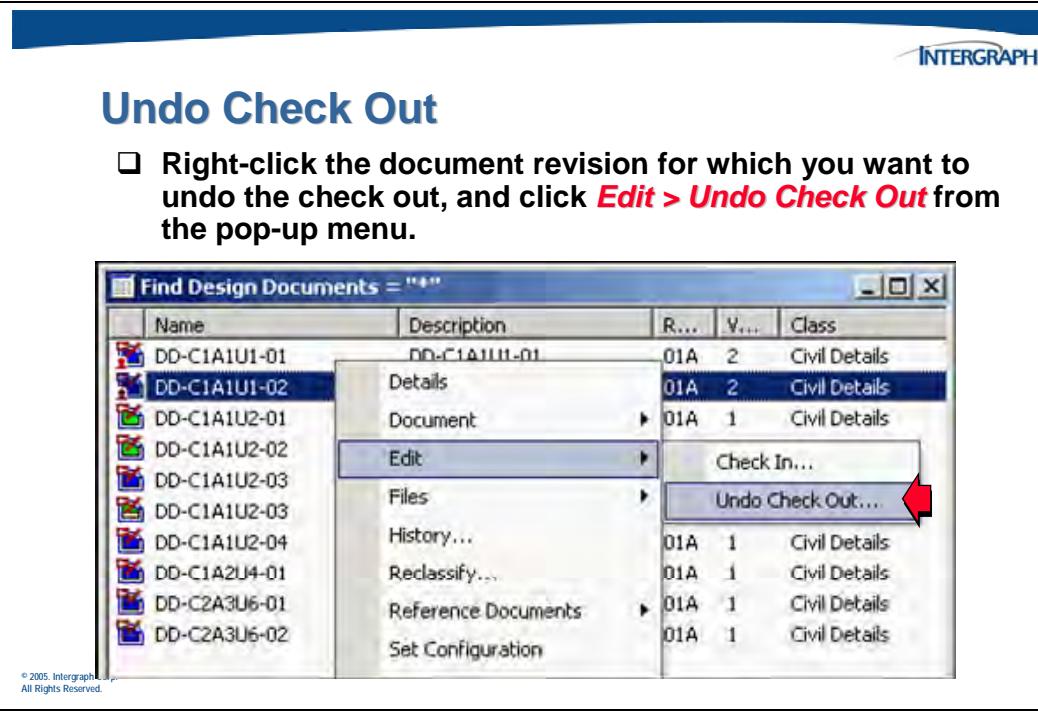
The following fields and columns are found on the *Check Out* dialog. Displayed columns can vary due to window size and customization..

- ❑ **Path** - Displays the folder in which the local copies of the files will be placed. Click the Browse button beside this field to search for a folder.
- ❑ **Name** - Displays the name of the attached file, and a check box that determines whether the file will be checked out. This check box has the following available states:
  - **Checked** - The file is selected for checkout.
  - **Unchecked** - The file is not selected for checkout.
  - **Gray** - A file nested under the file is selected for checkout. The box for the parent file may be checked or unchecked.
- ❑ **Description** - Displays the description of the attached file. This field is display-only.
- ❑ **Parent** - Displays the name of the document to which the file is attached. This field is display-only.
- ❑ **Revision** - Displays the document revision to which the document is attached. This field is display-only.

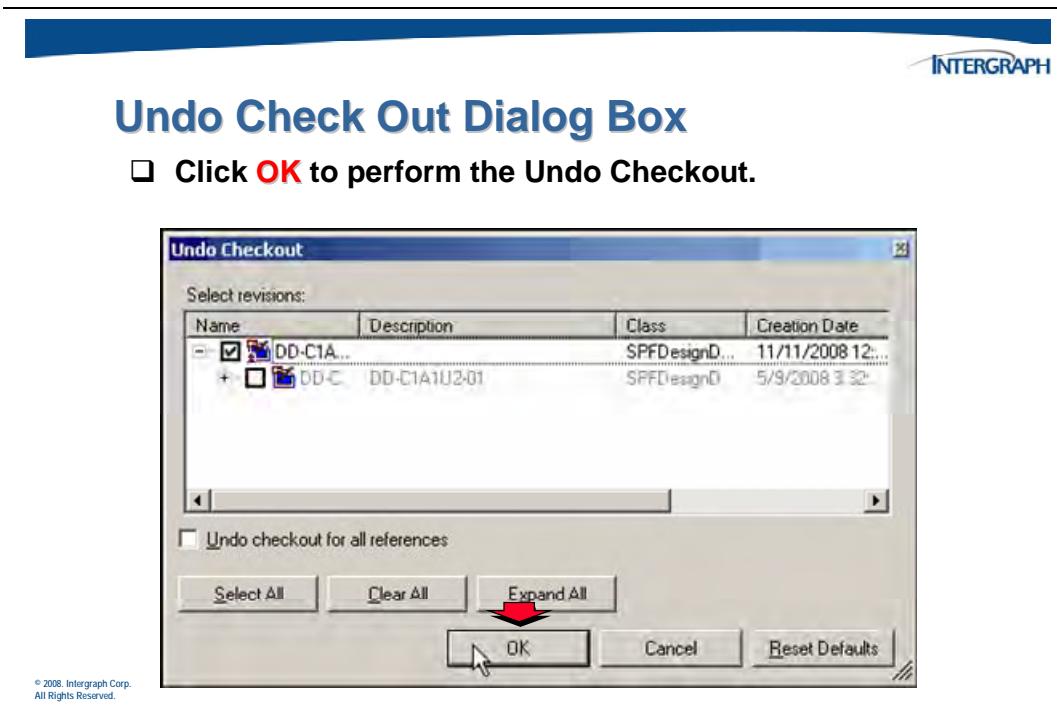
- File Name(s)** - Displays the file names of attached files participating in the reference file relationship with the master file. This field is display-only.
- Out of Date?** - Specifies whether the reference document is out-of-date. This field is display-only.
- Editable?** - Indicates whether you can edit the attached file in SmartPlant Foundation. This field is display-only.
- Viewable?** - Indicates whether you can view the attached file in SmartPlant Foundation. This field is display-only.
- Revision Status** - Displays the status of the document to which the file is attached. This field is display-only.
- Owning Group** - Displays the owning group to which the parent document belongs. This field is display-only.
- Expand All** - Expands the Select revisions tree to display all nested reference documents.
- Check out all references** - Selects all nested reference files and documents for checkout.
- Reset defaults** - Sets the Select revisions view to default selections that were displayed when the dialog box was opened. By default, all editable files are pre-selected when the dialog box is opened.

### 6.3.3 Undo Check Out

The **Undo Check Out** command allows you to cancel the check out of documents. A file whose text is grayed out in the *Select revisions* view is not available for check out cancellation.



The *Undo Check Out* dialog appears.



The following fields and columns are found on the *Undo Checkout* dialog. Displayed columns can vary due to window size and customization..

- ❑ **Name** - Displays the name of the document, and a check box that determines whether the document check out will be cancelled. This check box has the following available states:
  - **Checked** - The document check out is selected for cancellation.
  - **Unchecked** - The document check out is not selected for cancellation.
  - **Gray** - A file nested under the document or file is selected for check out cancellation. The box for the parent document or file may be checked or unchecked.
- ❑ **Revision** - Displays the document revision information. This field is display-only.
- ❑ **Description** - Displays the description of the document. This field is display-only.
- ❑ **Checked out files** - Displays the names of any checked-out files attached to the document. This field is display-only.
- ❑ **Out of Date?** - Specifies whether the document or file is out-of-date. This field is display-only.
- ❑ **Revision Status** - Displays the status of the document. This field is display-only.
- ❑ **Expand All** - Expands the Select revisions tree to display all nested reference files.

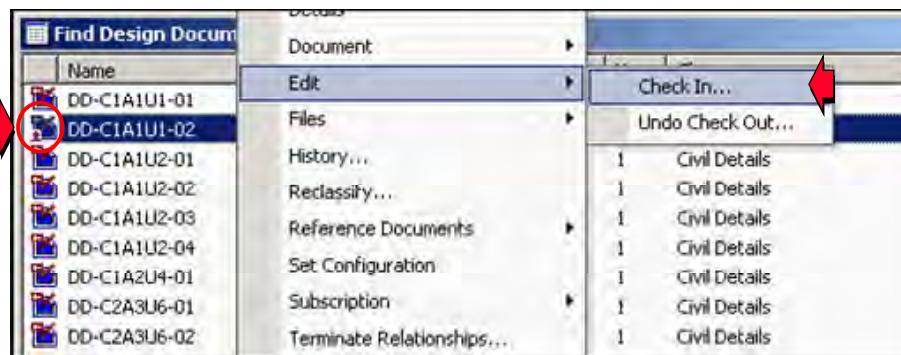
- Undo checkout for all references** - Selects all nested reference files for check out cancellation.
- Reset defaults** - Sets the Select revisions view to default selections that were displayed when the dialog box was opened. By default, all editable files are pre-selected when the dialog box is opened.

### 6.3.4 Check In a Document

The Check In command will return a working copy of a document back to the vault and must be performed by the user who checked the document out.

#### Check In a Document

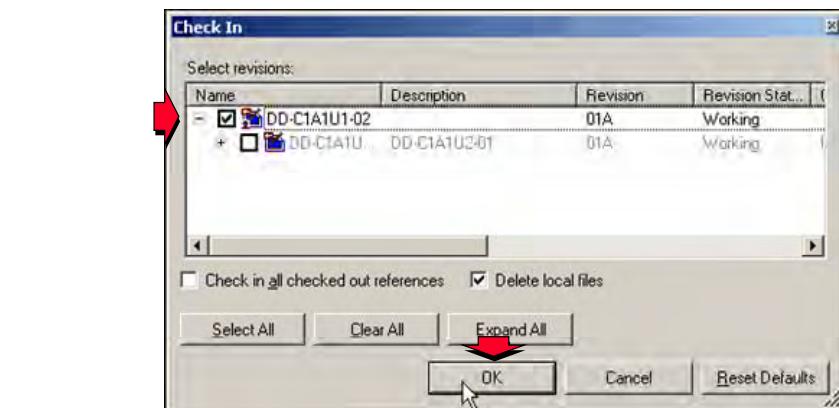
- Right-click the document revision that you want to check in, and click **Edit > Check In** on the pop-up menu.



The *Check In* dialog will appear.

## Check In a Document

- Select the documents to be checked in, and click **OK**.



© 2008, Intergraph Corp.  
All Rights Reserved.

The following fields are found on the *Check In* dialog. Displayed columns can vary due to window size and customization..

- Name** - Displays the name of the document, and a check box that determines whether the document will be checked out. This check box has the following available states:
  - **Checked** - The document is selected for checkin.
  - **Unchecked** - The document is not selected for checkin.
  - **Gray** - A file nested under the document is selected for checkin. The box for the parent document may be checked or unchecked.
- Revision** - Displays the document revision number. This field is display-only.
- Description** - Displays the description of the document. This field is display-only.
- Checked out files** - Displays the names of any checked out files attached to the document. This field is display-only.
- Out of Date?** - Specifies whether the reference document is out of date. This field is display-only.
- Revision Status** - Displays the status of the document. This field is display-only.
- Owner** - Displays the name of the user who has the document checked out. This field is display-only.

- Owning Group** - Displays the owning group to which the document belongs. This field is display-only.
- Reference file names** - Displays the file names of attached files participating in the reference file relationship with the master file. This field is display-only.
- Expand All** - Expands the Select revisions tree to display all nested reference documents.
- Check in all checked out references** - Selects all nested reference documents for check in.
- Delete all local files after checkin** - Specifies whether to delete the local copies of attached files after the files have been checked back into the vault.
- Reset defaults** - Sets the Select revisions view to default selections that were displayed when the dialog box was opened. By default, all editable files are pre-selected when the dialog box is opened.

You must select document revisions that you checked out previously. If any of the selected document revisions are not checked out, the **Check In** command does not appear on the shortcut menu.

To determine whether a file or document is checked out and who has the file checked out, right-click the file, and then click History. If CheckedOutInd is True, then the file is currently checked out.

The user who has the file checked out is listed as the owner of the file.



## Check In a Document

- If the file you check in has reference files and there are duplicate copies of a reference file, the software prompts you to select the appropriate reference file to attach.**
- The software sets the checked in indicator to TRUE and the checked out indicator to FALSE.**
- The software sets the access flag to 2 (in the Database) for the revision, which means that only members of the owning group can modify the files.**
- If you want to attach a file when you check in an object, you must first find the revision of the object you want to check in, and then attach the file.**

If the file you check in has references to files that are not in SmartPlant Foundation, the software displays an error message to let you know that the referenced files do not already exist. You must attach these references files at the same time as the master file.

Depending on how your software is configured, the software may display a message warning you that you are accessing a data source on another domain. Click **Yes** to continue the check in process.

Some additional notes for the *Check In* command:

- ❑ When you check in a document, the software moves the file to a vault determined by the owning group for the revision. After the file has been moved to the vault, access to the file is controlled by the owning document.
- ❑ When you check in a document, the software sets the checked in indicator to true and the checked out indicator to false. If the object has files, the software sets the access flag to 2 for the revision, which means that only members of the owning group can modify the files. If you want to attach a file when you check in an object, you must first find the revision of the object you want to check in, and then attach the file.
- ❑ When you check in a file that has reference files, all reference file relationships are maintained and updated for each file that is checked in. The following changes are made to reference file relationships depending on changes you make while the document is checked out:
  - If you check in a file with different reference files than those referenced previously, old reference file relationships are terminated, and new reference files are added to this file.
  - If you check in a file that did not have any reference files before, but now it has reference files, new reference file relationships are created.
  - The software terminates the relationship between the master file and the previous version of this file.
  - The software creates a new relationship between the master file and this checked in version of the file.



## Check In a Document

The following changes are made to reference file relationships depending on changes you make while the document is checked out:

- If you check in a file that no longer references the same files, old reference file relationships are terminated, and new reference files are added to this file.
- If you check in a file that did not have any reference files before, but now has reference files, new reference file relationships are created.
- When you check in a file, all Referred by relationships will be updated if the master file is not in the Checked In or Revised state.

## 6.4 Activity – Document Check in and Check out

Complete the **Chapter 6 – Activity 1** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.

## 6.5 Document Sign-off

After modifications to a document revision are complete, you can sign off the document to finalize it. Signing off a document sets the document to be the current released revision, makes it official, and supersedes any previous released revisions. To sign off a document, the document must be checked in. After a document has been signed off, additional changes can be made to the document only by revising it. When you revise a document, the software prompts you for the major and minor revision numbers that you want to associate with the revision.



### Document Sign Off

#### **Signing off on a Document**

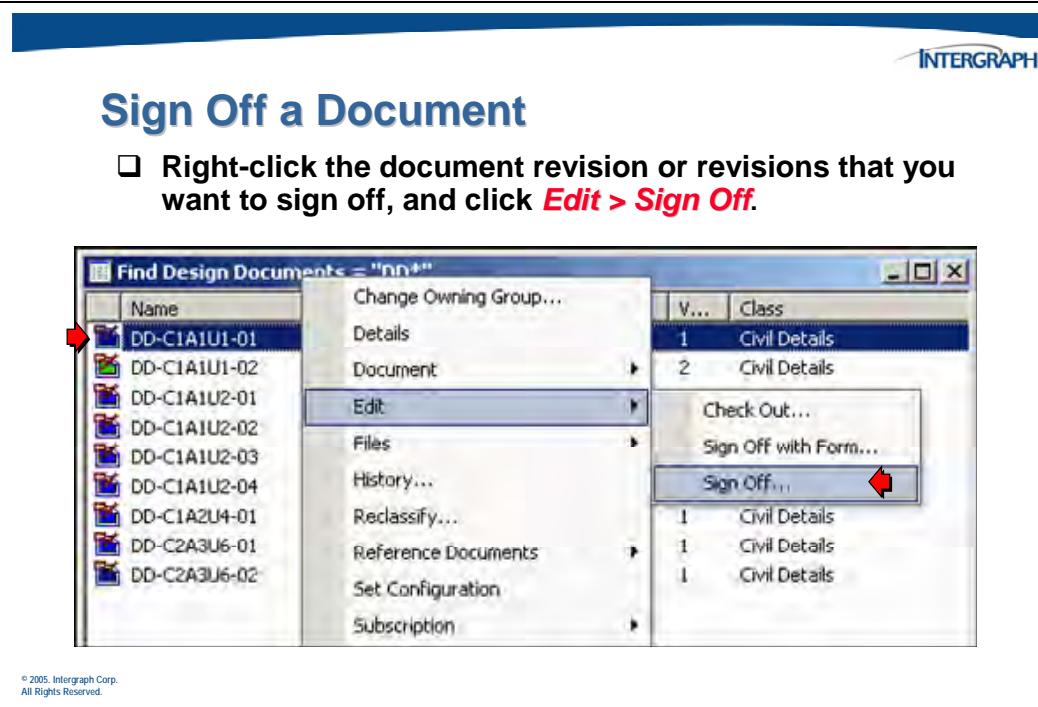
- The document must be checked in.**
- Supersedes any previous released revisions.**
- Documents are frozen and cannot be checked out.**
- Changes can be made to the document only by revising.**
- When you revise a document, the software prompts you for the major and minor revision numbers.**

You can select multiple documents for check in, check out, undo check out, sign off, and sign off with form operations.

## 6.5.1 Sign Off a Document

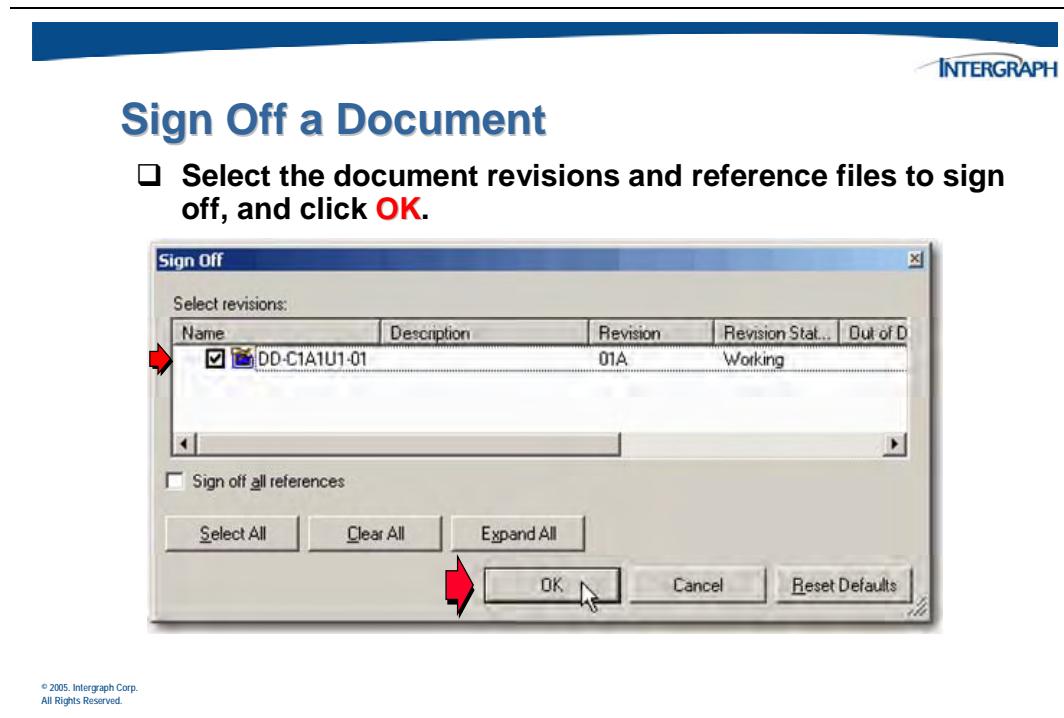
The **Sign Off** command allows you to sign off on a document, indicating that modifications to the document are complete.

---



To sign off a document, the document status must be working, and the revise state must be blank. If any of the selected documents do not meet these criteria, the *Sign Off* command does not appear on the shortcut menu.

The *Sign Off* dialog will appear.



The following fields are found on the *Sign Off* dialog:

- ❑ **Name** - Displays the name of the document, and a check box that determines whether the document will be signed off. This check box has the following available states:
  - **Checked** - The document is selected for sign off.
  - **Unchecked** - The document is not selected for sign off.
  - **Gray** - A file nested under the document is selected for sign off. The box for the parent document may be checked or unchecked.
- ❑ **Rev** - Displays the document revision number. This field is display-only.
- ❑ **Out of Date?** - Specifies whether the document is out-of-date. This field is display-only.
- ❑ **Type** - Displays the document type for the document. This field is display-only.
- ❑ **Status** - Displays the status of the document. This field is display-only.
- ❑ **Owning Group** - Displays the owning group to which the document belongs. This field is display-only.
- ❑ **Workflow** - Displays the workflow to which the document is attached. This field is display-only.
- ❑ **Creation Date** - Displays the date and time that the document was created. This field is display-only.

- Expand All** - Expands the Select revisions tree to display all nested reference files.
- Sign off all references** - Selects all nested reference files for sign off.
- Reset defaults** - Sets the Select revisions view to default selections that were displayed when the dialog box was opened. By default, all editable files are pre-selected when the dialog box is opened.

The maintain relations action can be set on the relationship between each reference file and the master file that references it. These options control what happens during sign off if newer revisions of those reference files are available.



## Sign Off a Document

**The options for the maintain relations action include:**

- Prompt Update** - Requires user input when an updated revision of a reference file exists.
- Always Update** - Automatically updates reference files to the latest revision in SmartPlant Foundation when you sign off the document revision with which reference files are associated.
- Always Fixed** - Relationships between older revisions of reference files remain the same.
- Always Update Working Revisions** – Automatically updates relationships to versions of the latest working revisions.

© 2008, Intergraph Corp.  
All Rights Reserved.

If reference files that have a status of superseded or working are attached to a revision, the software either stops the sign off process, or prompts you to continue with the sign off or cancel, depending on your configuration. If working references are allowed, click **Yes** to sign off the documents. If working references are not allowed, click **OK** to exit the signoff process.

If updated revisions of reference files associated with this document exist, but are not associated with this document, and those reference files have their maintain relations action set to *Prompt Update*, select the files that you want to update to the latest reference file revision, and then click **OK**.



## Sign Off a Document

**Additional considerations before performing a document sign off:**

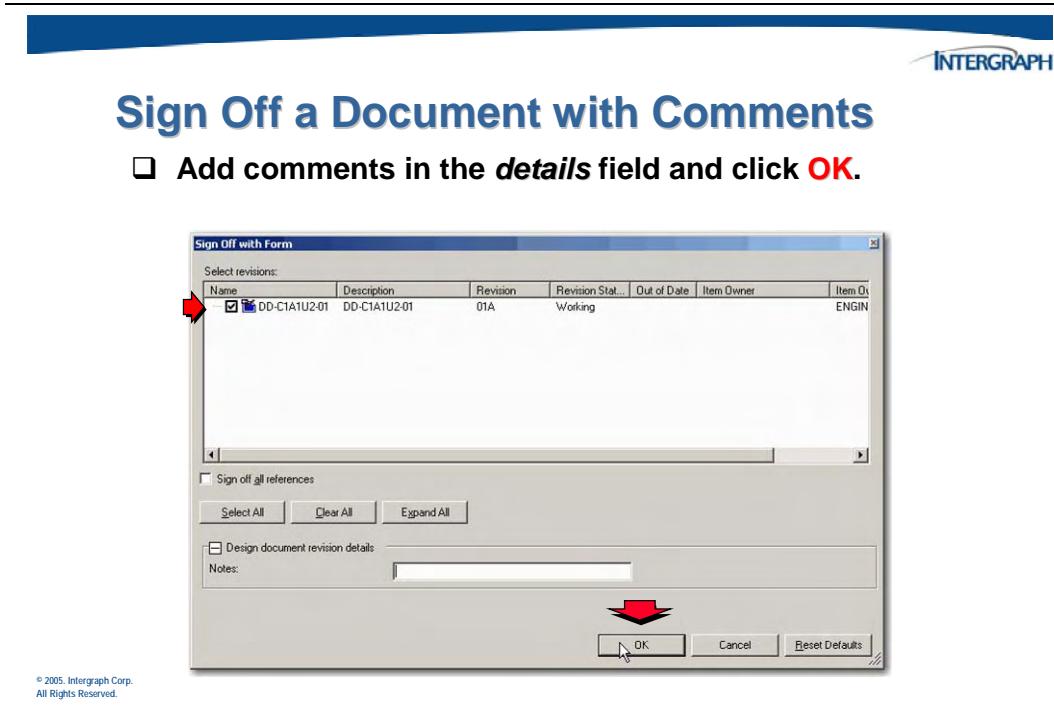
- Before you sign off a document, you must check in the document.**
- When you sign off a document, the software sets the status for the revision to current, the revise state to blank, and the version to 2.**
- Signing off a document sets the revise state for any previous revisions to superseded.**
- Signing off a document changes the status of the document master to issued.**

## 6.5.2 Sign Off a Document with Comments

If you want to provide comments when you approve the document revisions, use the **Sign Off with Form** command instead. To sign off a document, the status must be working, and the revise state must be blank. If any of the selected documents do not meet these criteria, the **Sign Off with Form** command does not appear on the pop-up menu.

To use this command from the Desktop Client, right-click the document revision or revisions that you want to sign off. On the shortcut menu, select **Edit > Sign Off with Form**.

The **Sign Off with Form** dialog will appear.



Select the document revisions and reference files to sign off.

If reference files that have a status of superseded or working are attached to a revision, the software either stops the sign off process, or prompts you to continue with the sign off or cancel, depending on your configuration. If working references are allowed, click **Yes** to sign off the documents. If working references are not allowed, click **OK** to exit the signoff process.

If updated revisions of reference files associated with this document exist, but are not associated with this document, and those reference files have their maintain relations action set to *Prompt Update*, select the files that you want to update to the latest reference file revision, and then click **OK**.

## 6.6 Revisions and Versions

A revision is an officially recognized change to a document. Revisions can have major and minor revision numbers associated with them. A version is an intermediate update to an existing document that is tracked by the software. Each revision of a document can have multiple versions.



### Revisions and Versions (Revise)

- A revision is an officially recognized change to a document.**
- Revisions can have major and minor revision numbers associated with them.**
- A revision of a document can have multiple versions.**
- Under the master document you can see the list of revisions, but versions do not appear explicitly.**
- Access is allowed to the latest version only.**
- You can query for all document revisions if needed.**
- When you create a document, the master document and the first document revision are created.**
- The Revise command creates a new revision.**

© 2005. Intergraph Corp.  
All Rights Reserved.

---

In the Desktop Client, you see the list of revisions under the master document, but the versions do not display explicitly. You only have access to the latest version. Previous versions are superseded when you check in, sign off, or publish a new one. If you need to see a previous version of a document, query for document revisions, and set the revise state to superseded. If you do not define a revise state, the query returns only the latest revision of each document. If you want to see superseded revisions, right-click the document master, and then click **Show All Revisions** on the shortcut menu.



## Revisions and Versions (Revise)

- When you check out a revision to modify it and then check it back in, a new version is created.
- New revisions and versions are also created when documents are published (SmartPlant environment).
- Changes in the document status of a related revision change the status of the master document.

© 2005, Intergraph Corp.  
All Rights Reserved.

---

For example, a master document **A** might have the following revisions and versions in the Desktop Client, where **A** and **B** are revision numbers, and **1** and **3** are version numbers:

Document A

Revision 1 [A, 1]

Revision 2 [B, 3]

When you use the **Show Latest Revision** command from the document master, the software displays the latest current and working revision of that document.

When you create a document in the Desktop Client, either manually or through publishing a document with SmartPlant, the master document and the first document revision are created in the SPF database.

Using the **Revise** command on a document creates a new revision. When you check out a revision to modify it and then check it back in, a new version is created. The revision and version are properties on a document revision in SmartPlant Foundation.

New revisions and versions are also created when documents are published to SmartPlant. Subsequent revisions are related to the master document and stored as revisions. Changes in the document status of a related revision change the status of the master document.

## 6.6.1 Revise a Document

The **Revise** command allows you to create a revision of the selected document.

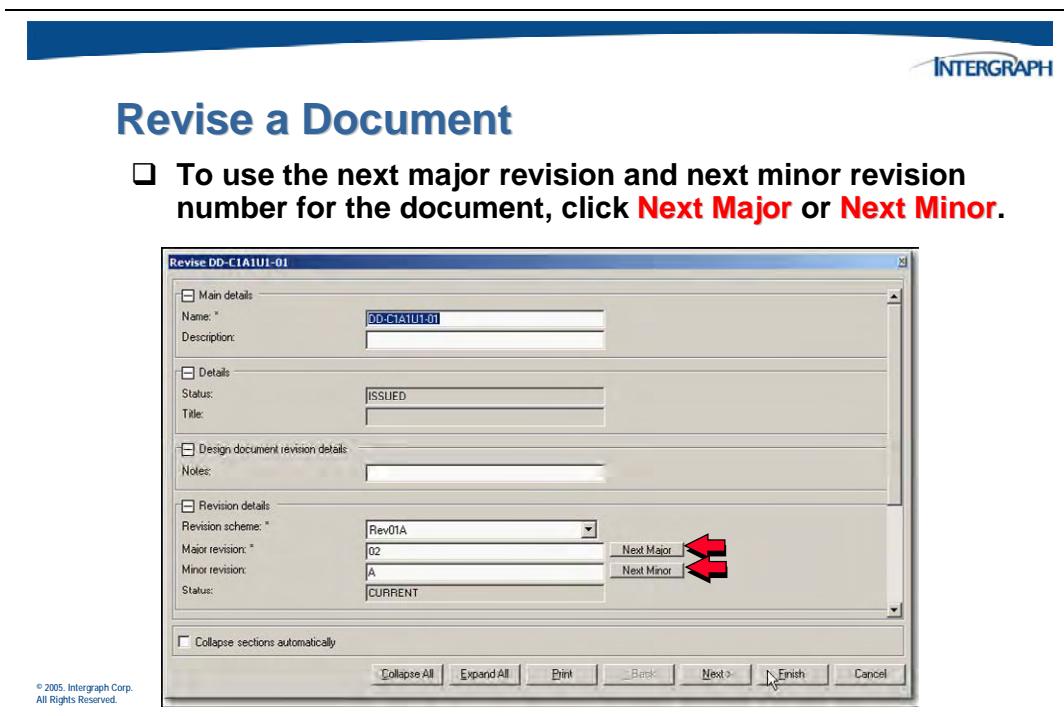


### Revise a Document

- To revise a document, the status must be current.
- The major and minor revision numbers can be input on the *Revise* dialog.
- If you want to copy markups to files attached to the document, select the **Copy markups** check box.

Right-click the revision of the document that you want to revise and click **Edit > Revise**.

To revise a document, the status must be current, which means that the document has already been signed off. If you want to copy markups to files attached to the document, select the **Copy markups** check box.



To create a new revision, type the major and minor revision numbers in the *Major* and *Minor* boxes. The next major and minor revision numbers appear in these boxes by default.

To use the next major revision number for the document, click **Next Major**. The software displays the next major revision number in the *Major* revision box. The revision number used for the latest current document revision, not the superseded revision being revised, determines the next major revision number.

To use the next minor revision number for the current major revision, click **Next Minor**. The software displays the current major revision number with the next minor revision number in the *Major* revision and *Minor* revision boxes. The revision number used for the latest current document revision, not the superseded revision being revised, determines the next minor revision number.

To attach a file to the new revision, click **Next**, use the **Add File** button, and after the file has been selected click **Finish**. When you revise a document, all reference file relationships are copied for each file that is attached to the revised document.



## Revise a Document

- When revising a document, all reference file relationships are copied for each file that is attached to the revised document.
- Revising a signed off document creates a new working revision (with first version) that can be edited.
- When you revise a signed off document, the status of the document master changes to **ISSUED\_WKG**.
- A project/as-built configuration supports only one working revision.
- If a revision is created in a project, the as-built revision is assigned a revise state of **CURRENT, SUPERSEDED** to show that it is under change.

## 6.6.2 Revision Object Properties

Revision objects have the following properties:

- OBID** - A unique identifier consisting of 24 uppercase characters. The software uses this identifier when you relate any object to the revision.
- Name** - The specific revision name. By default the software copies this from the master document.
- Description** - An optional description of the revision.
- Class** - The business object name. For example, DocRevision.
- OwningGroup** - The group to which a revision is assigned. You can assign a revision only to a group of which you are a member.
  - An OwningGroup is a UserGroup that has the Owning Group Indicator set to True.
  - The Vault to which any associated files are sent is directly associated with the group to which the revision is assigned. The UserGroup is associated with a Vault by the system administrator.
  - Files do not have an OwningGroup of their own. Any associated files use the OwningGroup from the Revision.
- Owner** - When a working copy is checked out, the software sets this value to the current logged in user. If the access control flag is set to 1 (which indicates that the document is checked out) then the software controls access to the document using this field.
- AccessFlag** - Indicates how the document should be accessed by methods that use access control. The values are:
  - 1 - Owner Access where the owner is the current logged in user.
  - 2 - OwningGroup access where the current logged in user is a member of OwningGroup.
  - 9 - No access granted to any method that uses access control.
- CreationSesID** - When you create a revision, the software sets this field to a value that is stored in the SesID table.
- CreationDate** - The date the Revision was created.
- TerminationSesID** - When you terminate a revision, the software sets this field to a value that is stored in the SesID table.
- TerminationDate** - The date the revision was terminated or superseded.

- ProjectName** - A field you control. If you set it, you have additional access control over the object if the access control flag is set to 2 (for example, when the object is working and checked in, or is current and latest).
- LastUpdated** - The date when the revision was last updated.
- UniqueKey** - A unique key that can be used by the software to identify the object. This key is set in System Administration against the business object. It will normally contain an Abbreviation, Name, revision, and version. For example, DOCR,C056-A-001,01A,1.
- LCState** - A field that you configure to indicate other information about the Revision, such as Issued For Construction. You can filter and search on this field.
- ClsRevOBID** - The OBID of the primary classification of the revision.
- IssueState** - Indicates whether the document Revision is working, current (or issued), or superseded. This field is controlled by the software.
- IssueDate** - The date when the revision state changed from working to current. This field is controlled by the software.
- ReviseState** - Indicates whether the document revision is currently under revision. This field is controlled by the software. The possible revision states for a working document are:
  - Blank - this is the latest version.
  - SUPERSEDED - there is another working version which is later than this one.
  - TERMINATED - there is another working version which was signed off in preference to this one.

The possible revision states for a current document are:

- Blank - this is the latest version.
  - SUPERSEDED - there is also a working version.
  - TERMINATED - the current version has been terminated making the document void.
- CheckedOutInd** - Indicates whether or not the object is checked out. This field is controlled by the software.
  - RevGrpMasterOBID** - Contains the OBID of the master document. This field is controlled by the software.
  - RevisionScheme** - The name of the revision scheme of which the object is a part. Any revision of the document must conform to the revision scheme of which it is a part.
  - IntRevision** - An integer value controlled by the software that stores a sequential number that gets incremented whenever a document is revised or checked out.

- ExtRevision** - The revision number that displays on the interface. This number can consist of a major part and a minor part that are held in the corresponding fields.
- MajorRevision** - The major part of the ExtRevision. For example, Revision 01A can be split with 01 as the major part and A as the minor part. You can sort on this field.
- MinorRevision** - The minor part of the ExtRevision. For example, Revision 01A can be split with 01 as the major part and A as the minor part. You can sort on this field.
- Version** - An integer value controlled by the software. The version is set back to 1 when you revise an object. The software increments the version when you check out the object.

## 6.6.3 Revision States

The following describes the statuses for a revision:



### Revision States

- Working Document:**
  - Blank - Indicates this is the latest version of the document.
  - SUPERSEDED - Indicates there is another working version that is newer than this document.
  - TERMINATED - Indicates that another working version has been signed off in preference to this one.
- Current Document:**
  - Blank - Indicates this is the latest version of the document.
  - SUPERSEDED - Indicates there is also a working version of this document.
  - TERMINATED - Indicates that the terminate command has been issued on the current version making the document void.

## Document Status Icons

The following table displays the icons for the various document lifecycle states.

Icon	Action State	Object	RevState	Under Change in Same Config	Checked out	Superseded	Icon Name
		DocClass					DocClass
		Rev A,1	WORKING		FALSE	FALSE	SPFDocument Version_W
	Checked out	Rev A,2	WORKING		TRUE	FALSE	SPFDocument Version_WC
	Superseded by check out	Rev A,1	WORKING		FALSE	TRUE	SPFDocument Version_WS
	Checked in	Rev A,2	WORKING		FALSE	FALSE	SPFDocument Version_W
	Superseded by check in	Rev A,1	WORKING		FALSE	TRUE	SPFDocument Version_WS
	Signed Off (rev A)	Rev A					SPFDocument Version_C
	Revised	Rev A	CURRENT	TRUE			SPFDocument Version_CS
		Rev B		FALSE			SPFDocument Version_W
	Signed Off (rev B)	Rev A	SUPERSEDED	TRUE			SPFDocument Version_SS
		Rev B	CURRENT	FALSE			SPFDocument Version_C

## 6.6.4 Revision State Rules for Documents in Project/As-Built Configurations

Project/as-built configurations support only one working document revision. If this working revision is created in a project, the as-built revision state is set to CURRENT, SUPERSEDED to show that the as-built revision is subject to change. Thus, the as-built document cannot be revised once it is revised into a project.

If a revision is signed off in a project, the as-built revision state is not updated to SUPERSEDED, SUPERSEDED.

When the CURRENT revision is merged to the as-built level, the previous as-built CURRENT revision is updated to SUPERSEDED, SUPERSEDED. If the latest revision is a WORKING revision, it is merged to the as-built level, and the previous as-built CURRENT revision is updated to CURRENT, SUPERSEDED. In both cases, the intermediate revisions are discarded, and only the latest revision, either CURRENT or WORKING, is merged.

If a project is discarded, the as-built revision state is reset from SUPERSEDED to blank.

This will be discussed in greater detail in the Concurrent Engineering chapter.



## 6.7 Activity - Revising and Committing Objects

Complete the **Chapter 6 – Activity 3** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.



# 7

CHAPTER

---

## Concurrent Engineering



## 7. Concurrent Engineering Overview

The concurrent engineering functionality delivered with SmartPlant Foundation allows you to create sub-configurations, or projects, beneath a plant. Within these projects, you can create new objects, modify existing ones, and even delete objects without affecting the plant, or as-built data. Once the changes have been approved, they can be merged into the plant, either one at a time or as an entire project.

---



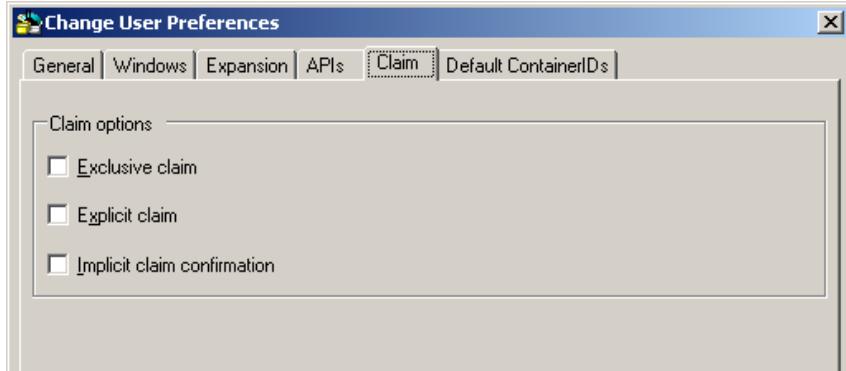
### Concurrent Engineering

- Concurrent Engineering allows you to create, view, modify, and delete changes within a particular plant configuration, without affecting the as-built data.**
- These transactions may take days, weeks, or months.**
- The user claims data from the plant into a project to make changes, such as updating items, deleting items, and creating new items in the project.**
- When the changes are complete, they are then merged back into the plant.**
- This functionality is not supported in conjunction with Integration. Data can be published into the plant level only. Projects and sub-configurations can be used only with non-published items.**

Users can choose how they want to control the claiming of objects into plants.

## Claims

- From the **Claim** tab of the **Change User Preferences** dialog box, users can specify how they want to the software to manage claims.



© 2008, Intergraph Corp.  
All Rights Reserved.

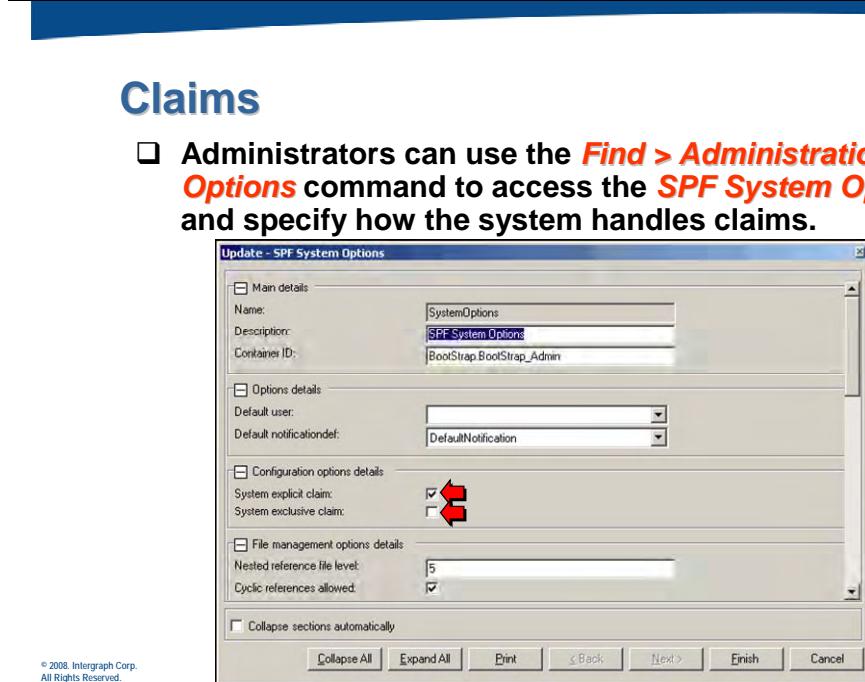
Choose the options you want by checking the applicable check boxes.

## Claims

- From the **Claim** tab of the **Change User Preferences** dialog box, users can specify how they want to the software to manage claims.
- **Exclusive claim** – Indicates that items system-wide may be claimed only once.
- **Explicit claim** – Indicates that system-wide, to work on an object, the user must right-clicked on it and use the Claim command.
- **Implicit claim confirmation** – Indicates that the software should display a confirmation dialog box to the user before claiming the object for that user. If neither the **Exclusive claim** nor **Explicit claim** options are selected, then this option is selected by default.

© 2008, Intergraph Corp.  
All Rights Reserved.

Administrators can choose how they want to control the claiming of objects into plants. These settings override the user settings.



The screenshot shows the 'Update - SPF System Options' dialog box. In the 'Claims' section, there are two checkboxes: 'System explicit claim:' and 'System exclusive claim:'. Both checkboxes are checked, and red arrows point to them from the left margin. The dialog box includes sections for 'Main details', 'Options details', 'Configuration options details', and 'File management options details'. At the bottom, there are buttons for 'Collapse All', 'Expand All', 'Print', 'Back', 'Next >', 'Finish', and 'Cancel'.

Choose the options you want by checking the applicable check boxes.

With exclusive claiming, only one project may claim an object at one time. With this check box selected, any object you claim is restricted to ONLY the one project you are in and it cannot be claimed into other projects until it is unclaimed, merged, or exclusivity is deactivated for the object.



## Exclusive and Non-Exclusive Claiming

- Claiming can take place in exclusive or non-exclusive modes.**
- Exclusive claiming makes objects available to only one project or sub-configuration at a time, ensuring that objects cannot be modified in multiple configuration at once.**
- When working in the non-exclusive mode, users can make changes to the same object in multiple configurations. When changes are merged into the as-built from a project, any other claims are using out-of-date information. Those conflicts must be resolved prior to merging other claims.**

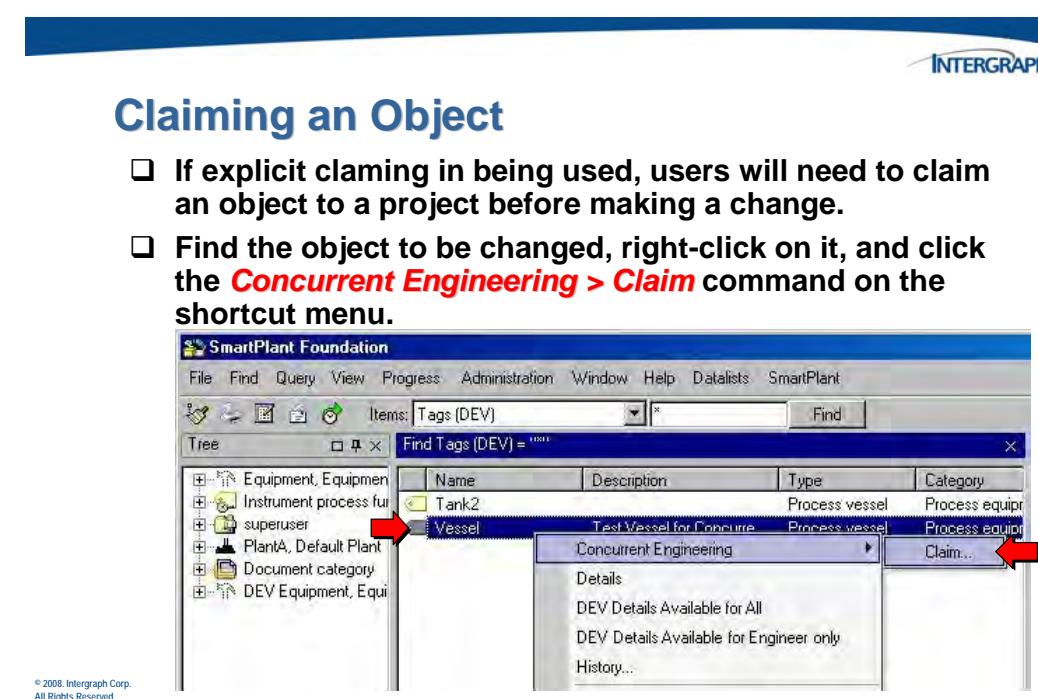


## Implicit and Explicit Claiming

- Claiming can also be done implicitly or explicitly.**
- When running implicit claiming, items from the plant are automatically claimed into an active project configuration when a user working in that project runs commands that update the objects.**
- With explicit claiming, all users are forced to claim an object into a project configuration before they can update it.**

## 7.1 Claiming a Tag into a Project

In order to claim a tag into a project, you must first be sure that your create/update scope is set to the project. Next, find the object that currently resides at the plant level, right-click on it, and use the **Concurrent Engineering > Claim** option on the shortcut menu.

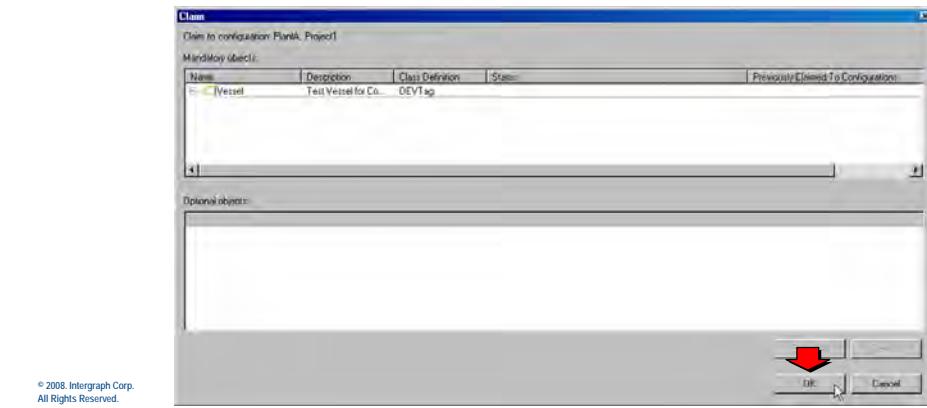


If you have activated the Implicit claim confirmation option on the *Claims* tab of the *Change User Preferences* dialog box, you will receive confirmation screen where you should approve the claim.



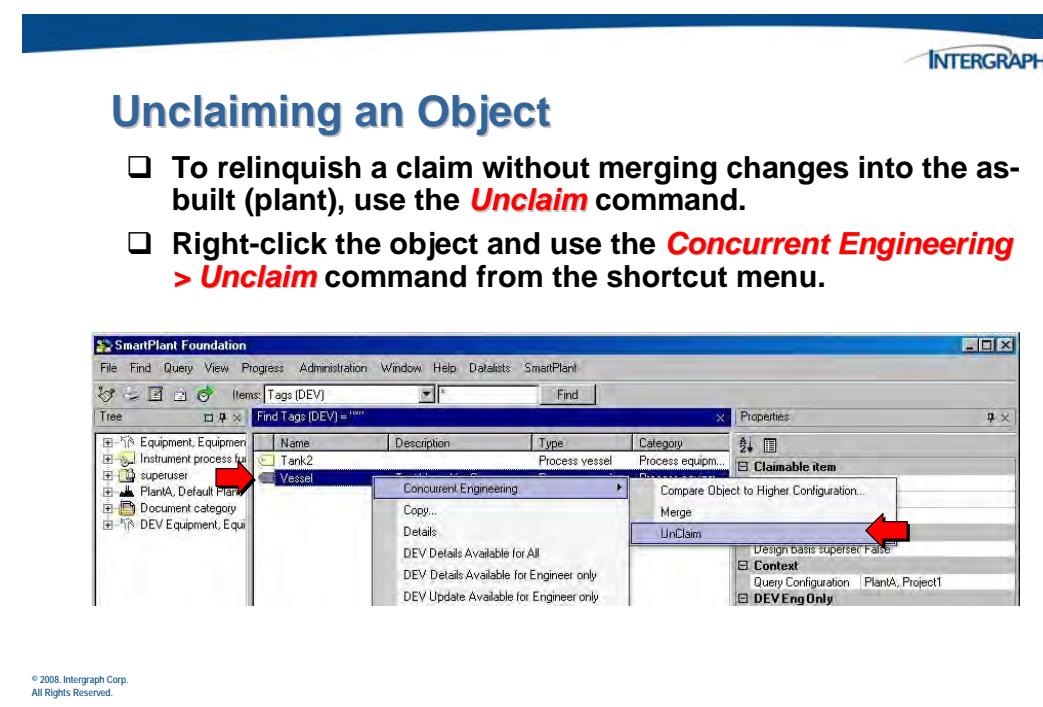
## Claiming an Object

- On the *Claim* dialog box, verify the object or objects you are claiming.**
- Note: If you have not set your active scope to the project, you will not be able to claim the object to it.**

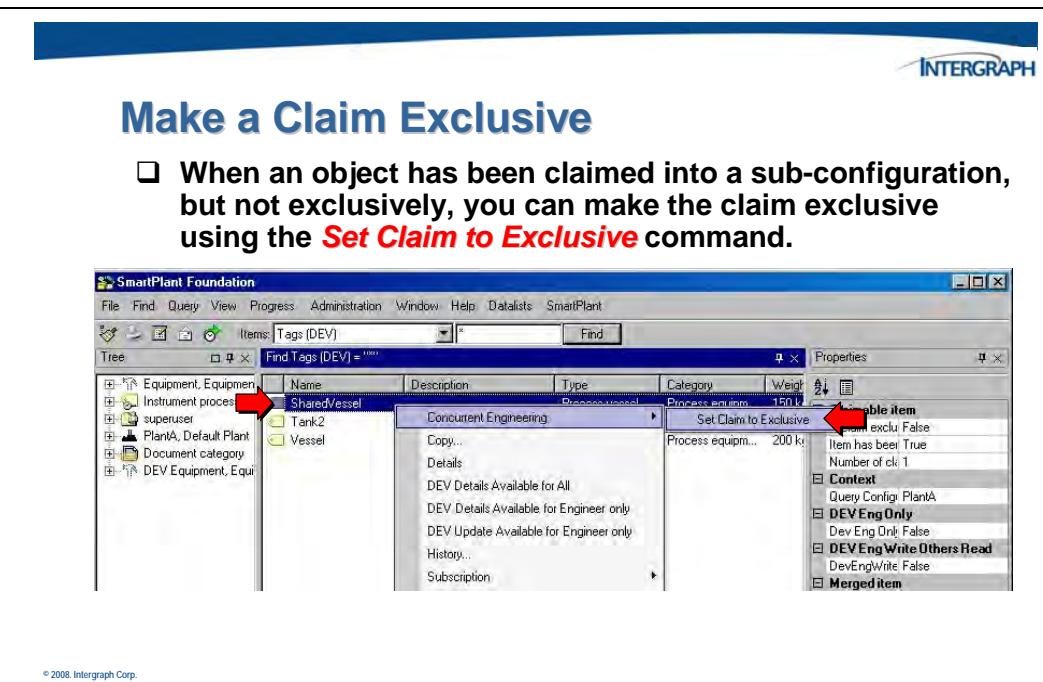


© 2008, Intergraph Corp.  
All Rights Reserved.

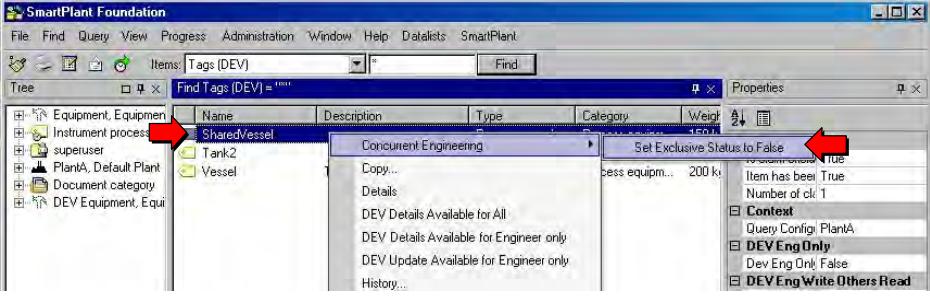
To undo a claim, right-click on the claimed object and use the **Concurrent Engineering > Unclaim** command.



If your user options did not include the **Exclusive claim** option when you claimed an object, but you want to modify a non-exclusive claim to make it exclusive, you can right-click on it and use the **Set Claim to Exclusive**.



If an object was claimed exclusively, you can change that claim to a non-exclusive claim using the **Set Exclusive Status to False** command.



The image shows a screenshot of the SmartPlant Foundation software interface. The main window title is "SmartPlant Foundation". The menu bar includes File, Find, Query, View, Progress, Administration, Window, Help, Details, and SmartPlant. A toolbar with various icons is visible above the main area. The left pane is a tree view showing categories like Equipment, Instrument process, superuser, PlantA, Default Plant, Document category, and DEV Equipment. The right pane contains a table with columns: Name, Description, Type, Category, and Weight. A row for "SharedVessel" is selected, showing details: Name is "SharedVessel", Description is "Concurrent Engineering", Type is "Vessel", Category is "Access equipment", and Weight is 400.0. A context menu is open over this row, with the option "Set Exclusive Status to False" highlighted. Two red arrows point to the "SharedVessel" row in the table and the "Set Exclusive Status to False" command in the context menu. At the bottom left of the interface, there is a copyright notice: "© 2008 Intergraph Corp. All Rights Reserved." The top right corner features the INTERGRAPH logo.

## 7.2 Reporting and Conflict Resolution

A number of ad hoc reports and other features are provided to help you manage the changes that are made in the project.

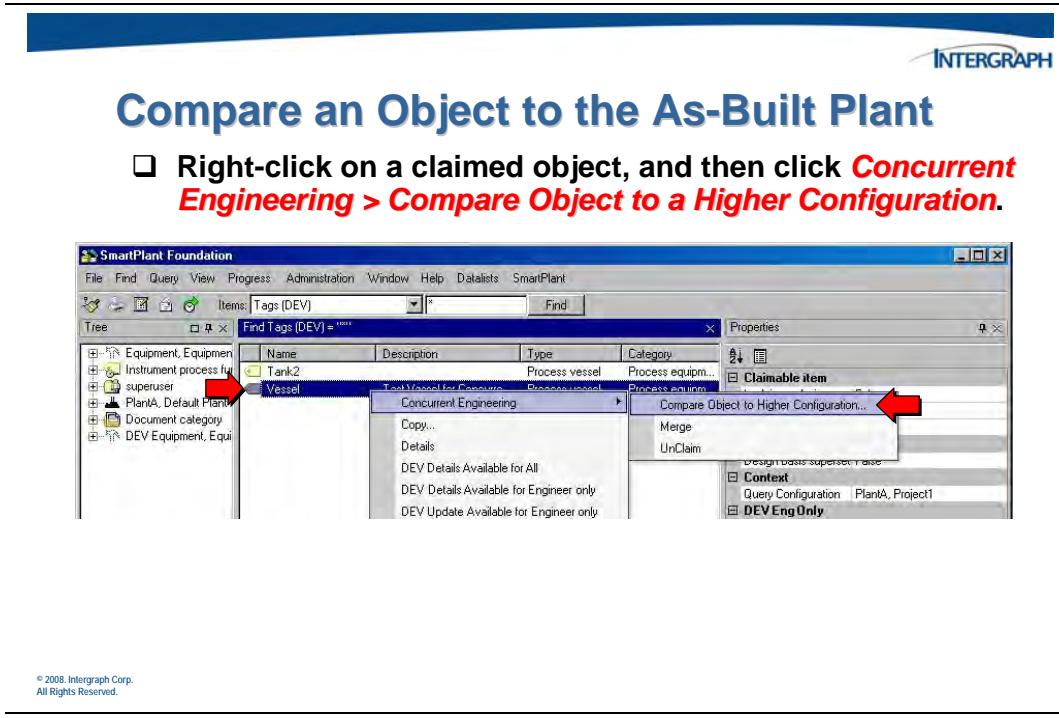
---



### Reports and Conflict Resolution

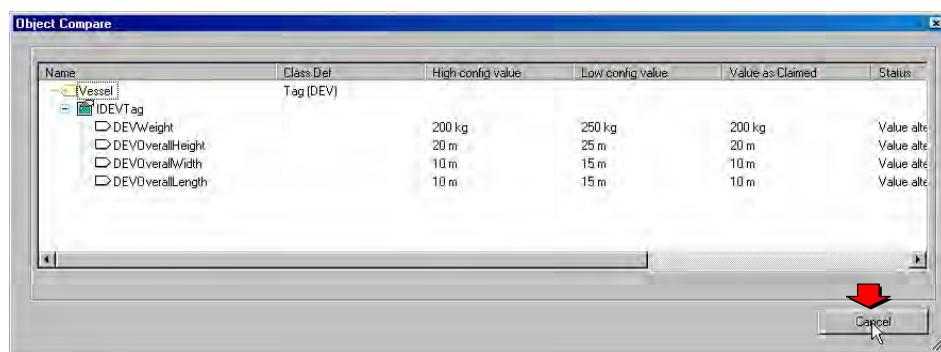
- In cases where non-exclusive claiming is support, the system has functionality to manage changes from multiple configurations.
- When multiple configurations have claimed the same object, the first configuration to perform a merge overrides the information in the as-built plant (the design basis).
- Once the design basis has been updated from one configuration, conflicts must be resolved before other configurations' changes can be merged.

The Compare feature allows you to compare the values of the object at the project level and the object at the plant level (the design basis).



## Compare an Object to the As-Built Plant

- The **Object Compare** dialog box displays the differences between the object claimed at the project level and the object as-built at the plant level.



## 7.2.1 View Configuration Reports

A configuration report, which is run on a project or sub-configuration, provides a list of all the objects that are currently part of the project.

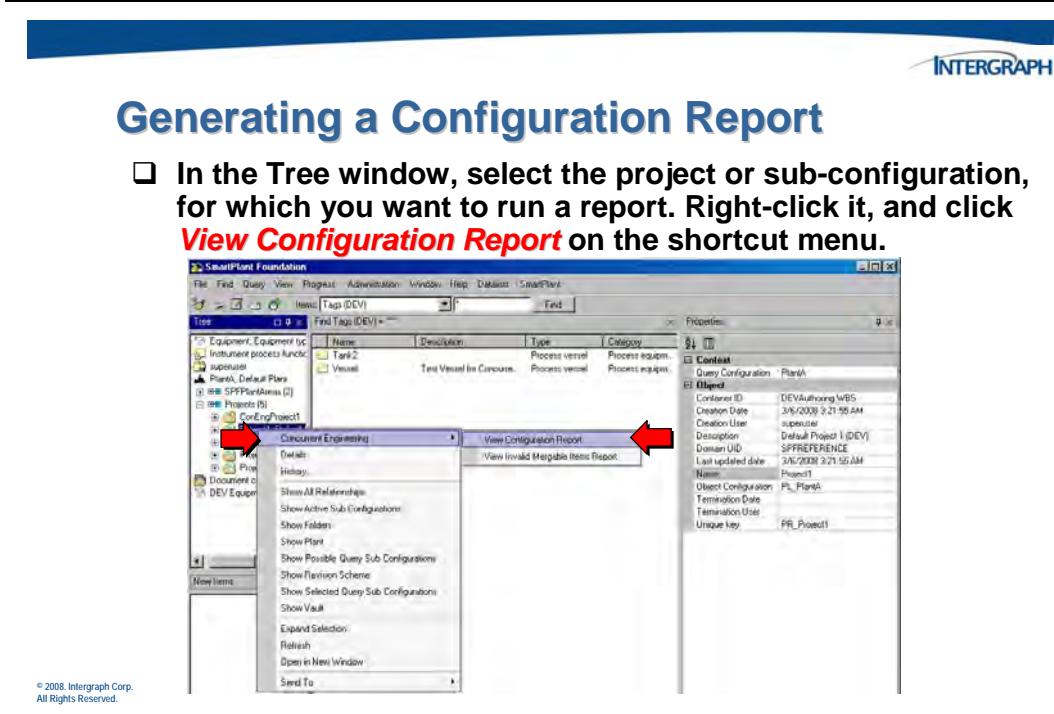
---



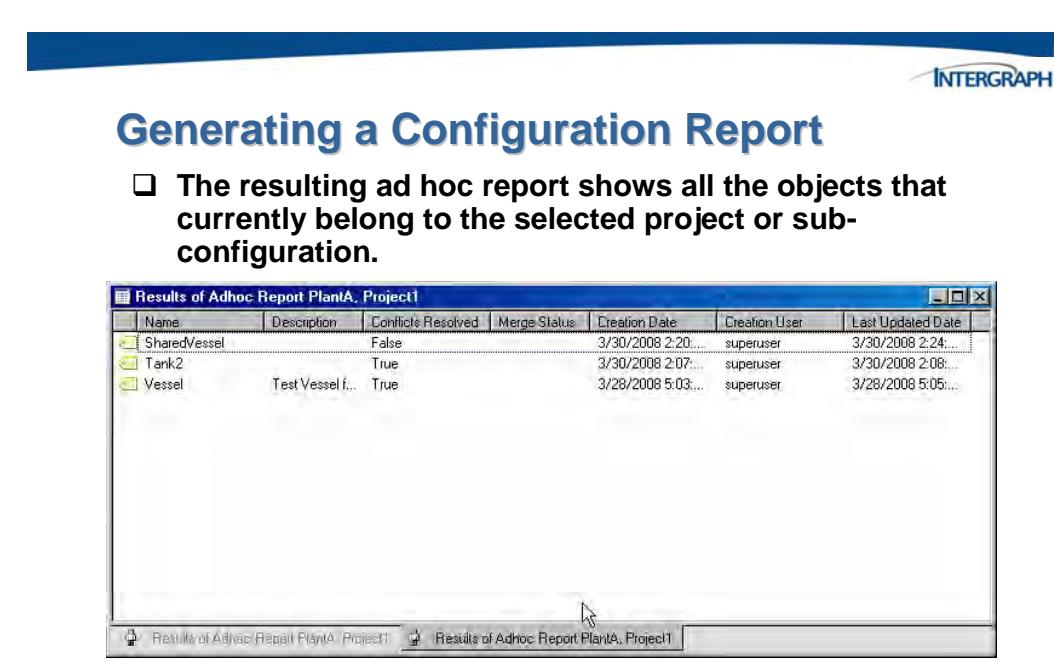
### Generating a Configuration Report

- The ***View Configuration Report*** command creates an ad-hoc report with information about items in the selected configuration.

The configuration report is accessed with the **Concurrent Engineering > View Configuration Report** command from the shortcut menu of the project.



The resulting report shows objects in the project, including information about whether or not there are conflicts that still need to be resolved.



## 7.2.2 Future Changes Reports

The Future Changes Report, which is run on a plant, displays objects that have been claimed by projects (or sub-configurations) beneath the plant. Each project with claimed items has its own tab where the objects are displayed.

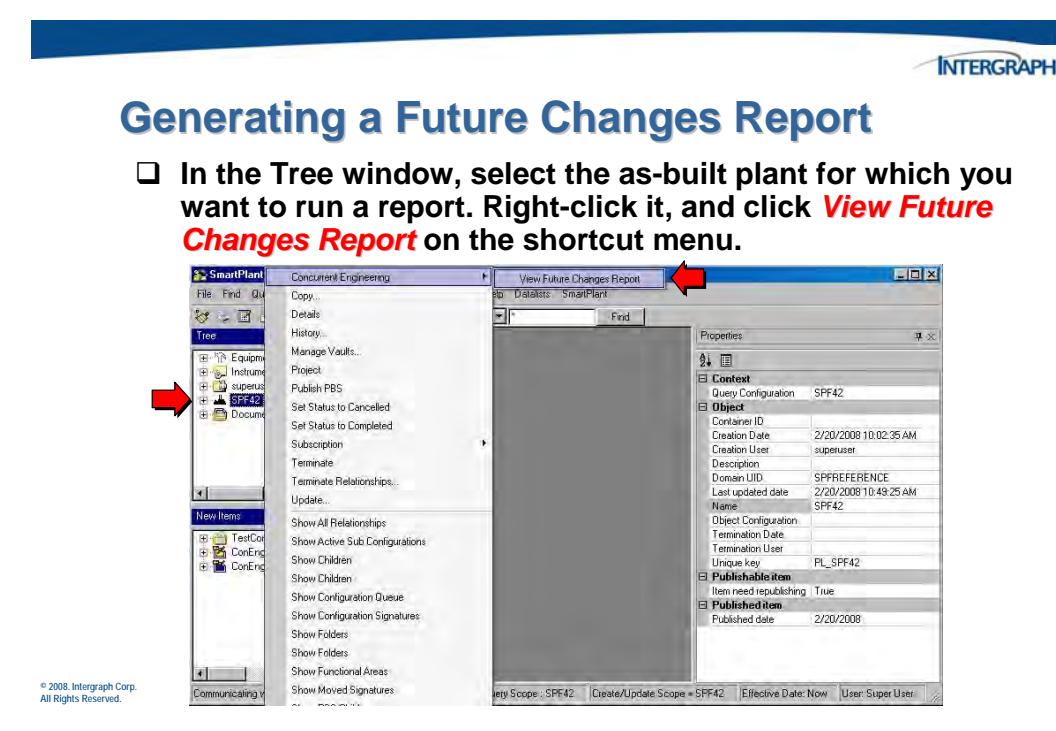
---



### Generating a Future Changes Report

- The ***View Future Changes Report*** command generates an ad-hoc report that provides information about objects that can be merged into the plant from any sub-configurations beneath it.

The report is accessed with the **Concurrent Engineering > View Future Changes Report** command from the shortcut menu of the plant.



The resulting report shows tabs for each project, each with a list objects claimed to the project.

## Generating a Future Changes Report

- The resulting ad hoc report shows all the objects that currently belong to projects or sub-configurations and have not yet been merged into the plant.

Name	Description	Conflicts Resolved	Merge Status	Creation Date	Creation User
SharedVessel		False		3/30/2008 2:21...	superuser

© 2008, Intergraph Corp.  
All Rights Reserved.

## Generating a Future Changes Report

- For each project with non-merged objects, the report will return a different tab with results

Name	Description	Conflicts Resolved	Merge Status	Creation Date	Creation User
SharedVessel		False		3/30/2008 2:20...	superuser
Tank2		True		3/30/2008 2:07...	superuser
Vessel	Test Vessel for C...	True		3/28/2008 5:03...	superuser

© 2008, Intergraph Corp.  
All Rights Reserved.

## 7.2.3 Invalid Mergable Items Report

Another ad hoc that you will find useful when working with Concurrent Engineering is the Invalid Mergable Items Report. The ***View Invalid Mergable Items Report*** command will display a list of all the items in the currently selected project that are not ready to be merged because of some conflict that must first be resolved.

---



### Generating a Merge Validation Report

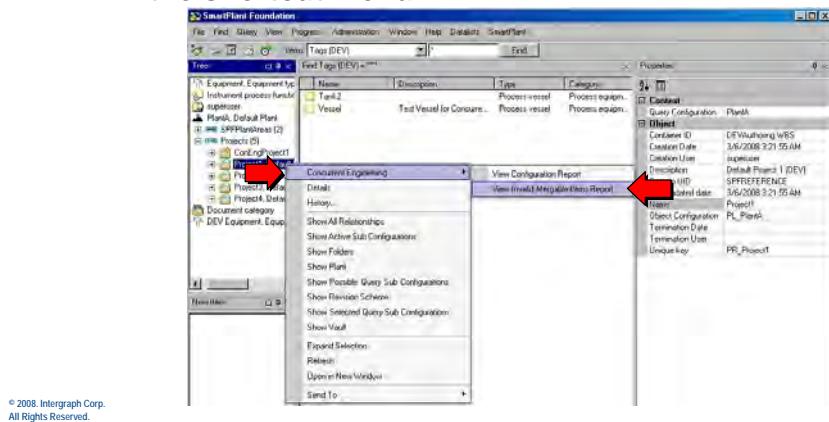
- The ***View Invalid Mergable Items Report*** command creates an ad-hoc report that includes all the objects in the project, or sub-configuration, that have unresolved conflicts with the plant, or design basis, that must be addressed before they can be merged.

This command is available on the shortcut menu of a project.



## Generating a Merge Validation Report

- In the Tree window, select the project, or sub-configuration, for which you want to run a report. Right-click it, and click **View Invalid Mergeable Items Report** on the shortcut menu.



© 2008, Intergraph Corp.  
All Rights Reserved.

INTERGRAPH



## Generating a Merge Validation Report

- The resulting ad hoc report includes a list of the objects in the selected project or sub-configuration

Name	Description	Conflicts Resolved	Merge Status	Creation Date	Creation User
SharedVessel		False		3/30/2008 2:20:...	superuser

© 2008, Intergraph Corp.  
All Rights Reserved.

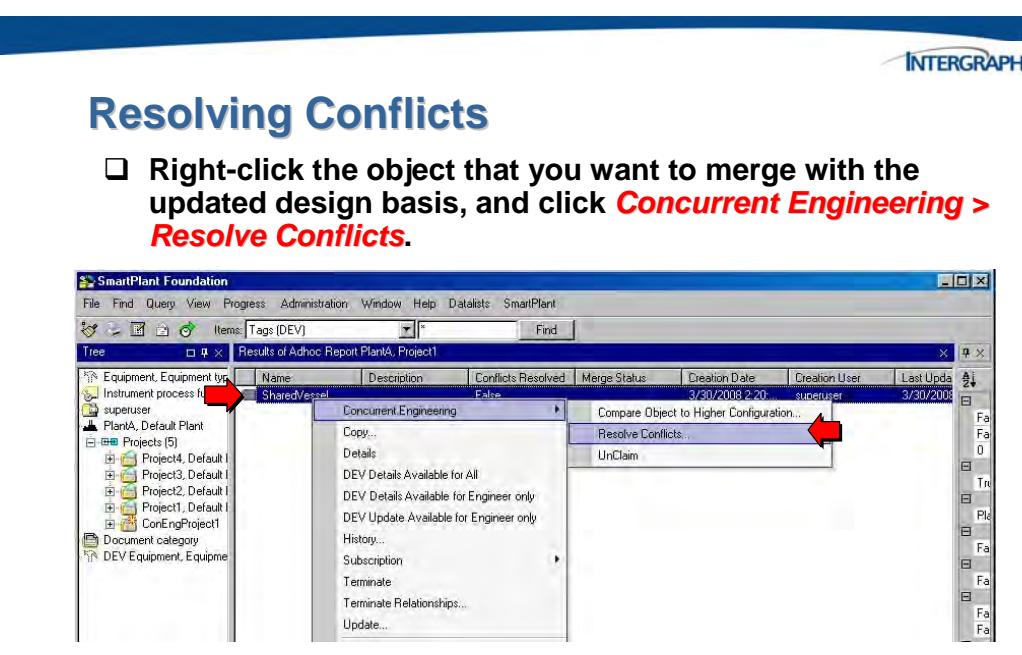
INTERGRAPH

## 7.3 Resolving Conflicts

Once you have seen what differences exist in the project, use the ***Resolve Conflicts*** options to apply certain changes to the as-built or to disregard others.

**Note:**

- ❑ The ***Resolve Conflicts*** command is available only when changes have been made to the as-built since the object was claimed into the project. In order for this to happen, two projects must have claimed the same object and one must have merged back changes. Once the first merge has updated the design basis, you must resolve conflicts between it and the second project.



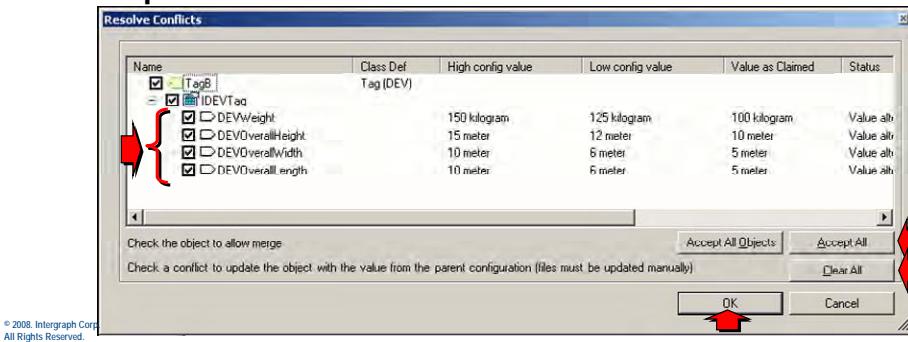
© 2008. Intergraph Corp.  
All Rights Reserved.

The **Resolve Conflicts** dialog box shows a list of all the properties that have changed in the design basis since the object was first claimed into the active project. The properties are sorted by the interface on which they are exposed and the following values are displayed:

- The current values of the design basis.
- The current values in the active project from which the report is run.
- The value of the properties when the object was first claimed into this project from the plant.

## Resolving Conflicts

- On the **Resolve Conflicts** dialog box, check the changes that you want to accept and clear the checks from any changes that you don't want to accept.
- Click **Accept All** to resolve conflicts and click **OK**. Once synchronized, the project or object can be merged into the plant.



© 2008, Intergraph Corp.  
All Rights Reserved.

## 7.4 Merging Data into the Design Basis

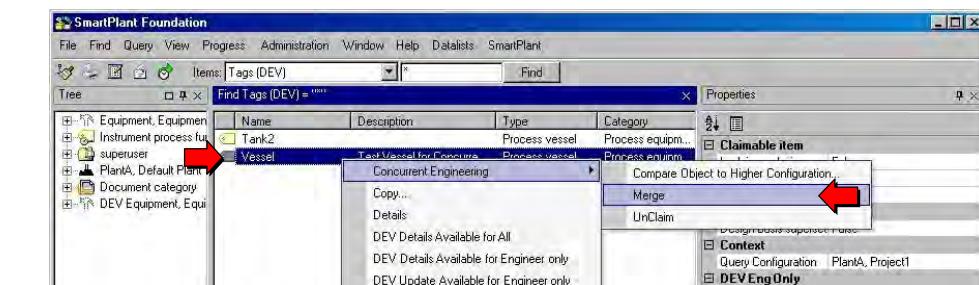
Once you have completed the changes to an object at the project level and resolved any conflicts with the design basis (the plant data), you are ready to merge the changes up to the plant. You may merge items one at a time, or you may merge an entire project into the plant.

To merge a specific item, right-click on the item in the project configuration, and use the **Concurrent Engineering > Merge** command.



### Merge a Claimed Object into the Plant

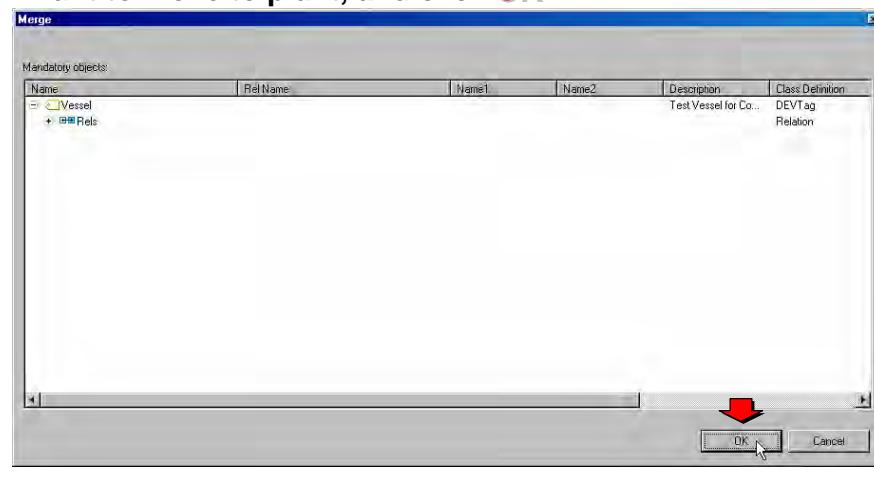
- To merge changes into the plant, right-click on the object to be merged, and click the **Concurrent Engineering > Merge** command from the shortcut menu.





## Merge a Claimed Object into the Plant

- On the **Merge** dialog box, select the object or objects you want to move to plant, and click **OK**.

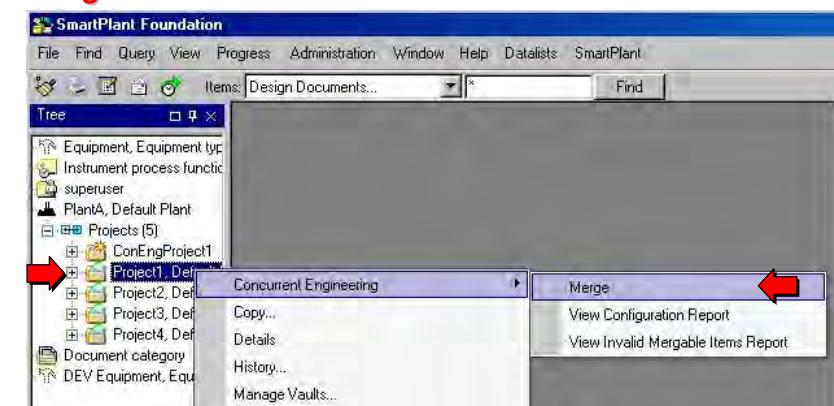


To merge an entire project at once, right-click on the project in the Tree window and use the **Concurrent Engineering > Merge** command.



## Merge an Entire Configuration

- To merge an entire project configuration at one time, find the project in the Tree window.
- Right-click the project, and click **Concurrent Engineering > Merge**.



## 7.5 Claiming Documents

Documents are treated a little differently in the Concurrent Engineering environment than tags, mostly this is because the claiming process is different.

### Note

- Because documents are claimed by *revising* them into project (there is no **Concurrent Engineering > Claim** command for documents), only documents with a status of ISSUED in the plant can be claimed into a project.
- 



### Claiming a Document

- Documents are claimed into a project just like any other type of object.
- Documents cannot be claimed with implicit claiming; they require explicit claiming.
- Only documents with a status of ISSUED can be claimed; in other words, you can only claim documents that have been signed off.
- The following example shows the steps to claim a plant document into a project for updates and merge it back into the plant again.

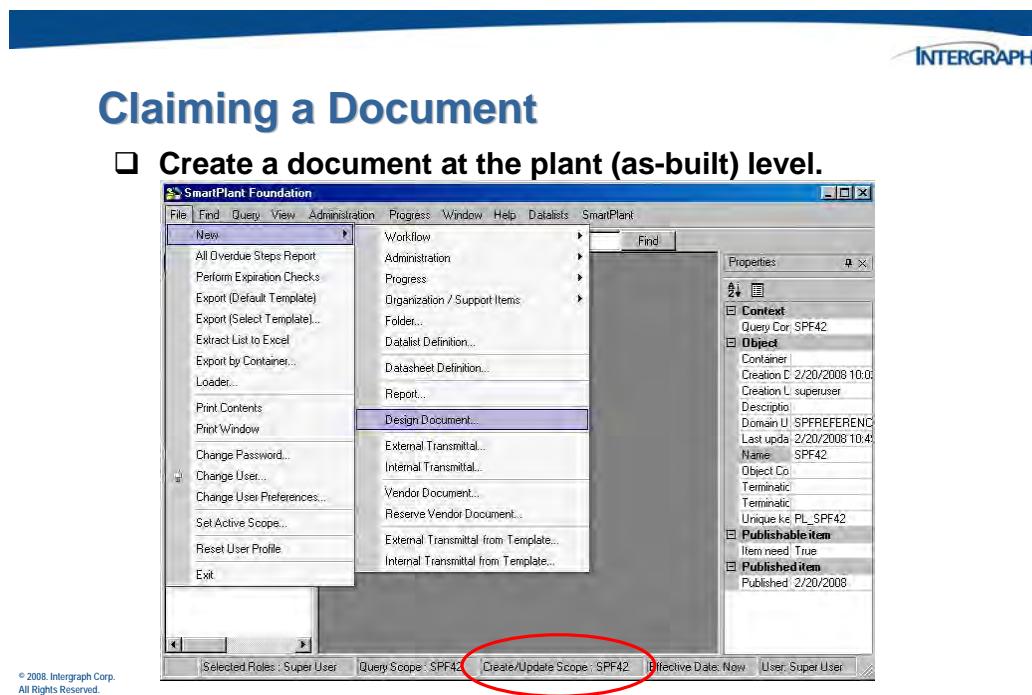
The following procedure illustrates how a document moves through the concurrent engineering functionality. We start with creating a project beneath our plant.

The screenshot shows the SmartPlant software interface. On the left, there's a tree view with nodes like 'Equipment', 'Instruments', 'superuser', 'SPF42', and 'Documents'. A red arrow points to the 'Project' option in a context menu that is open over the 'SPF42' node. The main window displays a properties dialog for an item named 'SPF42'. The 'Object' section shows details such as 'Container' (Query Cor SPF42), 'Creation C' (2/20/2008 10:01), 'Creation U' (superuser), 'Description', 'Domain U' (SPFREFERENC), 'Last update' (2/20/2008 10:41), and 'Name' (SPF42). The 'Published item' section indicates 'Item need: True' and 'Published: 2/20/2008'. At the bottom of the dialog, there are buttons for 'Site/Update Scope: SPF42', 'Effective Date: Now', and 'User: Super User'.

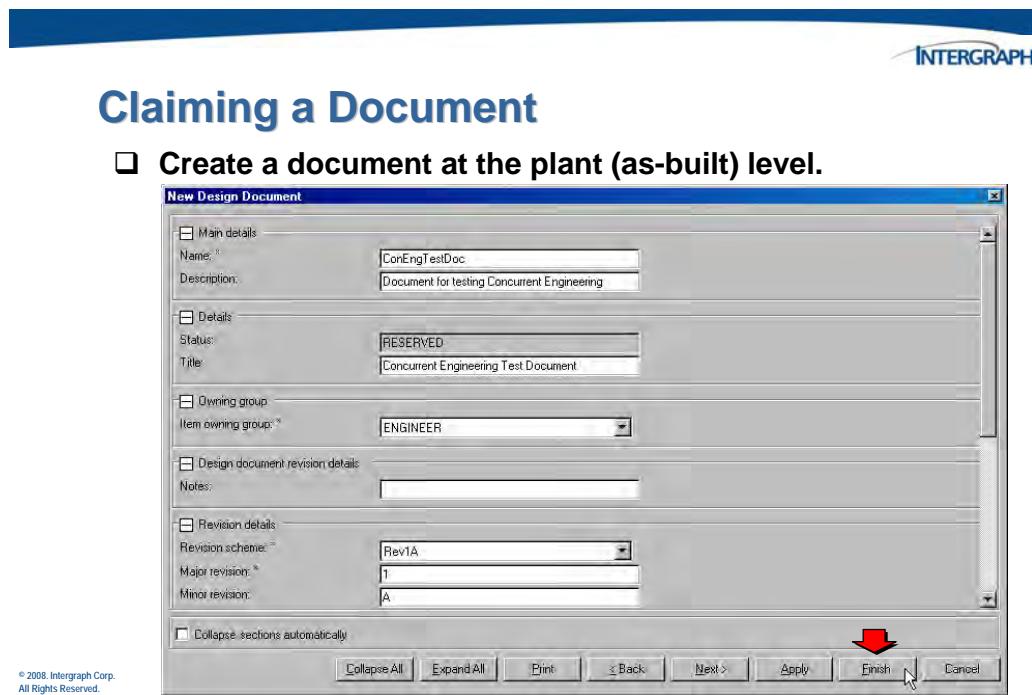
Name the project and be sure that it is set to that active state.

The screenshot shows the 'New Project' dialog box. In the 'Main details' section, the 'Name' field is filled with 'TestConEngProject' and the 'Description' field contains 'A test project for testing Concurrent Engineering'. Under 'Status', the 'Active' option is selected. At the bottom right of the dialog, there is a red arrow pointing to the 'Finish' button.

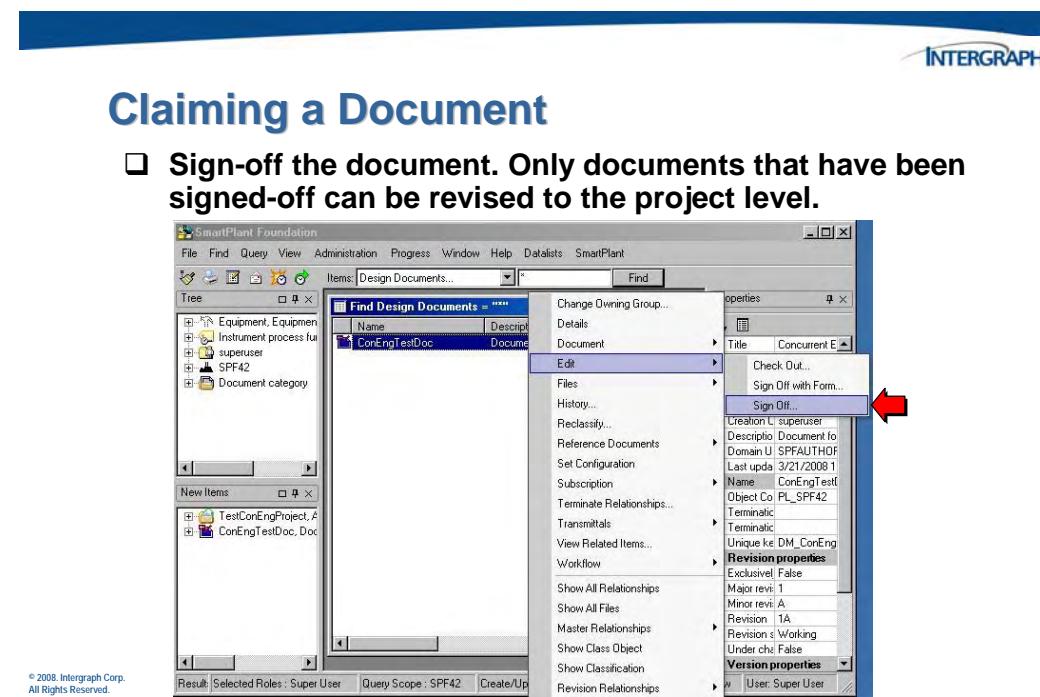
With the scope set to the PLANT, create a basic design document.



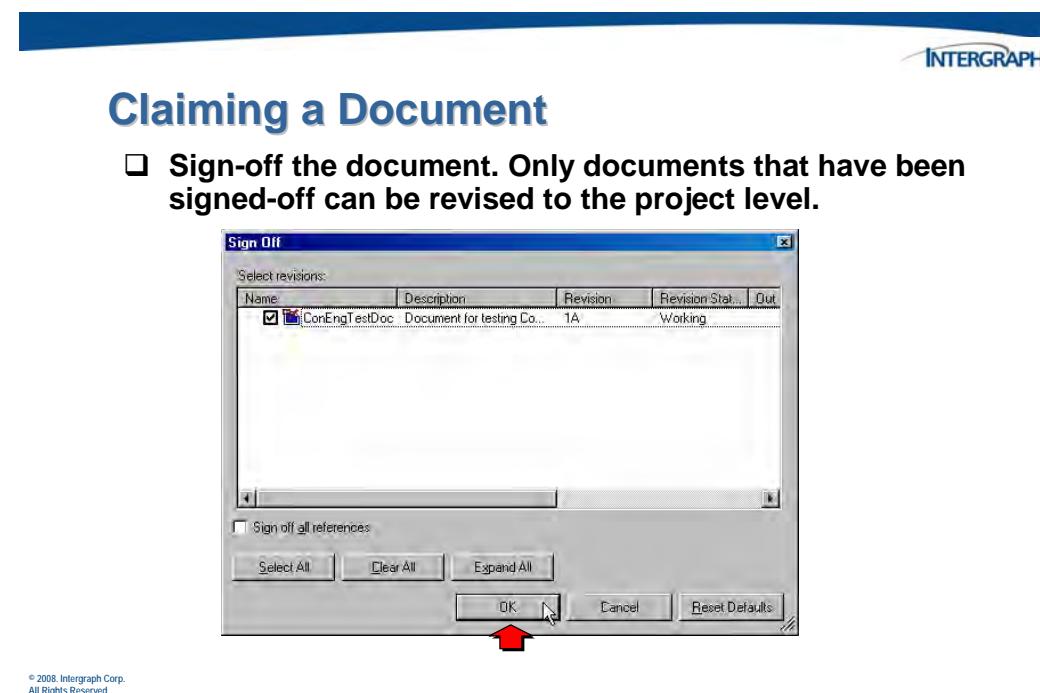
Provide the necessary data for the document master and first revision.



Before the document can be claimed into a project, it must be signed-off. Only documents with a status of ISSUED can be claimed into a project.



Complete the sign off.

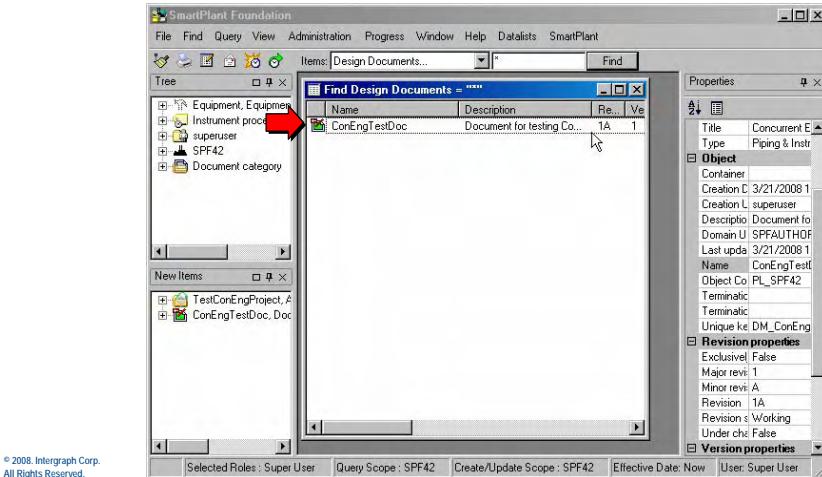


Notice the document is not ISSUED.



## Claiming a Document

- Sign-off the document. Only documents that have been signed-off can be revised to the project level.**

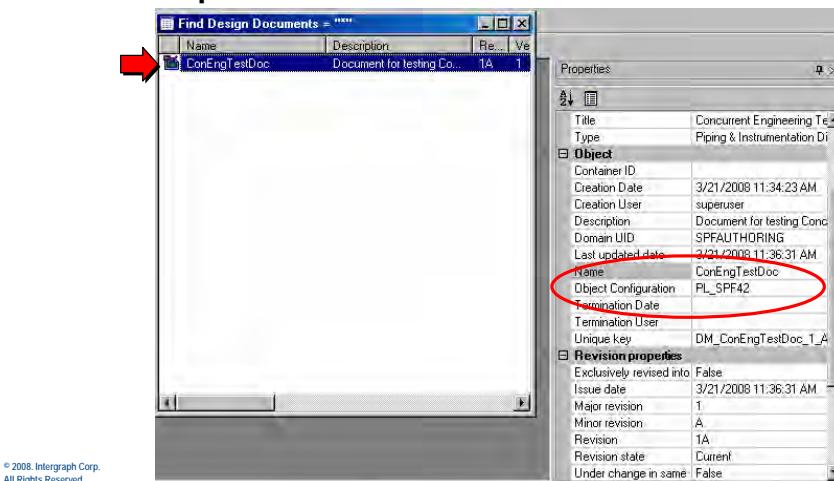


Notice that the configuration of the document is still the Plant.

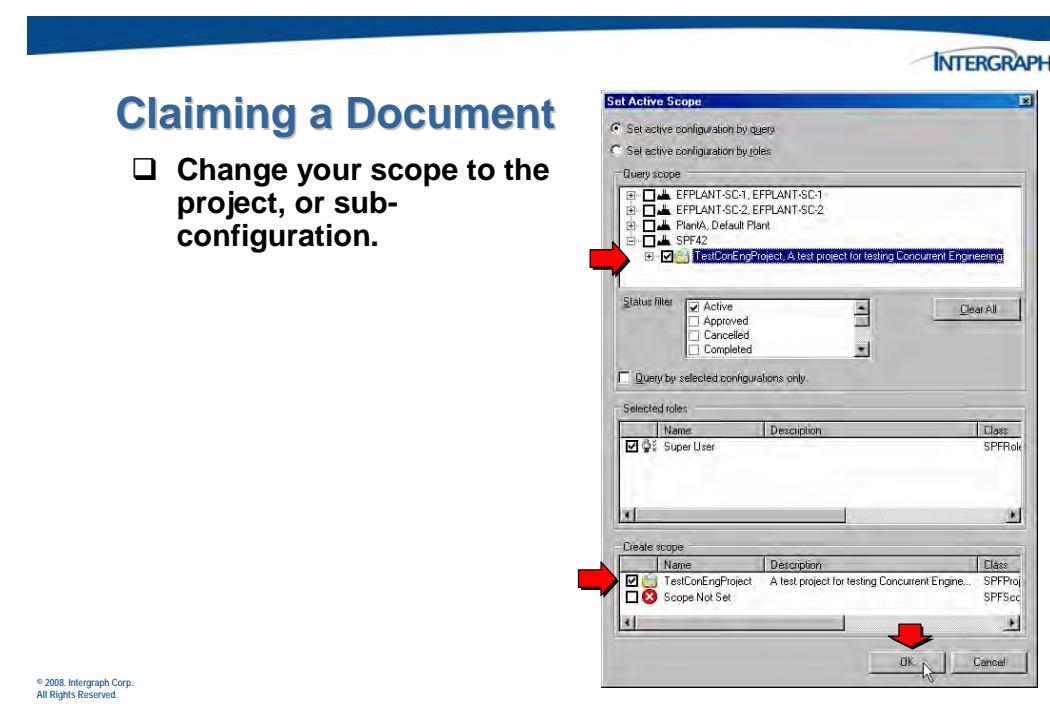


## Claiming a Document

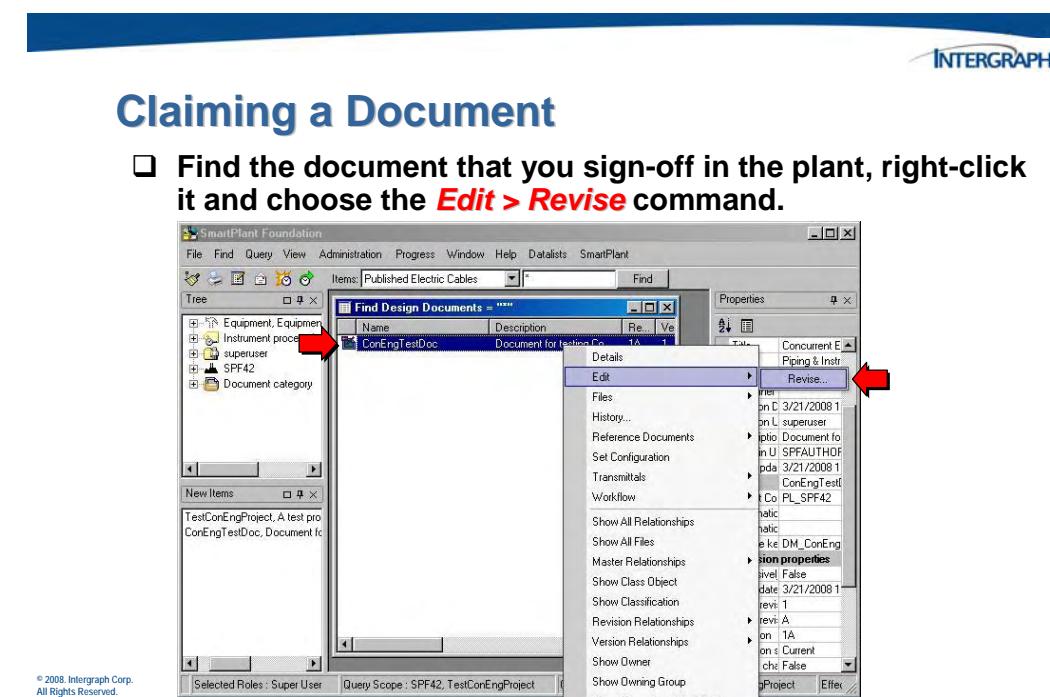
- Notice that the configuration defined for the document is the plant.**



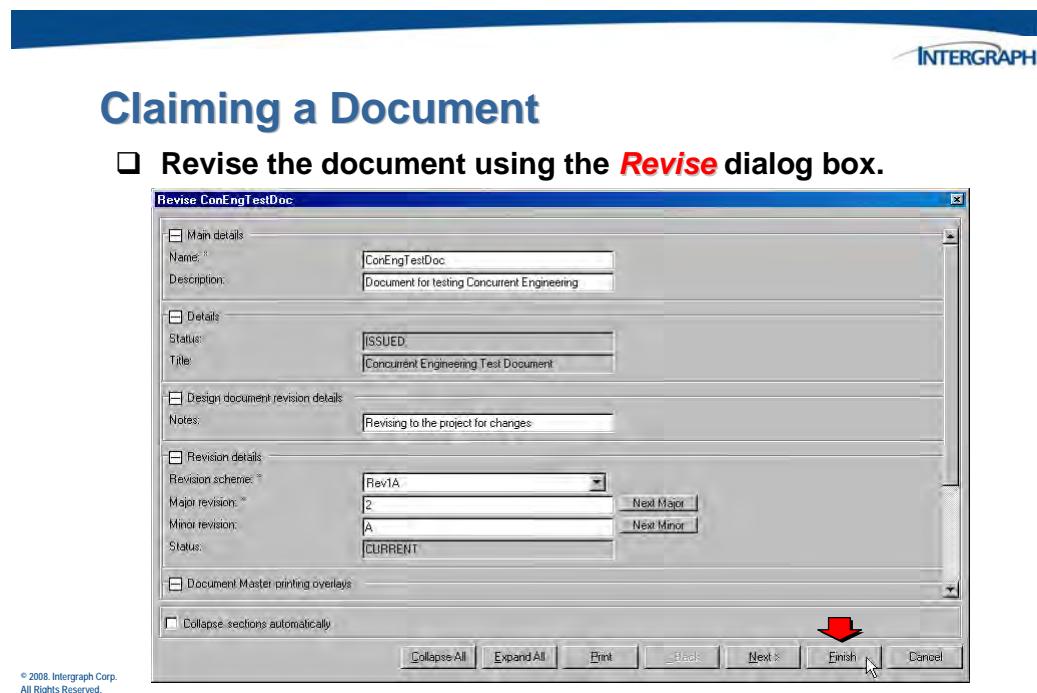
Set the Create scope for the new project.



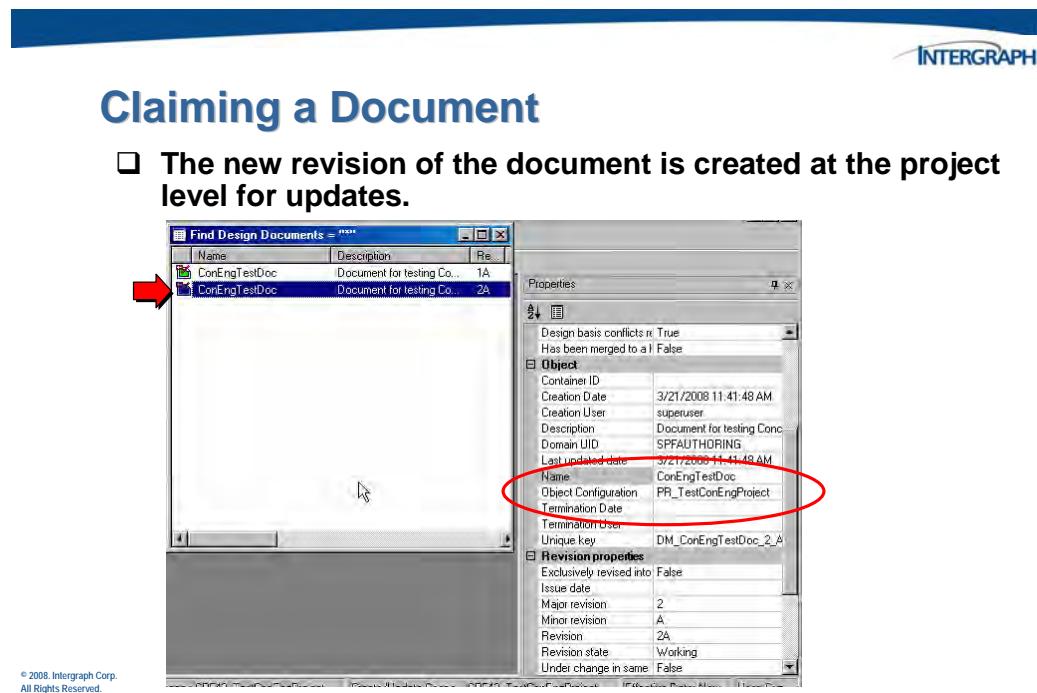
Once the scope is set to the project, right-click on the document and use the **Edit > Revise** command to revise the command into the project.



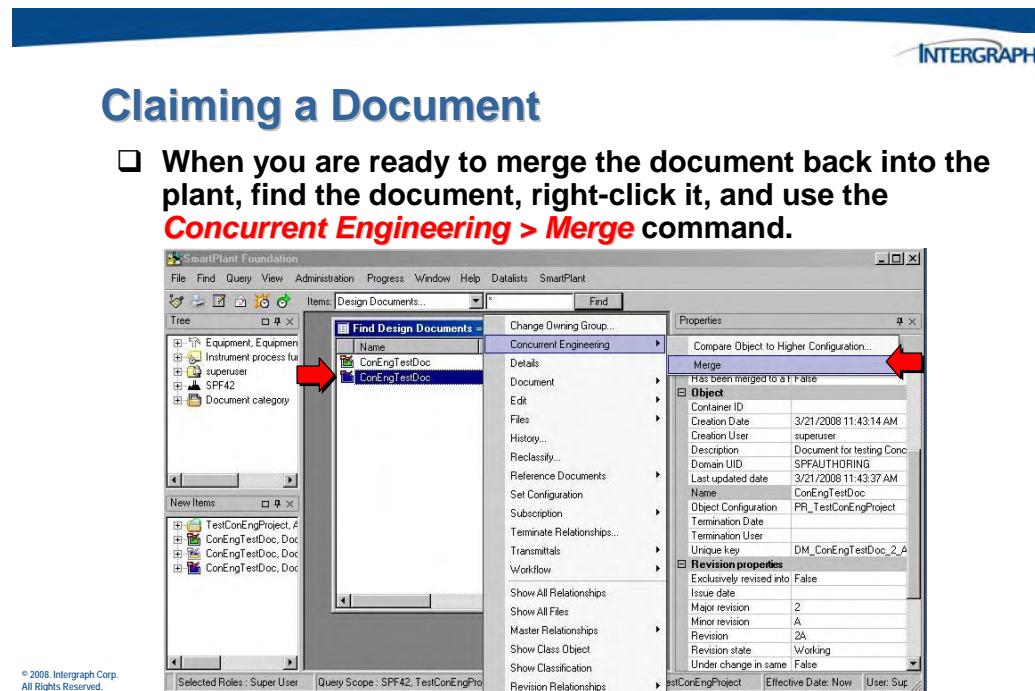
Create the new revision.



Viewing the new working revision confirms that it is part of the project.



The working revision of the document can be checked out and edited as needed. Once the changes are complete, you can merge the new version back into the plant. Right-click on the version you want to merge, and use the **Concurrent Engineering > Merge** command.



## 7.6 Activity – Concurrent Engineering

Complete the **Chapter 7 – Activity** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.

C H A P T E R

# 8

---

## Progress Model



## 8. Introduction to the Progress Model

The progress model gives the ability to plan and report on the development of time-critical activities related to a project. Deliverables, such as documents or groups of documents, are tracked against a project plan, indicating any deviations from the original plan.



### Progress Overview

- Ability to plan and report the development of time-critical activities related to documentation.
- Ability to track the development of deliverables or groups of deliverables against a project plan or set of milestones.
- Ability to view progress at specific milestones important to a project.
- Ability to view progress at varying levels within a project hierarchy.

The following components are key features of the progress model.



## Key Progress Components

- Deliverables**
- Reporting Hierarchy**
- Progress Options**
- Cut-off dates**
- Time Strings**
- Workpacks**
- Workpack Templates**

© 2008, Intergraph Corp.  
All Rights Reserved.

---

### Deliverables

Deliverables are objects registered with workpacks to measure progress. There are two types of deliverables:

- Design deliverables are single objects, such as design documents, that can be registered for progress. Progress is tracked linearly with sequential steps. Design deliverables are usually processed internally.
- Activity deliverables are groups of objects. Activity items, such as Vendor documents, relate to a parent deliverable. Activity items may be documents that are sent to and received from external suppliers. When returned, the item is given a status code corresponding to a step in the workpack. Activity deliverables are progressed dynamically and able to move forward and backward through the steps as the status changes.

### Reporting Hierarchy

The progress hierarchy provides the project structure for grouping deliverables and forms the levels at which progress is calculated, rolled up, and viewed. Progress can be monitored at any level in the hierarchy. The hierarchy in any configuration applies to both design and activity workpacks.

### Progress Options

Progress Options define certain default options that will apply to all deliverables for that configuration. Workpacks inherit these values from the progress options. Deliverables inherit the values from the workpacks.

## Cut-off Dates

Cut-off dates are important to progress reporting because they provide the means to store planned and forecasted progress at certain intervals and milestones. Calculations can be run off the cut-off dates for viewing and reporting purposes.

## Time Strings

The time strings manage the estimated effort required to complete each production step for the workpack and are used to calculate the plan and forecast dates for steps. Each deliverable must be assigned one of the workpack's time strings.

## Workpacks

Workpacks group deliverables by common reporting hierarchy attributes against which workpack steps are configured and planning information is recorded and calculated.

## Workpack Templates

Workpack templates are a set of workpack structures that can be used to create actual workpacks.

## **8.1 Setting Key Progress Components**

Many of the key components must be set prior to using the progress model. While not required, setting other components as part of a planning process better ensures success farther into the process.

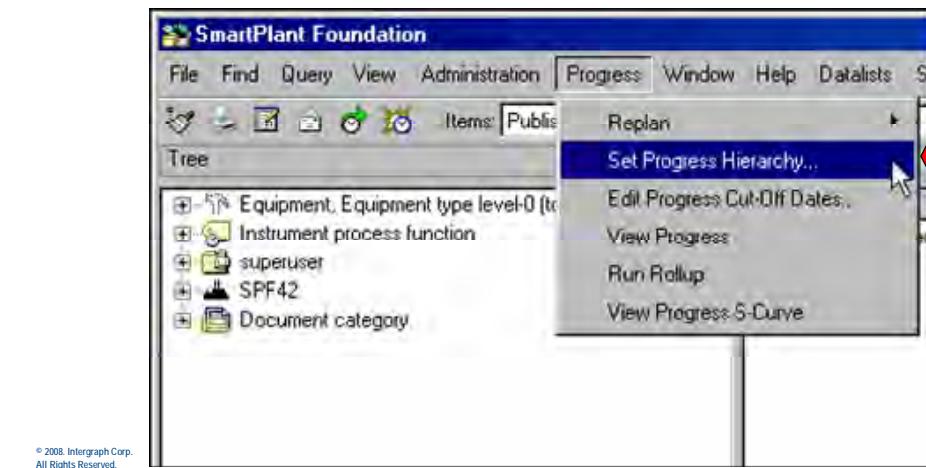
## 8.1.1 Setting the Progress Hierarchy

Progress is calculated against the levels of a progress hierarchy. The progress hierarchy provides the project structure against which progress is calculated, reported, and viewed. This hierarchy must be set before the progress functionality can be used. It cannot be changed once deliverables are registered against it.

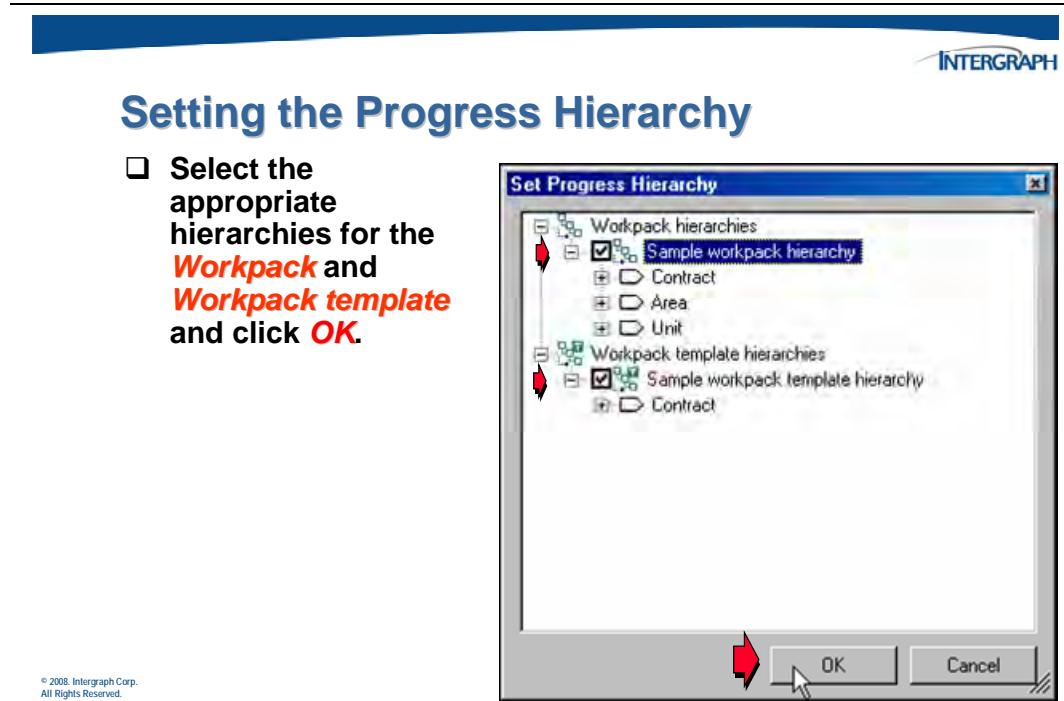


### Setting the Progress Hierarchy

- From the menu, click **Progress > Set Progress Hierarchy**.



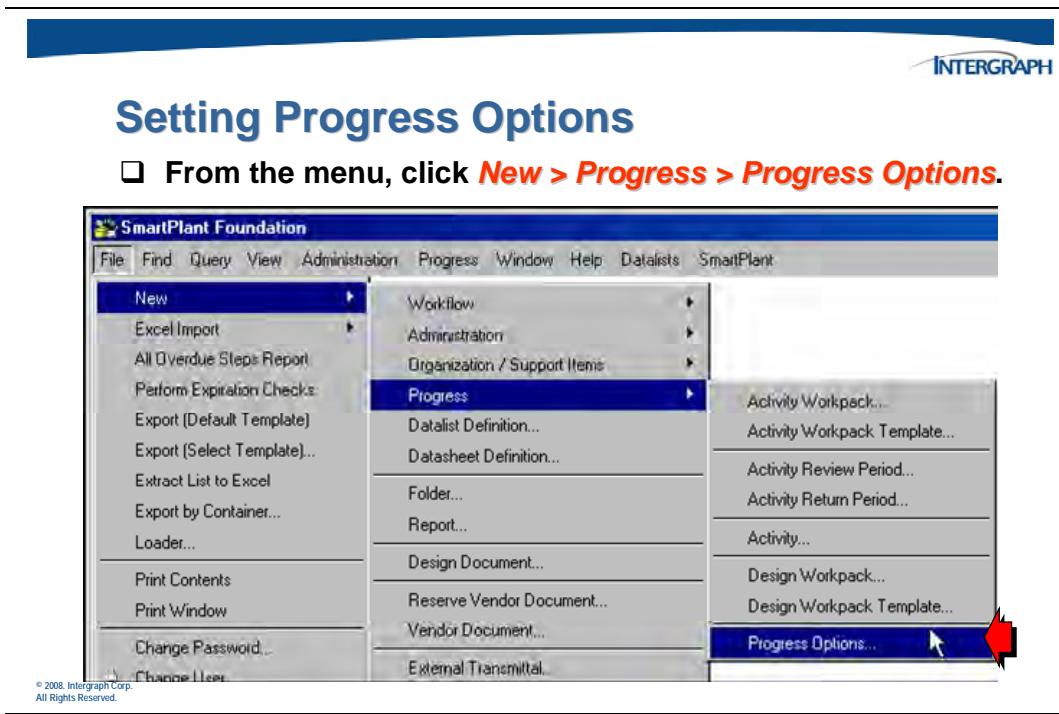
Choose the hierarchy you want by checking the applicable check boxes.



Notice the hierarchy for the workpack template contains only the top level to allow freedom in selecting levels during creation of the workpack.

## 8.1.2 Setting Progress Options

Progress options can be set for each SPF configuration. Progress options must exist before workpacks can be created.

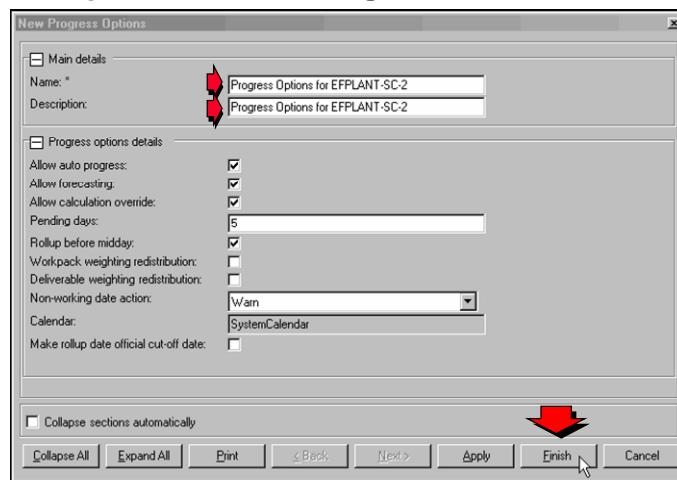


Enter a name, description, and select other appropriate options. These progress options are valid for the active configuration.



## Setting Progress Options

- On the **New Progress Options** dialog box, enter details and select options for the configuration. Click **Finish**.

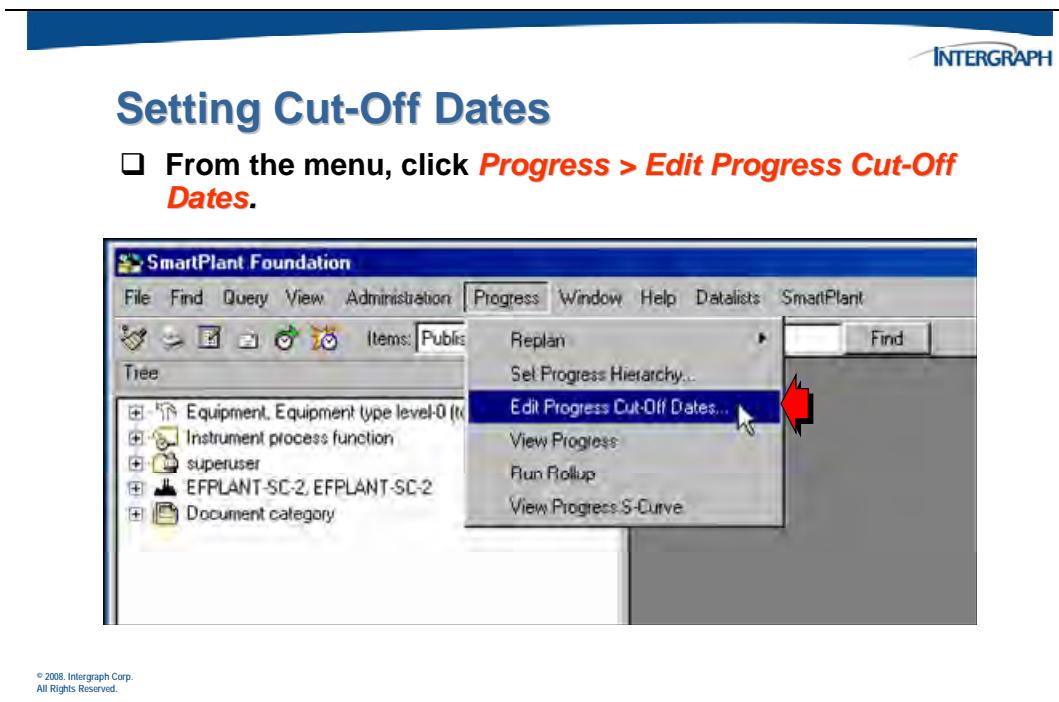


Option	Description
<b>Allow auto progress</b>	Indicates whether automatic progress calculation based on time elapsed is allowed to be enabled.
<b>Allow forecasting</b>	Indicates whether downstream forecasting is allowed to be enabled.
<b>Allow calculation override</b>	Indicates whether calculation override is allowed to be enabled.
<b>Pending days</b>	Set a deliverable's production step to Pending when forecast date is due in this number of days  (A certain number of days before the plan or forecast date, the status of a production step is automatically updated to pending by the system. Pending days enables you to specify how many days before the forecast date the status should be changed.)
<b>Rollup before midday</b>	Indicates whether the calculation date during progress rollup uses the previous working day if the time is before midday.
<b>Workpack weighting redistribution</b>	Indicates whether the Budget Man-hour values for all deliverables in a workpack are to be automatically updated when the allocated weighting of the workpack changes.

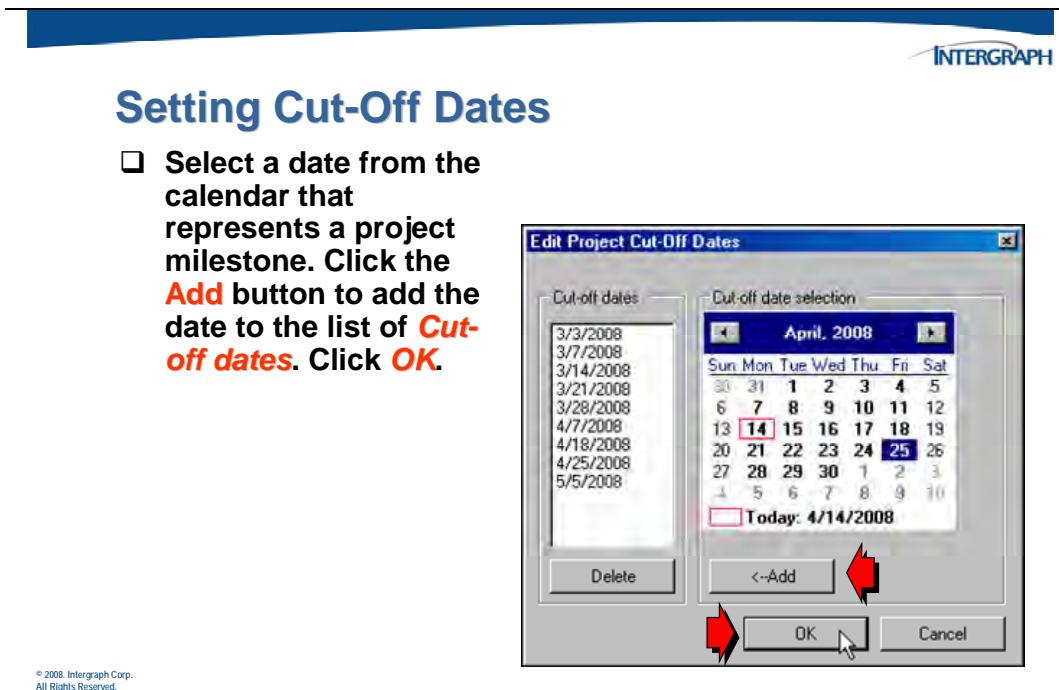
<b>Option</b>	<b>Description</b>
<b>Deliverable weighting redistribution</b>	Indicates whether the Budget Man-hour values for all deliverables in a workpack are to be automatically updated when the weighting of the one of the deliverables in the work changes.
<b>Non-working date action</b>	Indicates what should happen when users attempt to enter a non-working date into a date field.  The options available are: <ol style="list-style-type: none"><li data-bbox="734 549 1077 580">1. No Action (allow date entry)</li><li data-bbox="734 601 962 633">2. Deny the date entry</li><li data-bbox="734 654 897 686">3. Warn the user</li></ol>
<b>Make rollup date official cutoff date</b>	Indicates if rollups instigated manually should be treated as official cut-off dates by the system for reporting purposes.

### 8.1.3 Setting Cut-Off Dates

Cut-off dates represent milestones in a project. These dates can be set and used later with the Progress module. Select **Progress > Edit Progress Cut-Off Dates**.



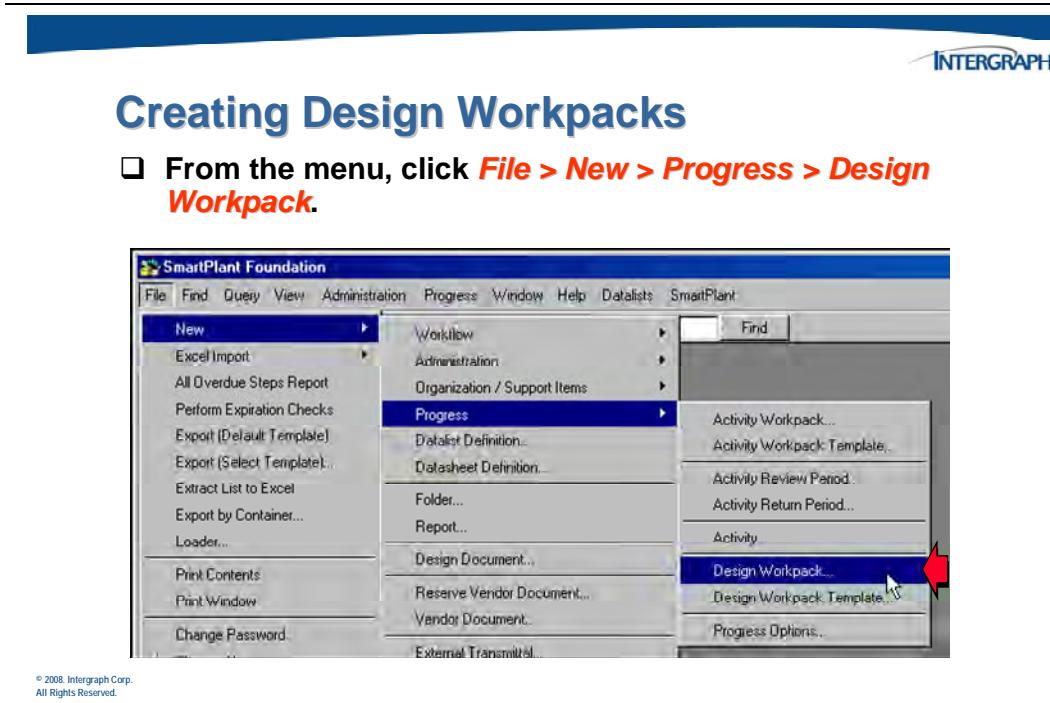
© 2008, Intergraph Corp.  
All Rights Reserved.



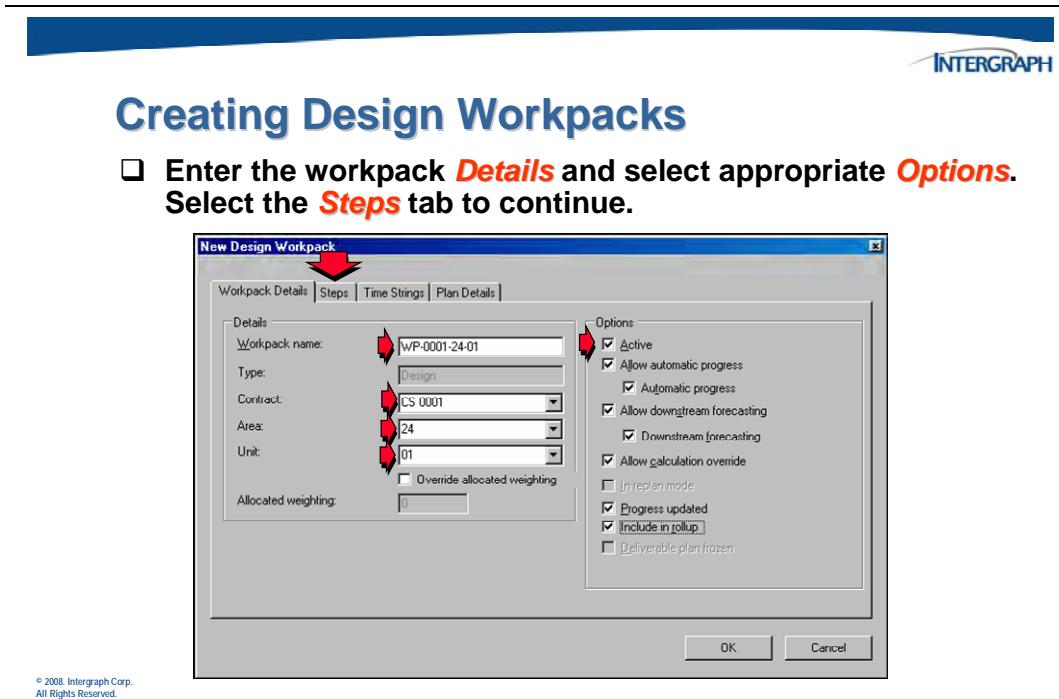
© 2008, Intergraph Corp.  
All Rights Reserved.

## 8.2 Creating Design Workpacks

Once progress hierarchy and progress options have been created for the current configuration, workpacks can be created. Design workpacks are identified by their reporting hierarchy and are specific to the current configuration scope. Design workpacks have plan details that define the duration of the project. Deliverables move linearly through workpack steps and must complete all steps in the sequence.



On the **Workpack Details** tab, enter the name, *Contract*, *Area*, and *Unit* information. Some options are set to default values based on settings in progress options. Workpacks must be set to *Active* before they are available for use.



## Detail

### Type

## Description

Shows the type of workpack being created. This field cannot be edited.

### Contract

The top level of the hierarchy for which this workpack will be available.

### Area

The sub level of the hierarchy for which this workpack will be available.

The **Area** selected determines the options available in the **Unit** list.

### Unit

The second sub level of the hierarchy for which this workpack will be available.

### Override allocated weighting

When enabled, this option allows you to override the value displayed in the **Allocated Weighting** field.

### Allocated weighting

Displays the sum of the weightings of the deliverables registered for progress in this workpack. Select the **Override Allocated Weighting** check box to activate this field and to override the value displayed here.

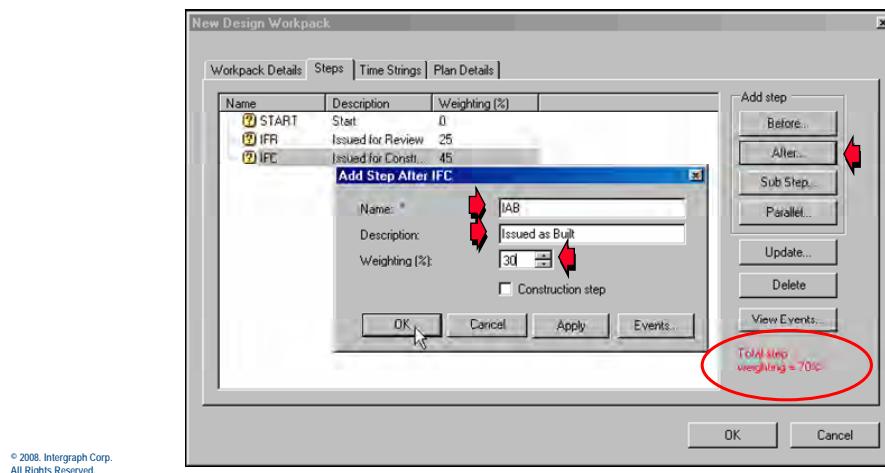
<b>Option</b>	<b>Description</b>
<b>Active</b>	Sets the workpack to active. That is, it specifies whether documents can be registered in progress to this workpack.
<b>Allow automatic progress</b>	Indicates whether this workpack will allow the automatic calculation of progress (%) for registered documents in each step.
<b>Automatic progress</b>	Specifies whether all documents registered for this workpack will have the auto progress feature activated by default.
	This setting can be overridden on the deliverable.
	Steps cannot be completed with Automatic Progress; they can accrue a maximum of only 99% progress.
<b>Allow downstream forecasting</b>	Indicates whether this workpack will allow the automatic calculation of remaining forecast dates for the registered documents in subsequent steps based on the deliverable's selected time string.
<b>Downstream forecasting</b>	Specifies whether all documents registered for this workpack will have the downstream forecasting feature activated by default.
	This setting can be overridden on the deliverable.
<b>Allow calculation override</b>	Indicates whether this workpack will allow the user to manually override the calculated progress value for an individual step on a deliverable.
<b>In replan mode</b>	An indicator to show when this workpack is in replan mode. This option is not selectable.
<b>Progress updated</b>	Set to show if the updating of deliverable progress has been completed for this workpack.
	This field is unchecked when the progress rollup process has been completed on a project cut-off dates.
<b>Include in rollup</b>	Select to include this workpack in rollups.
<b>Deliverable plan frozen</b>	An indicator to show that the plan dates for deliverables in this workpack have been frozen to prevent changes.
	This option is activated by a right hand mouse option.

On the **Steps** tab, add steps using the **Before** and **After** buttons. In the **weighting** field, enter a percentage of the total weight. The weights of each step must total 100%. Enter the name, *Contract*, *Area*, and *Unit* information. Some options are set to default values based on settings in the progress options. Workpacks must be set to *Active* before they are available for use.



## Creating Design Workpacks

- ❑ Use the **Before** and **After** buttons to add new steps.  
Continue adding steps until the **weighting** equals 100%.



---

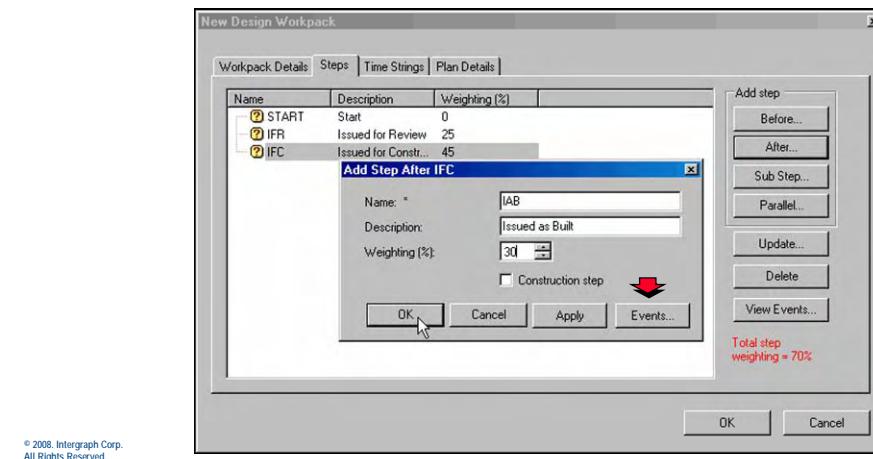
If the step will be a construction step, select the **Construction Step** option. Construction steps must be completed between the construction start and end dates.

Steps can use the **Events** option to automatically update progress when certain events occur.



## Creating Design Workpacks

- ❑ Click the **Events** button to add select an event for the step that will trigger a progress update.

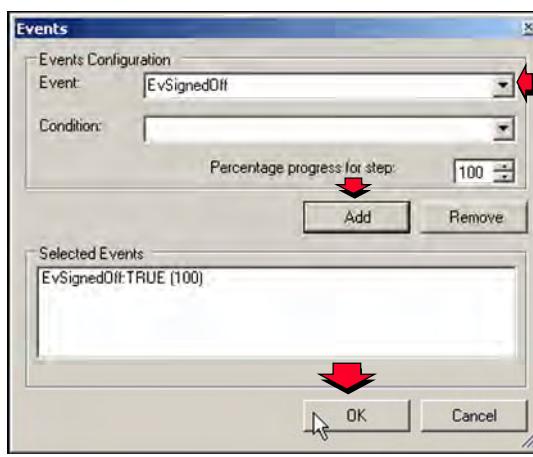


© 2008, Intergraph Corp.  
All Rights Reserved.



## Creating Design Workpacks

- ❑ Select an event, click **Add**, and click **OK**.

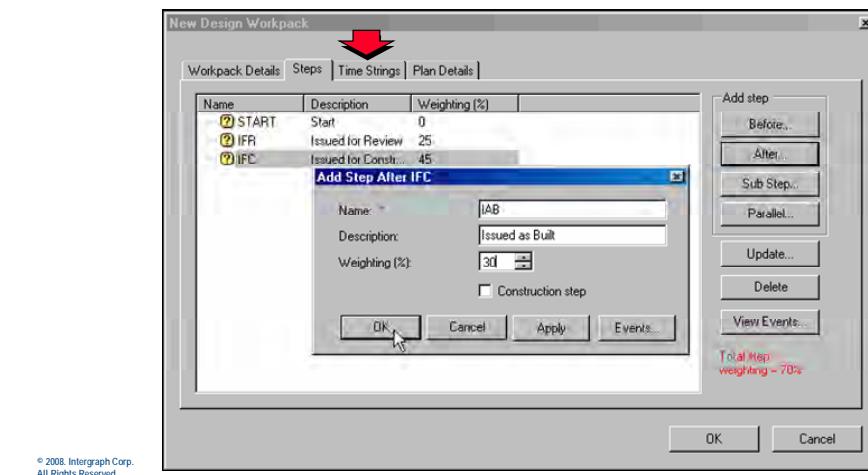


© 2008, Intergraph Corp.  
All Rights Reserved.



## Creating Design Workpacks

- ❑ Click the **Time Strings** tab to continue.

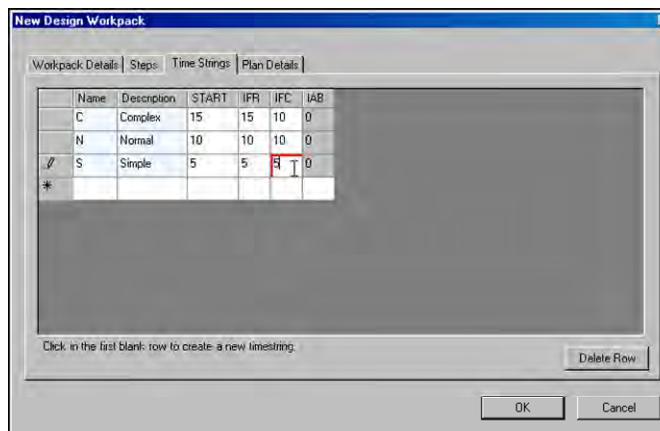


On the **Time Strings** tab, time strings can be created or modified for each workpack. A time string specifies the number of days between steps. Clicking a blank row lets you add new time string information.

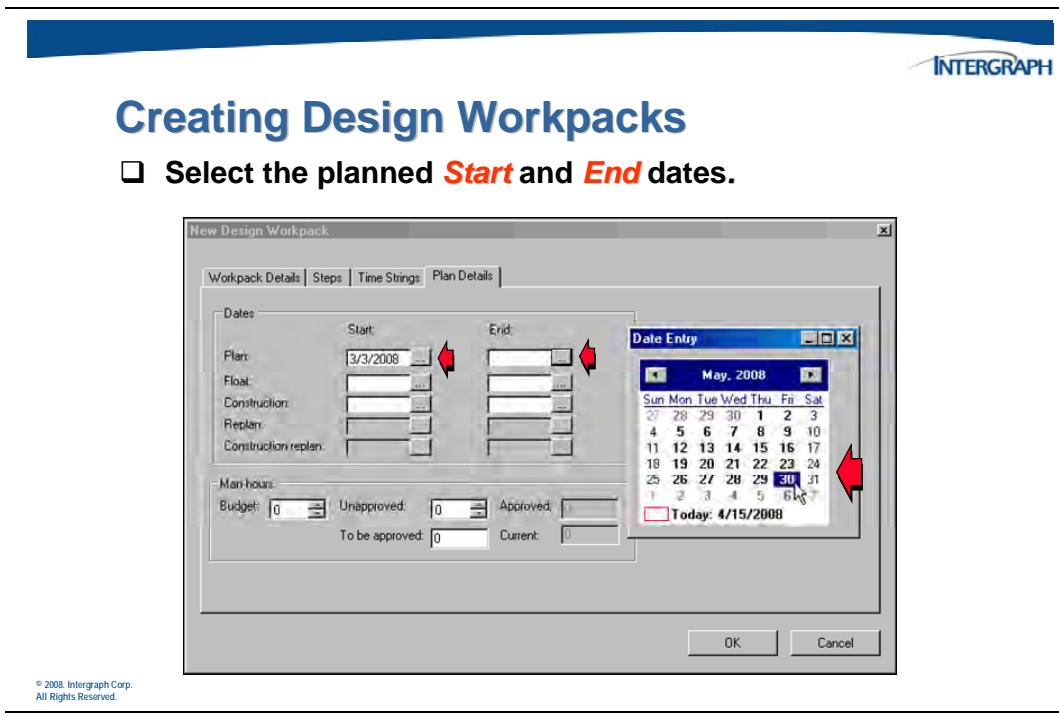


## Creating Design Workpacks

- ❑ Enter information for **Time Strings**. Durations for each step are represented in days. Click the **Plan Details** tab to continue.



On the **Plan Details** tab, set the start and end dates for the workpack. Man hour information can also be added.



## Dates

### Plan

Planned start and end dates of the workpack.

### Float

Dates by which the plan must be started and finished, including any available slip time.

The float overrides the plan dates above. When a deliverable is first registered, the system checks to see if it is within the plan dates. If it is not, the system then checks to see if it is within the float dates.

### Construction

The dates on which construction is scheduled to start and finish. If the construction flag is set on a step then its date on any deliverables must fall within this window.

**Note:** The **Construction Start** and **Construction End** dates must be within the defined **Plan Start** and **Plan End** dates.

### Replan

Activated when the workpack is in replan mode.

If necessary, enter revised plan start and end dates rather than changing the original dates entered for that value.

### Construction replan

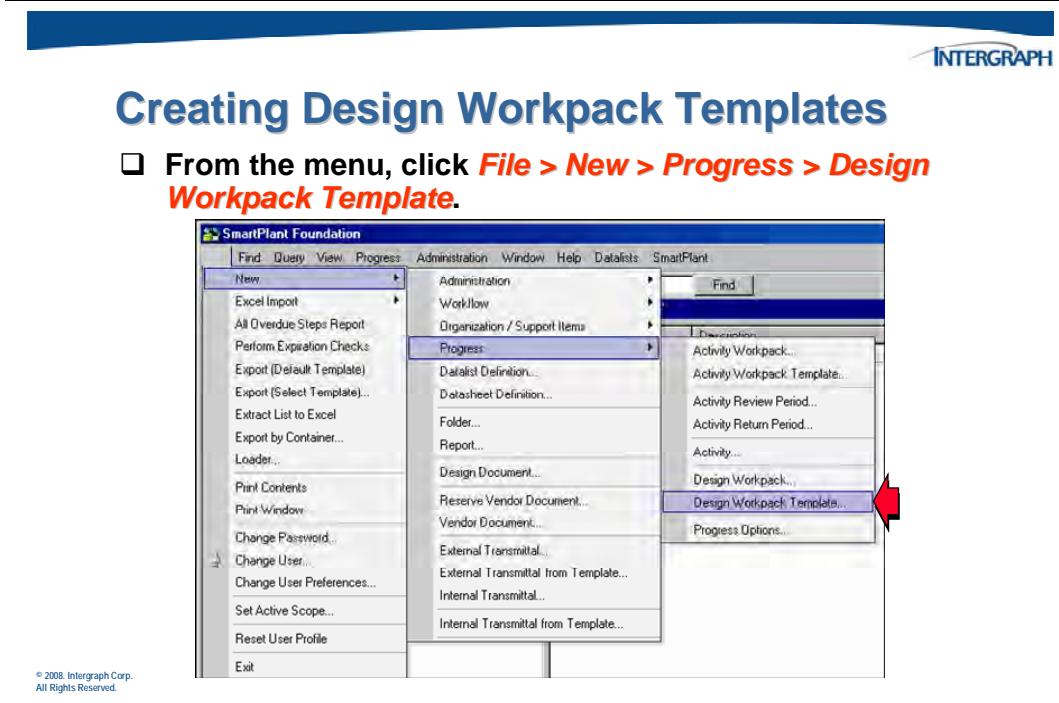
Activated when workpack is in replan. If necessary, enter revised construction plan start and end dates rather than changing the original dates entered for that value.

**Man hours**

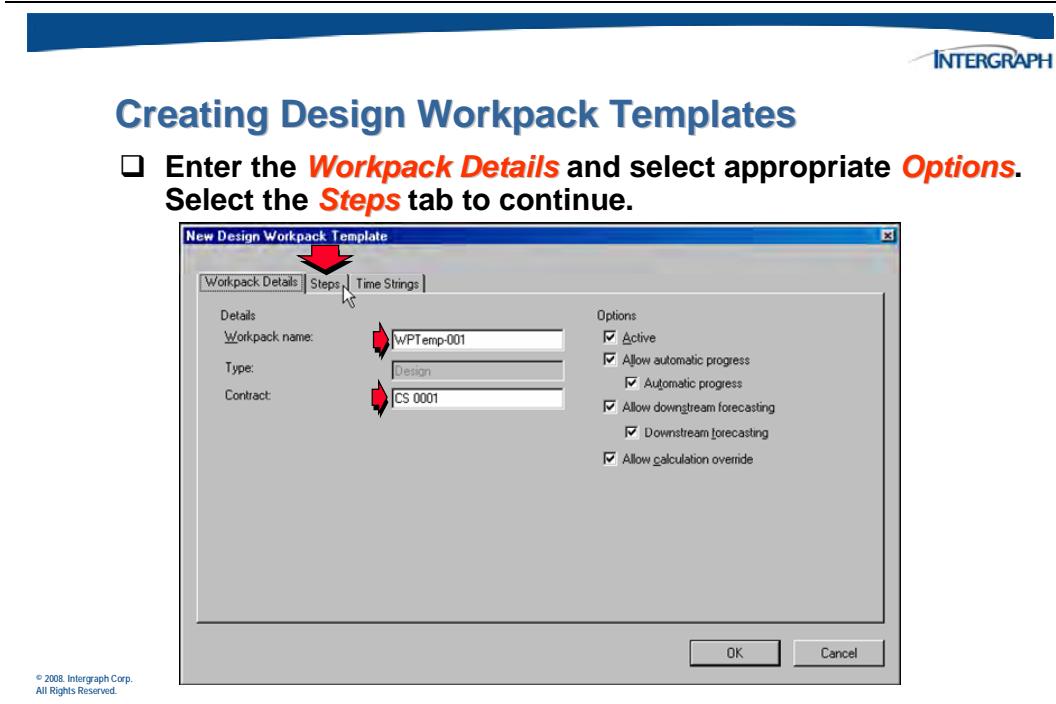
<b>Budget</b>	The original number of man hours that have been budgeted for the completion of this deliverable.
<b>Unapproved</b>	The number of man hours (needed to complete the task) you would like to extend the allocated budget hours by. These hours are not yet approved or used in any calculations.
<b>Approved</b>	The number of additional man hours that have been approved.
<b>To be approved</b>	The number of unapproved hours that have still to be approved.
	The number entered here is subtracted from the <b>Unapproved</b> field and added to the <b>Approved</b> and <b>Current</b> fields.
<b>Current</b>	The accumulated number of man hours allocated (budget hours + approved hours). You cannot edit this field.

## 8.3 Creating Design Workpack Templates

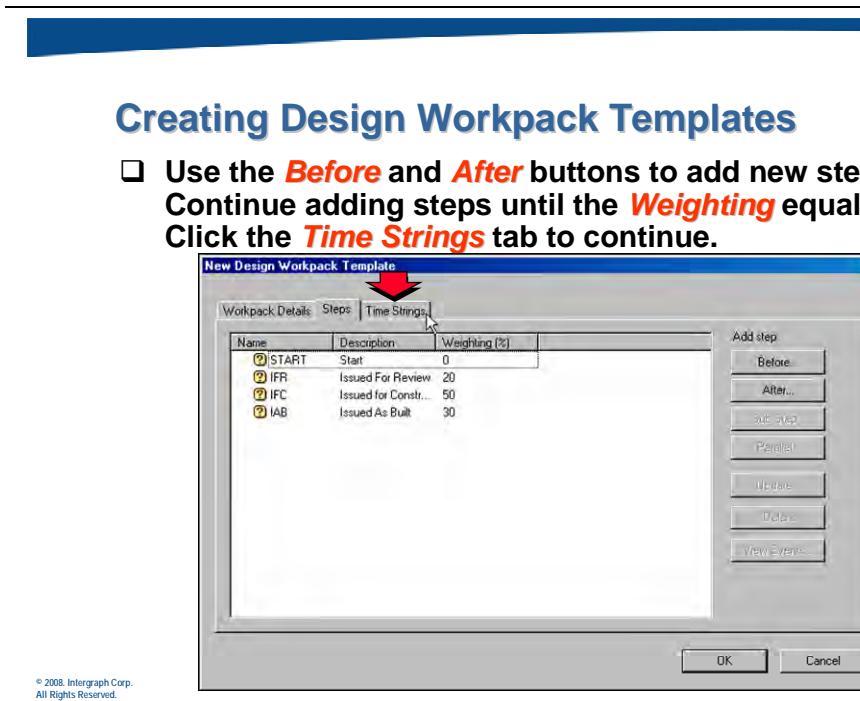
Design Workpack Templates let you set certain options to be used by all workpacks under a given contract.



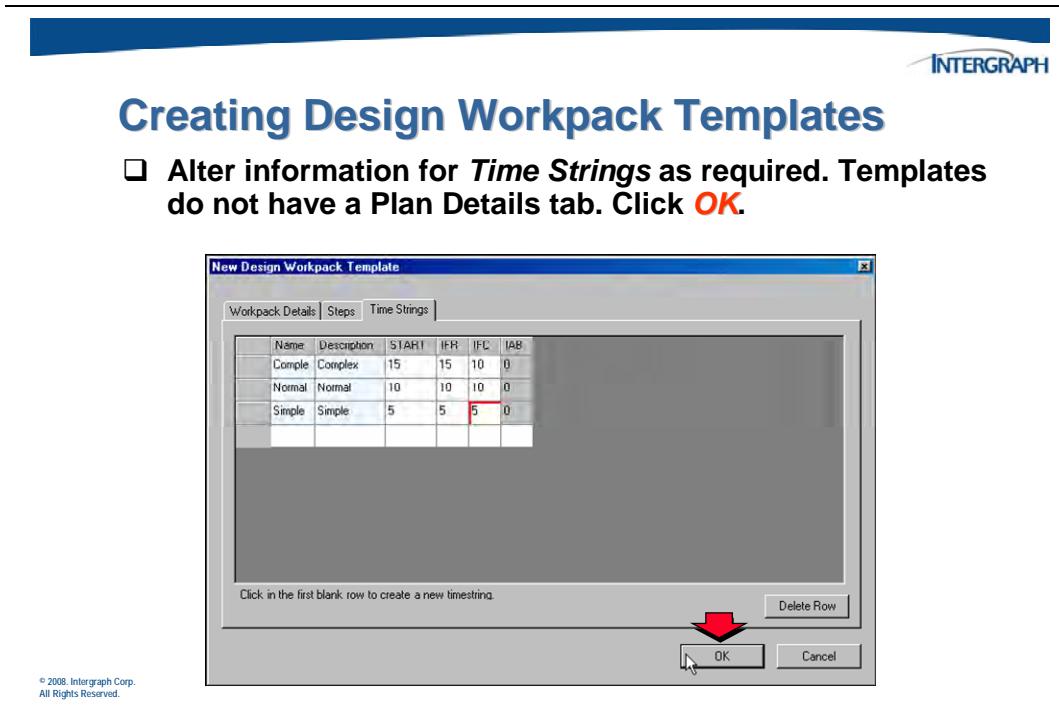
On the **Workpack Details** tab, enter the **Name** and **Contract**. Notice the Unit and Area are not set on templates. Set options as you normally would when creating a design workpack.



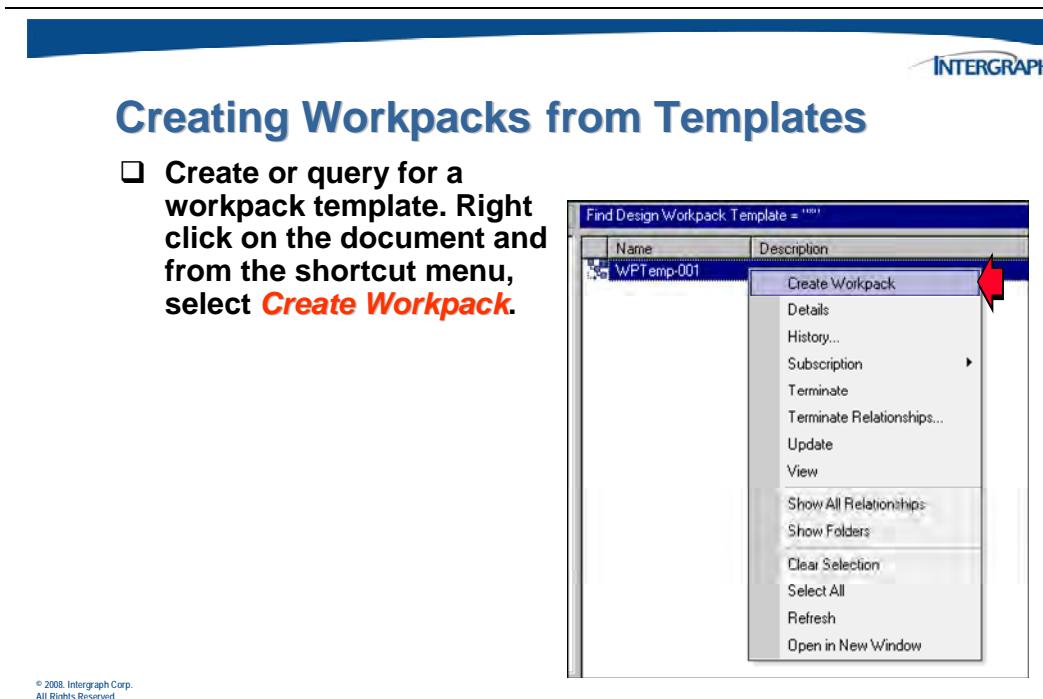
On the **Steps** tab, create steps as you normally would when creating a design workpack.



On the **Time Strings** tab, create time strings as you normally would when creating a design workpack.

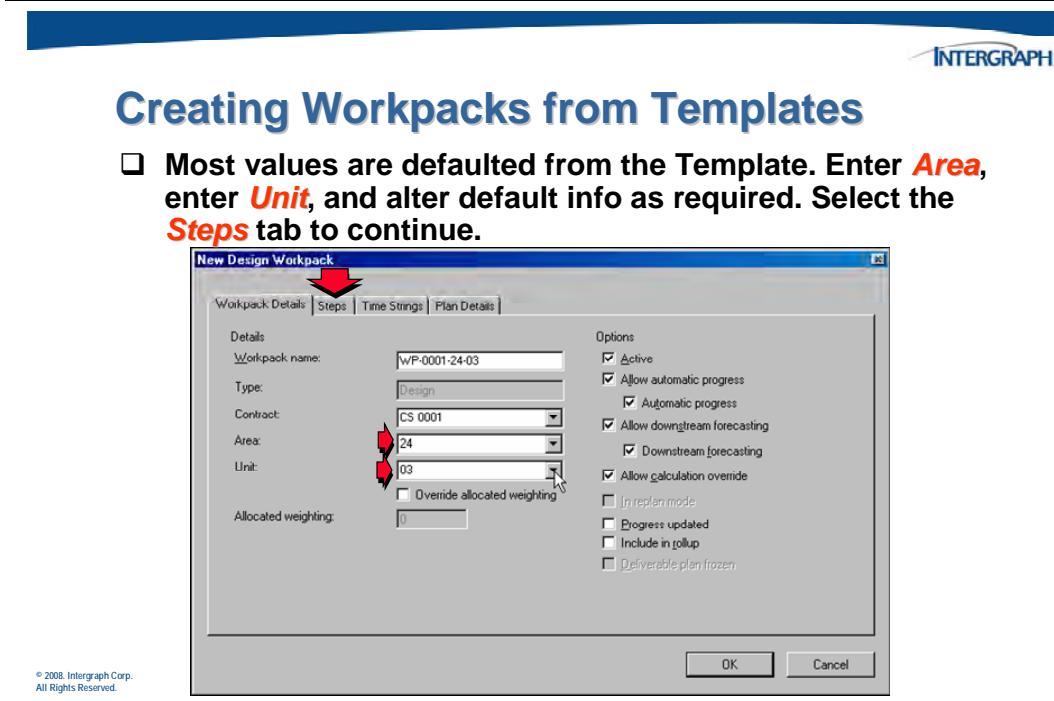


The design workpack template is now available for use as a basis for new design workpacks.



## 8.4 Creating Workpacks from Templates

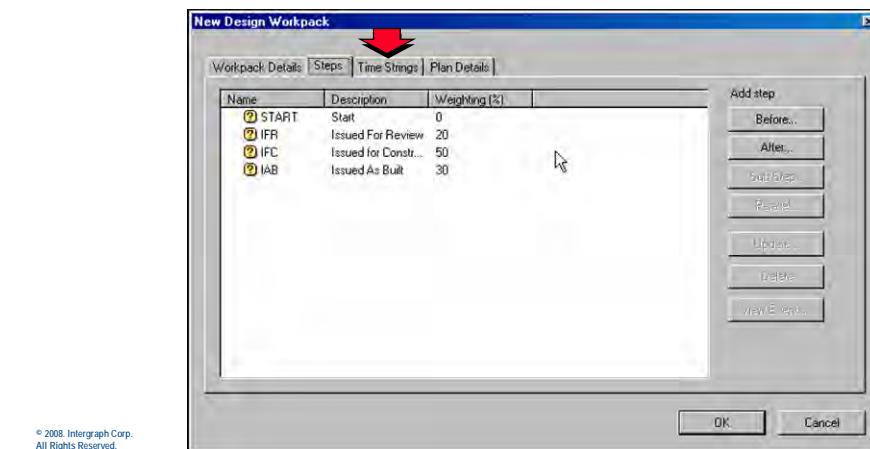
Continue creation of the design workpack by adding or altering the values that were populated from the template.





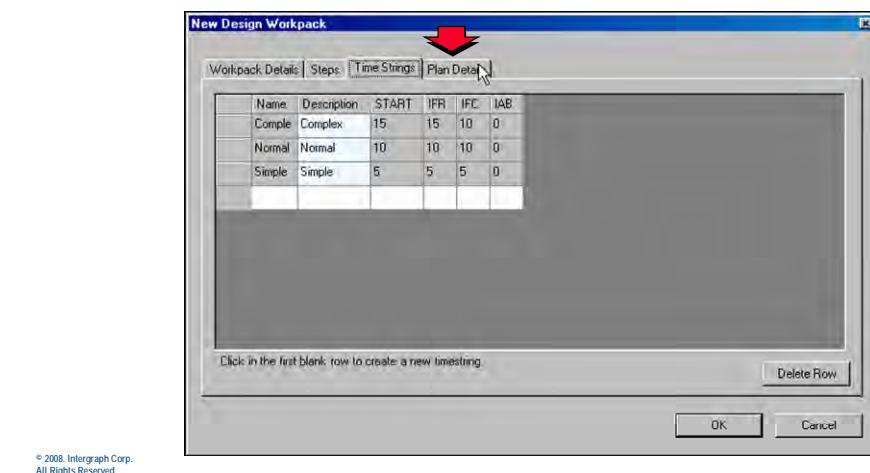
## Creating Workpacks from Templates

- The **Step** information is defaulted from the Template. Change or add steps as required. Click the **Time Strings** tab to continue.



## Creating Workpacks from Templates

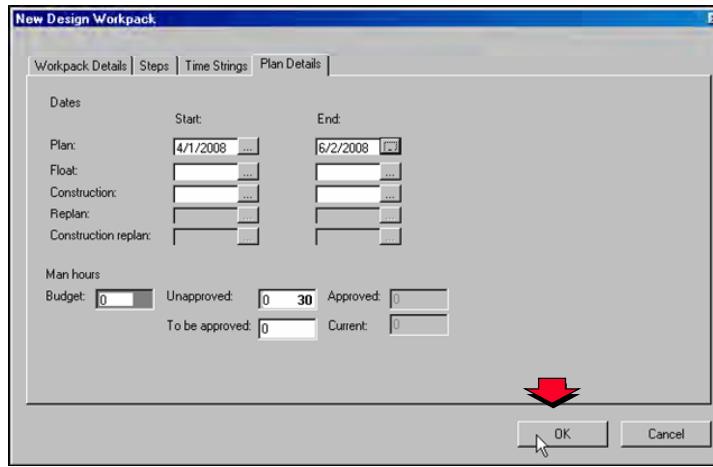
- The **Time Strings** information defaults from the template. Alter as required. Click the **Plan Details** tab to continue.





## Creating Workpacks from Templates

- ❑ The **Plan Details** information is not populated from the template. Enter appropriate values and click **OK**.

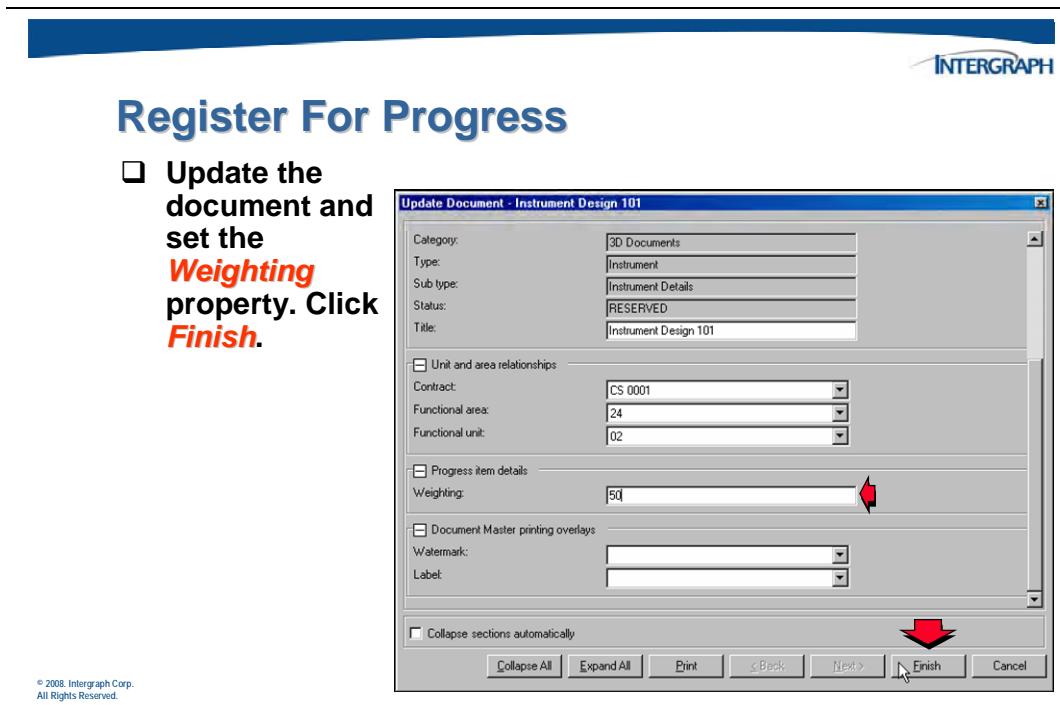


© 2008, Intergraph Corp.  
All Rights Reserved.

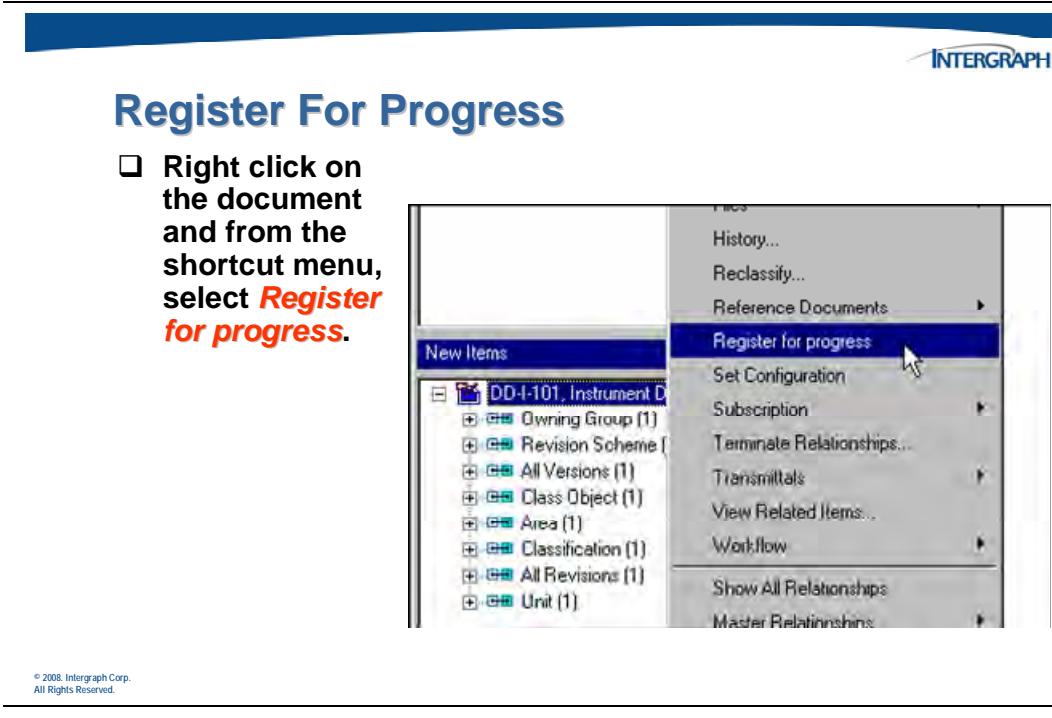
## 8.5 Registering Deliverables for Progress

For a design document to take part in a workpack, the document must be registered for progress. The design document is registered against the workpack that exists for the current configuration. The document cannot be registered for progress if the weighting property is not set for the document.

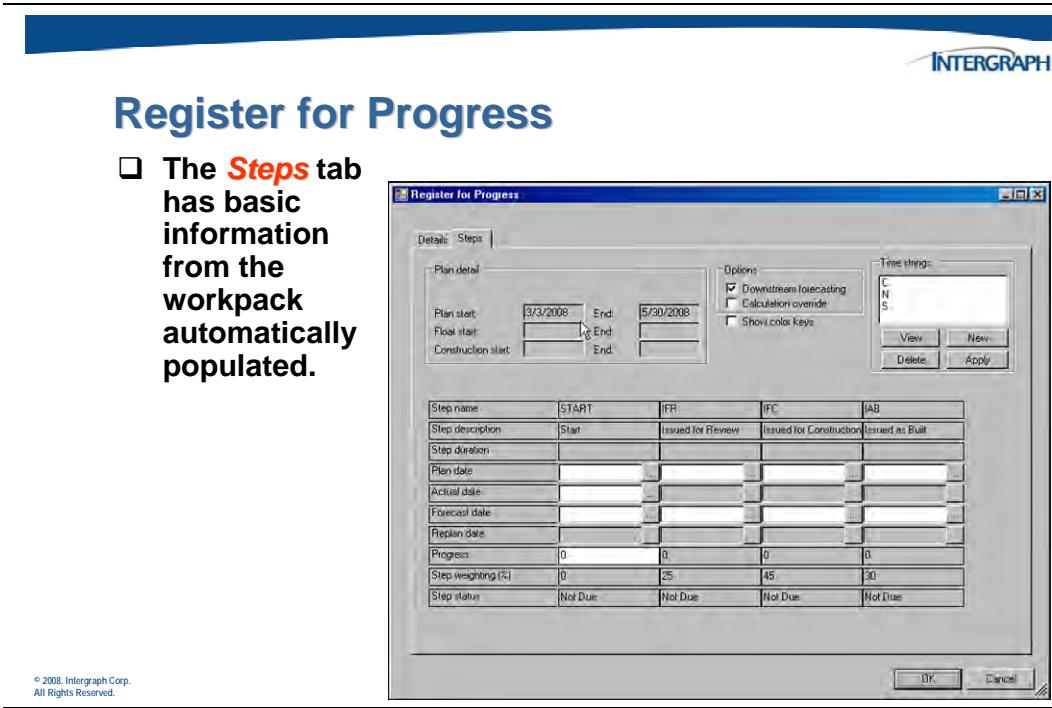
Update the document and set the weight property to make the document available for progress.



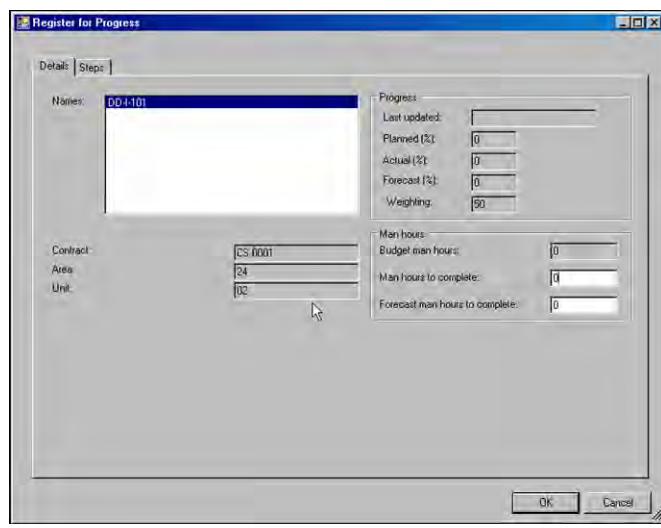
Once the property is set, the document can be registered for progress.



On the **Register for Progress** dialog, the **Steps** tab is populated with the basic step information from the workpack.

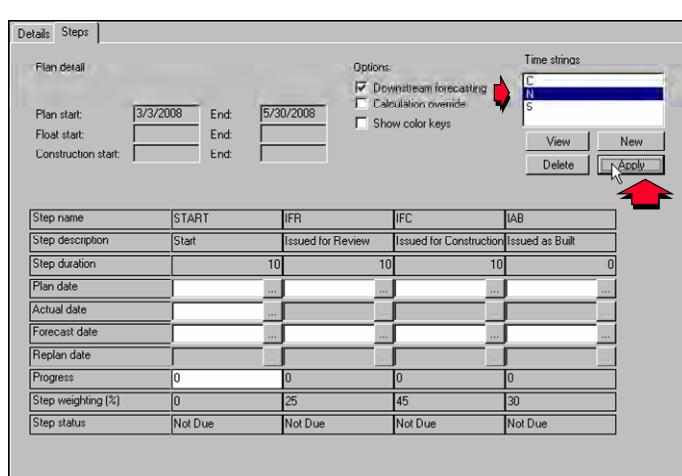


The **Details** tab has information populated from the design document, the configuration, and the workpack.



The screenshot shows the 'Register for Progress' dialog box with the 'Details' tab selected. The 'Names' field contains 'DD-I-101'. Under 'Contract', 'Area', and 'Unit', the values are 'CS 0001', '24', and '02' respectively. On the right side, there are sections for 'Progress' and 'Man hours'. The 'Progress' section includes fields for 'Last updated', 'Planned (%)', 'Actual (%)', 'Forecast (%)', and 'Weighting'. The 'Man hours' section includes fields for 'Budget man hours', 'Man hours to complete', and 'Forecast man hours to complete'. At the bottom are 'OK' and 'Cancel' buttons. A copyright notice at the bottom left reads: © 2008, Intergraph Corp. All Rights Reserved.

To begin tracking progress for the document, select the appropriate time string and click apply. The **Step** durations are automatically populated based on the selected time string.



The screenshot shows the 'Register for Progress' dialog box with the 'Steps' tab selected. In the 'Plan detail' section, 'Plan start' is set to 3/3/2008 and 'End' is 5/30/2008. In the 'Options' group, 'Downstream forecasting' is checked, while 'Calculation override' and 'Show color keys' are unchecked. The 'Time strings' dropdown menu is open, showing options C, N, and S, with 'N' selected. Red arrows point to the 'Apply' button and the 'N' option in the dropdown. Below these, a table lists step details for four categories: START, IFR, IFC, and JAB. The 'Step duration' for all categories is 10. The 'Step status' for all categories is 'Not Due'. A copyright notice at the bottom left reads: © 2008, Intergraph Corp. All Rights Reserved.

**Plan dates** must exist to track progress. Setting the **Plan date** for the first step automatically sets the remaining steps. Selecting different Time strings adjusts the **Plan date** accordingly.



## Register for Progress

- Use calendar button to select a date for **Plan date** in the first step.

The screenshot shows the 'Register for Progress' dialog box. In the 'Step name' column, 'START' is selected. In the 'Plan date' row, there is a date entry field containing '4/15/2008'. A red arrow points to this field. To the right of the date entry field is a 'Date Entry' calendar window for March 2008, with the date '4/15/2008' highlighted. The 'Time strings' section on the right shows 'C' selected. At the bottom right of the dialog box are 'OK' and 'Cancel' buttons.

© 2008 Intergraph Corp.  
All Rights Reserved.



## Register for Progress

- The **Plan date** for the other steps are automatically calculated. Selecting alternate **Time Strings** adjusts the dates accordingly. Click **OK**.

The screenshot shows the 'Register for Progress' dialog box. The 'Time strings' section on the right has 'C' selected. A red arrow points to the 'OK' button at the bottom right of the dialog box. The 'OK' button is highlighted with a red border. The 'Cancel' button is also visible at the bottom right.

© 2008 Intergraph Corp.  
All Rights Reserved.

Once a document is registered for progress, information about the workpack is displayed in the Properties window for the document. Planned and forecast information is automatically calculated based on the given dates. Actual progress is not updated until the document is updated to reflect its status relative to the steps.

## Register For Progress

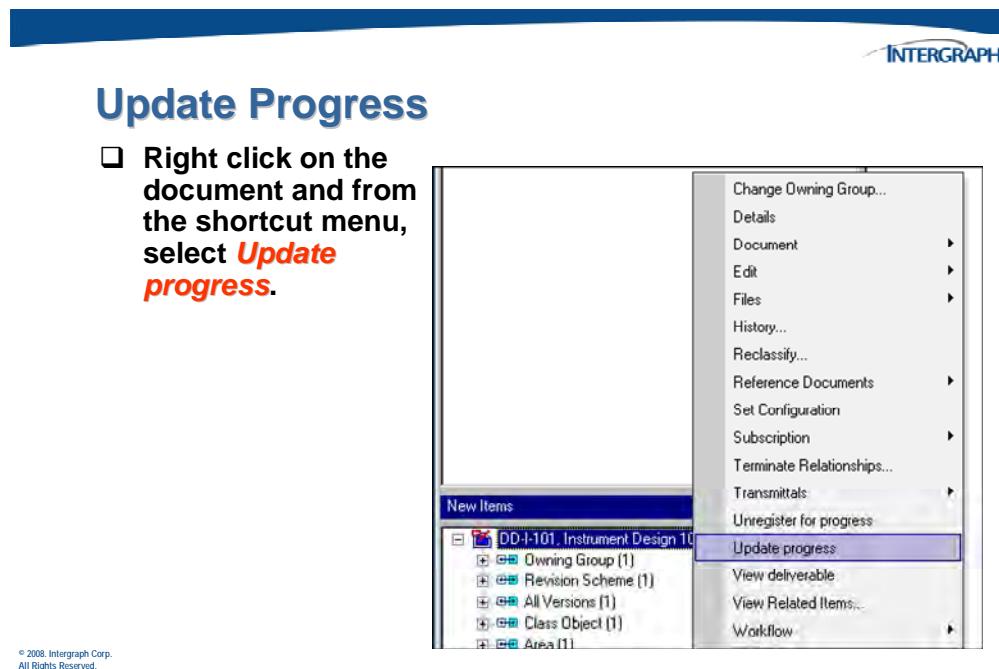
- In the **Properties** window, planned and forecast progress is calculated based on the supplied dates.

Type	Instrument
Item workpack	
Actual man-hours to	0
Actual progress	0
Budget man-hours to	1000
Calculation override	False
Downstream	True
Forecast man-hours	0
Forecast progress	76
Has due steps	False
Has overdue steps	True
Has pending steps	False
Last distributed	
Planned progress	76
Progress last calculat	4/15/2008
Object	
Container ID	

## 8.6 Updating Progress

To see changes in the actual progress for a document, you must update the progress.

---



The information on the *Steps* tab is calculated based on the current system date. Selecting the *Show color keys* option lets you visually see the status of each step.

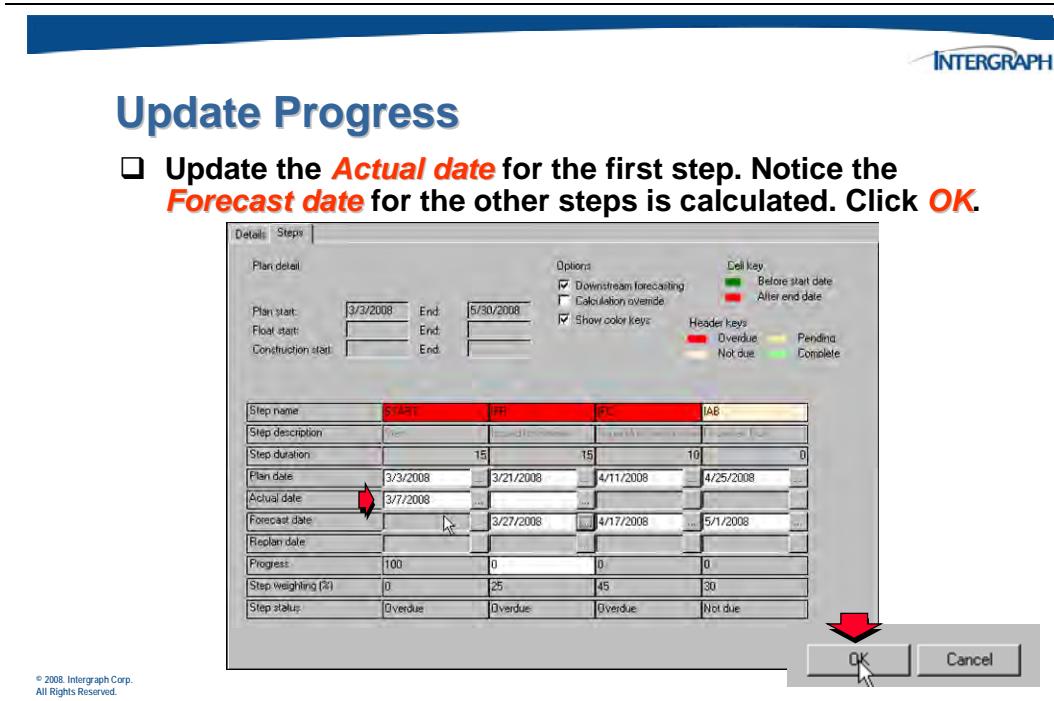
**Update Progress**

To see the status of each step, check **Show color keys**.

Step name	STAR1	IPH	IFC	AB
Step description	... (an)	Initial Review	Initial Review	Initial Review
Step duration	15	15	10	0
Plan date	3/3/2008	3/21/2008	4/11/2008	4/25/2008
Actual date	...	...	...	...
Forecast date	...	...	...	...
Replan date	...	...	...	...
Progress	0	0	0	0
Step weighting (%)	0	25	45	30
Step status	Overdue	Overdue	Overdue	Not due

© 2008, Intergraph Corp.  
All Rights Reserved.

Setting the **Actual date** for the first step automatically calculates the **Forecast date** for the remaining steps.



Since the first step only indicates the start of the plan, the progress for the first step has also been updated to 100%.

By updating progress for the document, ***Actual progress*** has been accrued and ***Forecast progress*** has been recalculated.



## Update Progress

- ❑ The update is reflected in the **Properties** window. ***Actual progress*** is accrued for the document and ***Forecast progress*** is adjusted.

Type	Instrument
<b>Item workpack</b>	
Actual man-hou	752
<b>Actual progress</b>	24.75
Budget man-hou	1000
Calculation ove	False
Downstream	True
Forecast man-h	330
Forecast progre	67
Has due steps	False
Has overdue st	True
Has pending st	True
Last distributed	
Planned progr	79
Progress last ca	4/16/2008
Reason for calc	

© 2008 Intergraph Corp.  
All Rights Reserved.

Following the same process, progress can be updated for each step in the workpack. Forecast data and percentage complete are adjusted based on the given dates.



## Update Progress

- ❑ Repeat the process to update progress for the next step and click **OK**.

Details Steps			
Plan detail Plan start: <input type="text" value="3/3/2008"/> End: <input type="text" value="5/30/2008"/> Float start: <input type="text"/> End: <input type="text"/> Construction start: <input type="text"/> End: <input type="text"/>			
Options <input checked="" type="checkbox"/> Downstream forecasting <input type="checkbox"/> Calculation override <input checked="" type="checkbox"/> Show color keys <input type="checkbox"/> Header key: Cell key: <input type="checkbox"/> Before start date <input type="checkbox"/> After end date Header key: <input type="checkbox"/> Overdue <input type="checkbox"/> Pending <input type="checkbox"/> Not due <input type="checkbox"/> Complete			
Step name	START	IFR	IFC
Step description			
Step duration	15	15	10
Plan date	3/3/2008	3/21/2008	4/11/2008
Actual date	3/7/2008	3/27/2008	4/17/2008
Forecast date		3/27/2008	4/17/2008
Replan date			5/1/2008
Progress	100	100	93.3333333333333
Step weighting (%)	0	25	45
Step status	Complete	Complete	Pending

OK Cancel

© 2008. Intergraph Corp.  
All Rights Reserved.



## Update Progress

- The update is reflected in the **Properties** window.  
**Actual progress** is accrued for the document and  
**Forecast progress** is adjusted.

Item workpack	
Actual man-hou	330
Actual progress	67
Budget man-hou	1000
Calculation over	False
Downstream	True
Forecast man-h	324
Forecast progr	67.6315789473684
Has due steps	False
Has overdue st	False
Has pending st	True
Last distributed	
Planned progre	79
Progress last ca	4/16/2008
Reason for calc	

© 2008 Intergraph Corp.  
All Rights Reserved.

Since the progress for each step is automatically calculated on days elapsed, it is possible for the percentage to not match actual progress. **Calculation override** lets you alter the progress for a step to accurately reflect actual progress.



## Update Progress

- Click the **Calculation override** option, enter a **Reason for Override**, and alter the progress for the step. Click **OK**.

Details
Steps

Plan detail
Options
Color key

Plan start:	3/3/2008	End:	5/30/2008	<input checked="" type="checkbox"/> Downstream forecasting	Header key:
Float start:		End:		<input checked="" type="checkbox"/> Calculation override	Before start date
Construction start:		End:		<input type="checkbox"/> Reason for Override	After end date
				<input type="checkbox"/> Delay Schedule	Overdue
				<input checked="" type="checkbox"/> Show color keys	Pending
					Not due
					Complete

Step name	START	IFR	IFC	IAB
Step description	Start	Issued for Review	Issued for Construction	Issued as Built
Step duration	15	15	10	0
Plan date	3/3/2008	3/21/2008	4/11/2008	4/25/2008
Actual date	3/7/2008	3/27/2008		
Forecast date		3/27/2008	4/17/2008	5/1/2008
Replan date				
Progress	100	100	50	0
Step weighting (%)	0	25	45	30
Step status	Complete	Complete	Pending	Not due

© 2008 Intergraph Corp.  
All Rights Reserved.



## Update Progress

- ❑ The update is reflected in the **Properties** window.  
**Actual progress** is accrued for the document and  
**Forecast progress** is adjusted.

Item workpack	
Actual man-hou	525
Actual progress	47.5
Budget man-hou	1000
Calculation ove	True
Downstream	True
Forecast man-h	324
Forecast progr	67.6315789473684
Has due steps	False
Has overdue str	False
Has pending str	True
Last distributed	
Planned progr	79
Progress last c	4/16/2008
Reason for calc	Schedule Delay

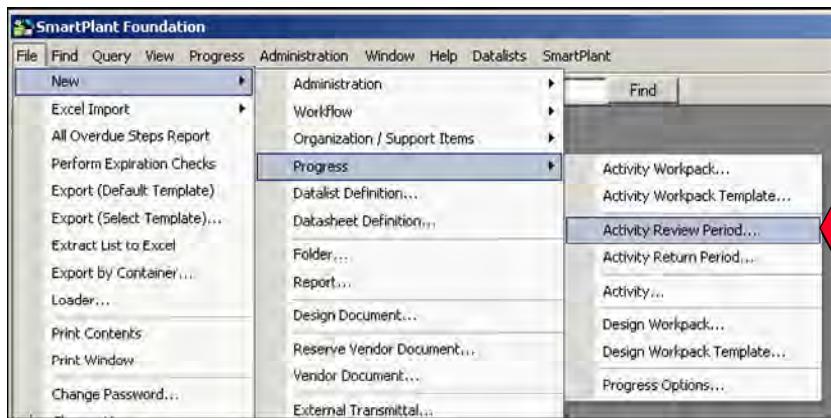
## 8.7 Using Activity Workpacks

An activity review period is the expected duration that a deliverable needs for its internal review. A review period is required for each type of deliverable.

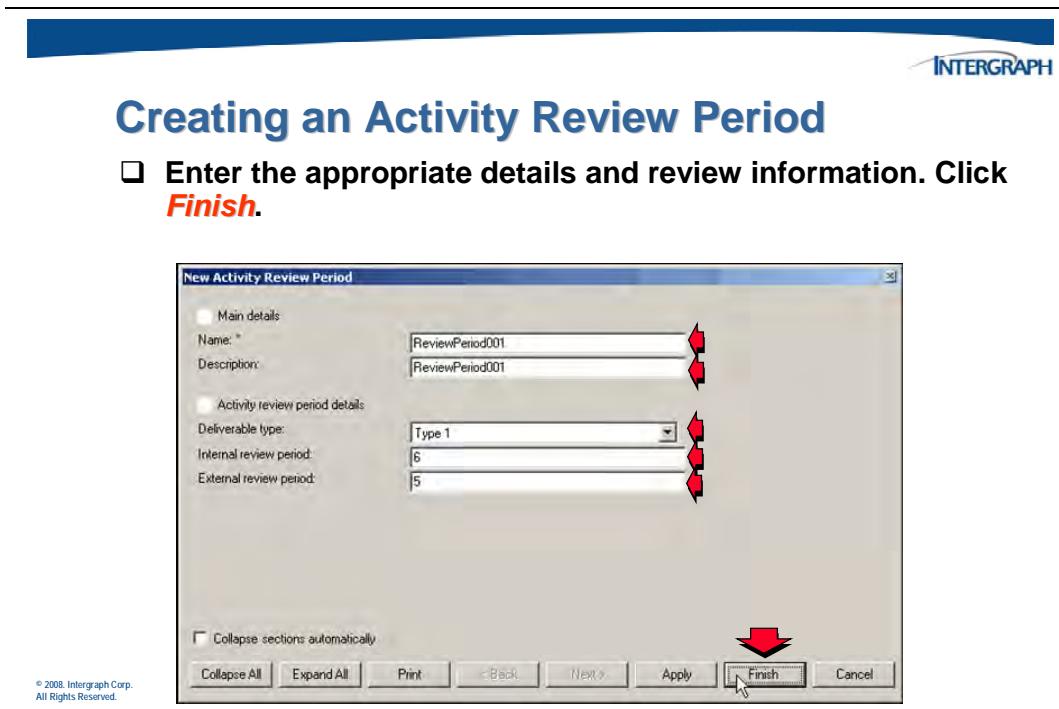
---

### Creating an Activity Review Period

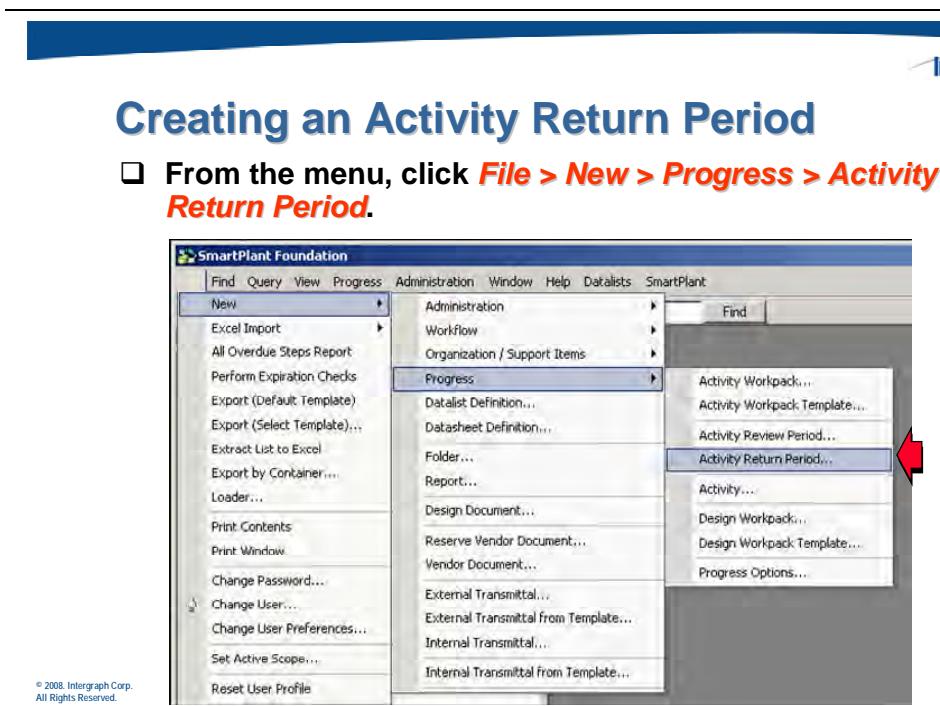
- From the menu, click **File > New > Progress > Activity Review Period.**



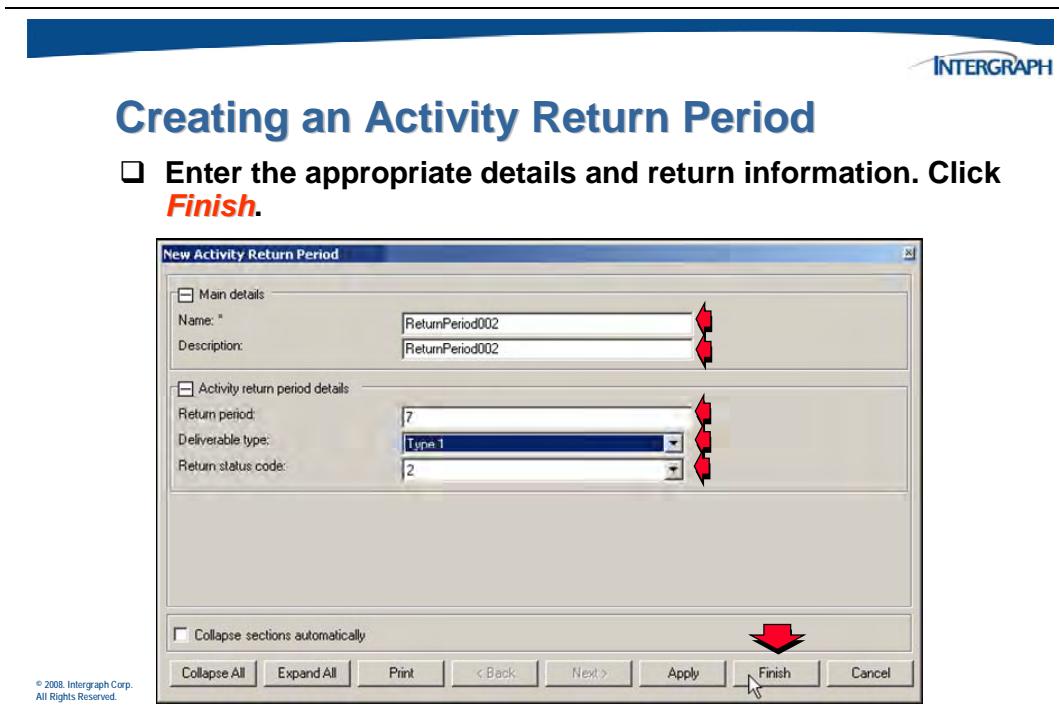
In addition to the deliverable type, review periods require the number of days needed to conduct the review internally and externally by another company.



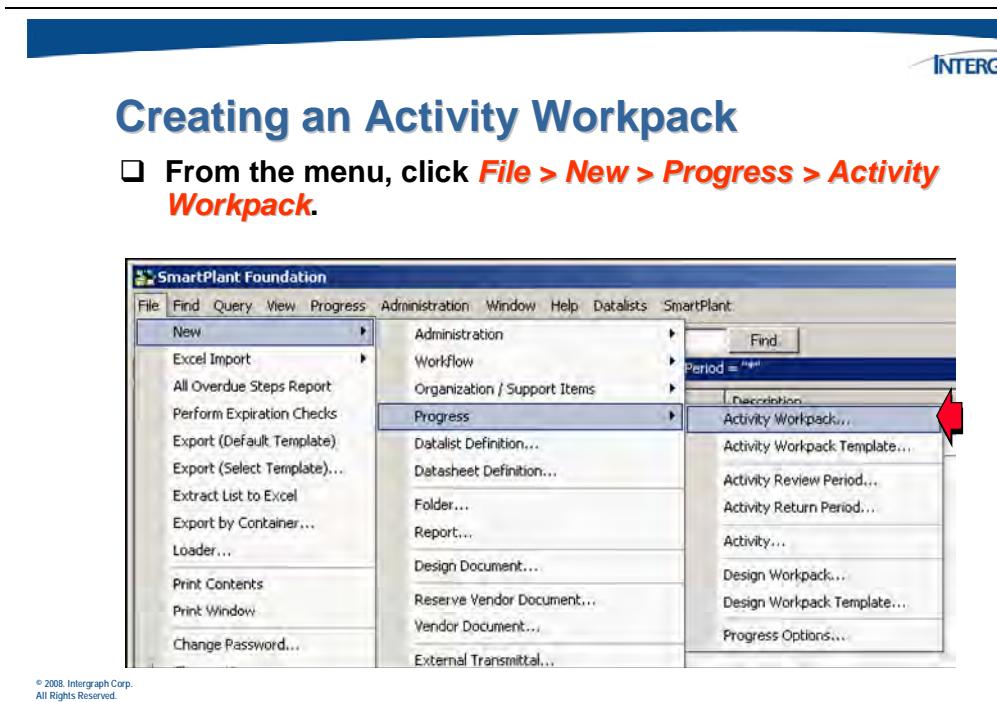
An activity return period is the expected duration that a deliverable needs until it is issued back to the originator. One review period is required for each type of deliverable.



In addition to the number of days required for the return, a return period needs a status to indicate the reason for the return. Status codes can reflect approval or rejection.



Before creating the activity workpack, ensure that progress hierarchy, progress options, review periods, and return periods are created for the current configuration.



Some of the options available with design workpacks are not applicable for activity workpacks. For example, calculation override and automatic progress are not available since progress is calculated differently using the review and return periods.

**Creating an Activity Workpack**

□ As with design workpacks, enter the proper **Details** and **Options**. Click the **Steps** tab.

Workpack Details | **Steps** | Plan Details

**Details:**

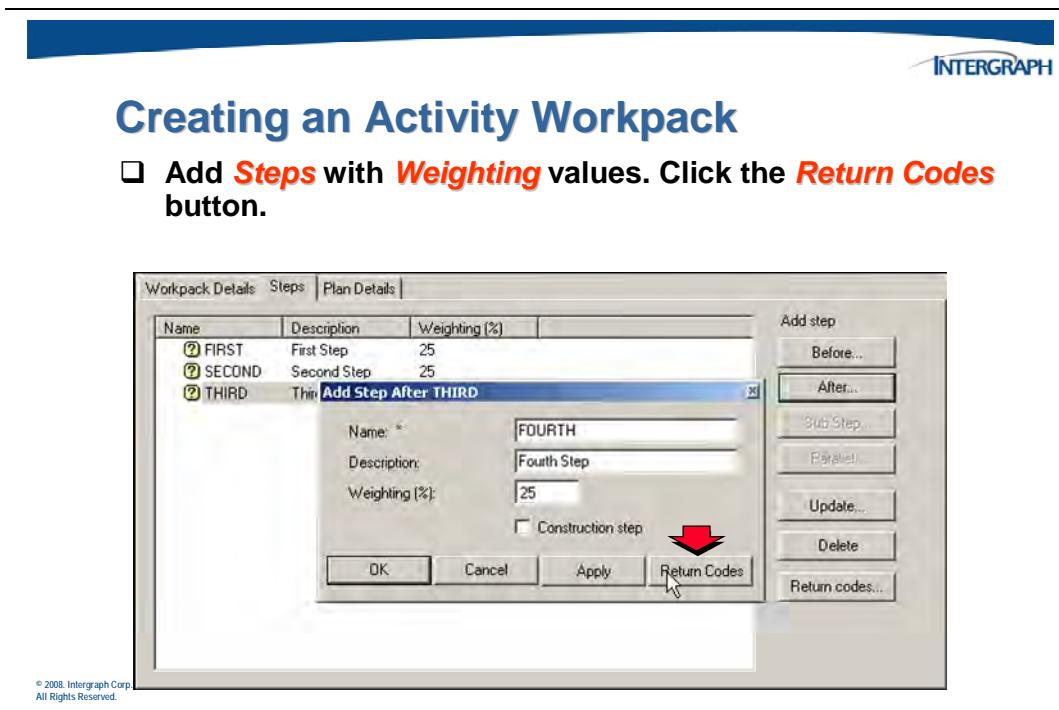
Workpack name: W/P-ACT-001-24-02  
Type: Activity  
Contract: CS 0001  
Area: 24  
Unit: 02  
Allocated weighting:

**Options:**

Active  
 Allow automatic progress  
 Automatic progress  
 Allow downstream forecasting  
 Downstream forecasting  
 Allow calculation override  
 In-replan mode  
 Progress updated  
 Include in rollup  
 Deliverable plan frozen

© 2008, Intergraph Corp.  
All Rights Reserved.

Add steps with weighting, ensuring the weighting values total 100%. Activity workpacks differ from design workpacks in that return codes are used instead of events to automatically complete steps. With the exception of the first step, each step must have a return status.

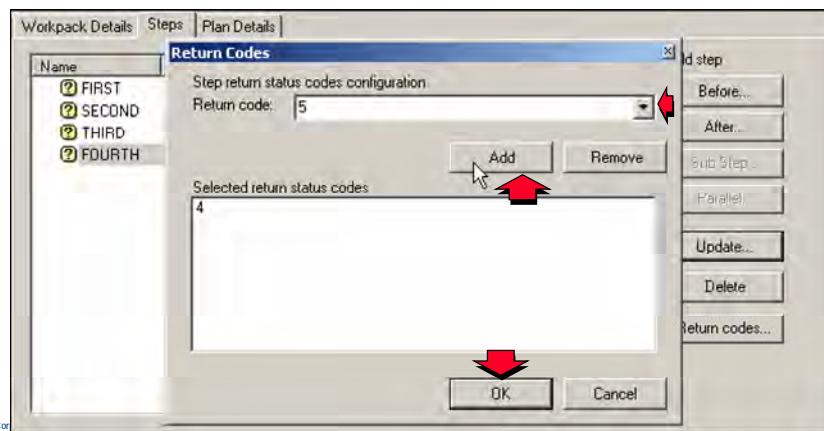


Multiple return codes can be used to signify a status, such as accepted or rejected. A **Rejected** status returns the item to the previous step.



## Creating an Activity Workpack

- Select the **Return** code and click **Add**. Once the code(s) are added, click **OK**.

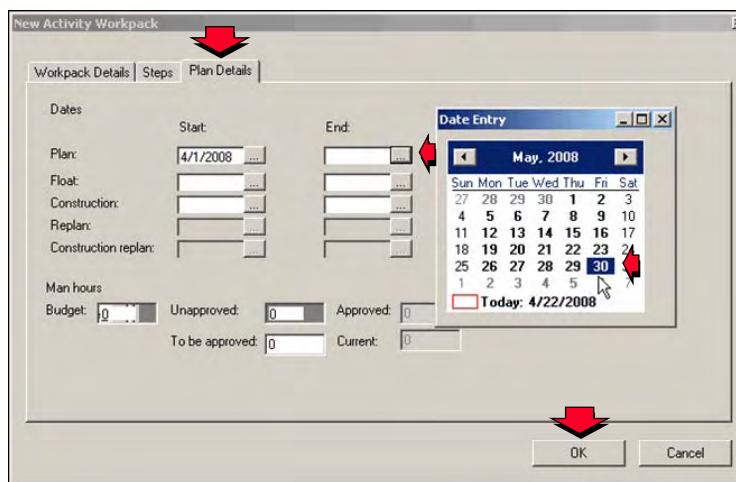


Enter the start and end dates to define the duration of the activity workpack.

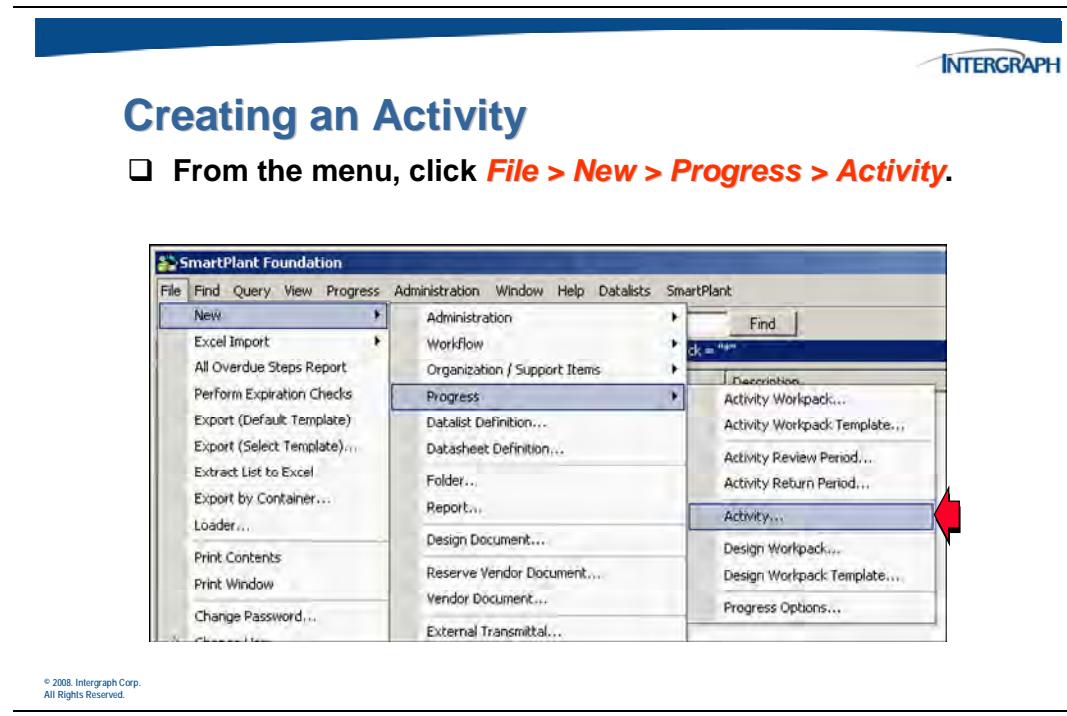


## Creating an Activity Workpack

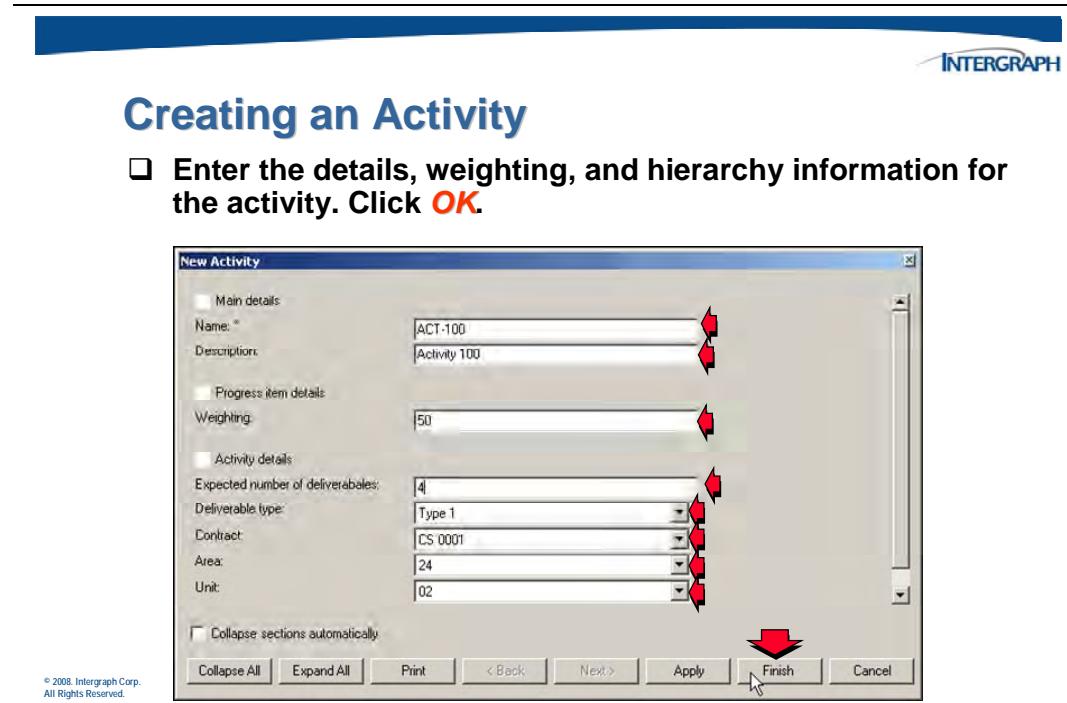
- Click the **Plan Details** tab. Enter appropriate start and end dates. Click **OK**.



Create the new activity that will be registered against the activity workpack.



Enter the details for the activity workpack.

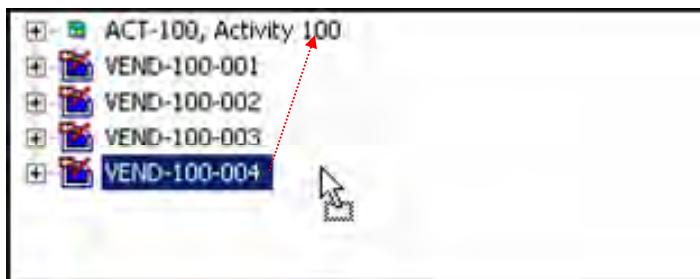


Unlike design workpacks, documents in an activity workpack are not directly registered to the workpack. The documents are treated as a single group by the activity. Each document must be related to the activity by an activity items relation.



## Relating Document to an Activity

- Find or create vendor documents. Use drag and drop to create an Activity Items relation between the activity and the documents.



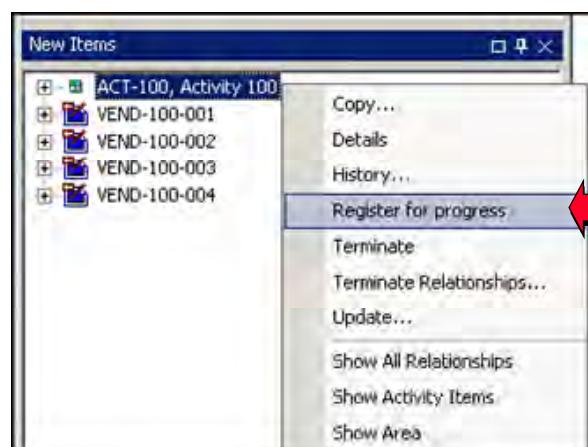
© 2008, Intergraph Corp.  
All Rights Reserved.

Once the vendor documents are related, the activity is registered for progress.



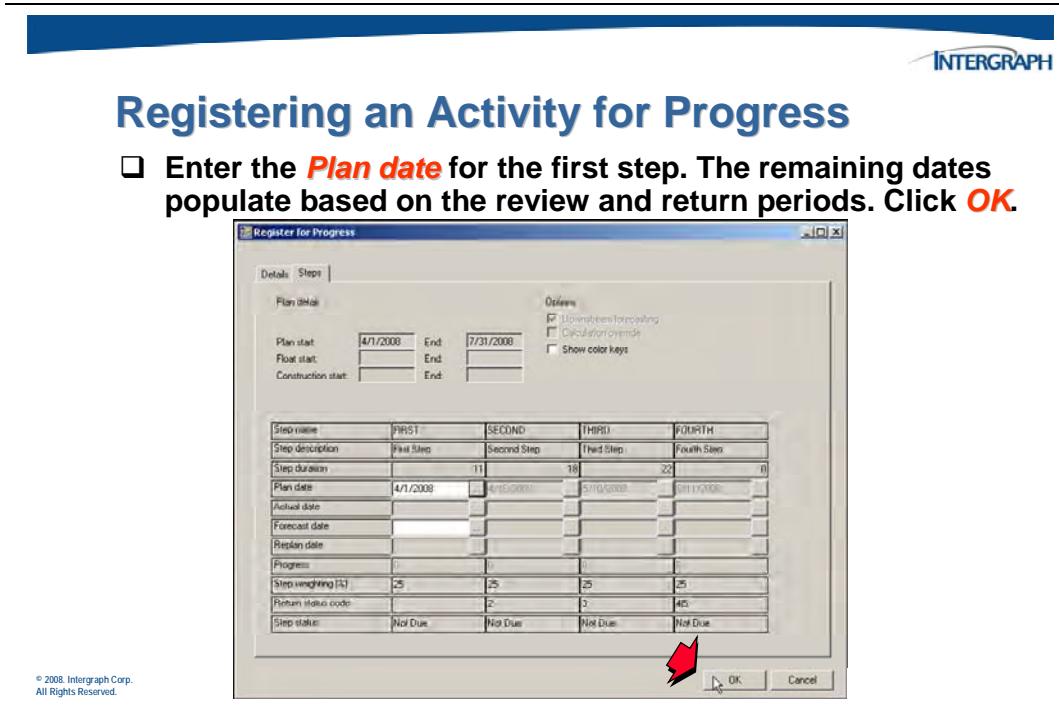
## Registering an Activity for Progress

- Right click on the activity and from the shortcut menu, select **Register for progress**.



© 2008, Intergraph Corp.  
All Rights Reserved.

The register for progress procedure is very similar to the design workpack. Some options are not available due to the differences in how dates are used to calculate progress. Most notable is the absence of time strings. Instead of using time strings, step durations are automatically set based on values from review and return dates.



After registration, progress properties are populated for the activity.

**INTERGRAPH**

## Registering an Activity for Progress

The workpack properties for the activity are updated. Planned and forecast information is calculated based on the dates, review periods, and return periods. Documents related to the activity must be updated for actual progress to update.

Item workpack
Actual man-hou 0
Actual progress 0
Budget man-ho 1000
Calculation over False
Downstream True
Forecast man-h 0
Forecast progre 64.6464646464646
Has due steps False
Has overdue st True
Has pending stc False
Last distributed
Planned progre: 55.55555555555556
Progress last ce 4/22/2008

© 2008, Intergraph Corp.  
All Rights Reserved.

Update the first vendor document to begin accruing progress.

**INTERGRAPH**

## Updating Activity Progress

To update the first vendor document, set the receipt date, return date, and status code. Click **Finish**.

Update Document - VEND-100-001

Main details

Name: VEND-100-001

Description:

Document properties

Category: 3D Documents

Type: Civil

Status: RESERVED

Title:

Progress activity item details

Actual receipt date: 4/4/2008

Actual return date: 4/17/2008

Due date:

Planned return date:

Promised date:

Return status code: 2

Finish

© 2008, Intergraph Corp.  
All Rights Reserved.

The first step signifies start of the activity, so it updates to 100%. One out of four documents are at step two, giving 25% for that step. Overall progress moves to 31.25%. The actual date will reflect the return date of the earliest document.

**Updating Activity Progress**

Update progress on the activity to see **Progress** and **Forecast dates**. The **Properties** window is also updated.

Step name	FIRST	SECOND	THIRD	FOURTH
Step description	First Step	Second Step	Third Step	Fourth Step
Step duration	11	18	22	0
Plan date	4/1/2008	4/16/2008	5/10/2008	6/11/2008
Actual date	4/4/2008			
Forecast date		4/21/2008	5/15/2008	6/16/2008
Replan date				
Progress	100	25	0	0
Step weighting (%)	25	25	25	25
Return status code	2	3	415	
Step status	Not due	Overdue	Not due	Not due

© 2008, Intergraph Corp.  
All Rights Reserved.

Update the second document with a return status code of 3.

**Updating Activity Progress**

Update the second document, set the **Actual receipt date**, **Actual return date**, and **Return status code**. Click **Finish**.

Name:	VEND-100-002
Description:	
Category:	3D Documents
Type:	Civil
Status:	RESERVED
Actual receipt date:	4/3/2008
Actual return date:	4/18/2008
Due date:	
Planned return date:	
Promised date:	
Return status code:	3

Collapse sections automatically

Collage All | Expand All | Print | < Back | Next > | **Finish** | Cancel |

© 2008, Intergraph Corp.  
All Rights Reserved.

This second document automatically completes step two and adds progress to step three. The Actual date will not populate until all documents have completed step two. The date reflects the latest return date among the documents.

**Updating Activity Progress**

- Update progress on the activity to see **Progress** and **Forecast dates**. The **Properties** window is also updated.

© 2008, Intergraph Corp.  
All Rights Reserved.

As each document is updated, progress continues to update based the return dates and status codes.

**Updating Activity Progress**

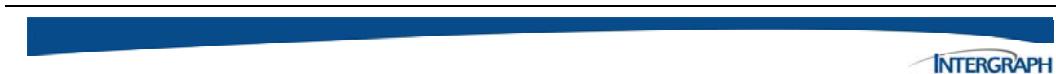
- Continue updating documents with dates and return codes to accrue progress.

© 2008, Intergraph Corp.  
All Rights Reserved.

## 8.8 Using Replan

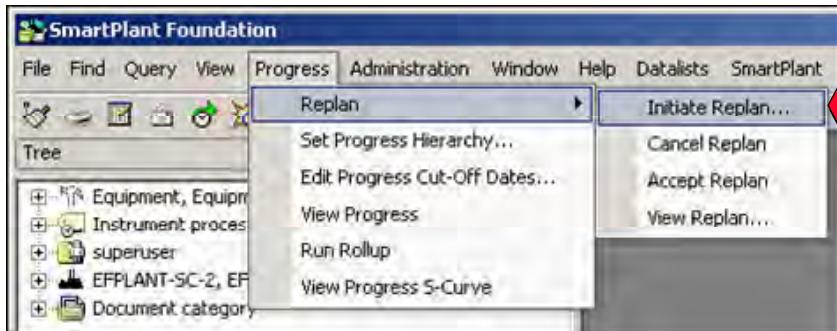
The replan functionality provides the ability to revise plan dates for workpacks and registered progress items. Plan dates entered during replan mode are reviewed and are applied only when a replan is accepted.

A replan can be initiated for any configuration and only one replan can be active for each configuration.



### Using Replan

- From the menu, click **Progress > Replan > Initiate Replan**.

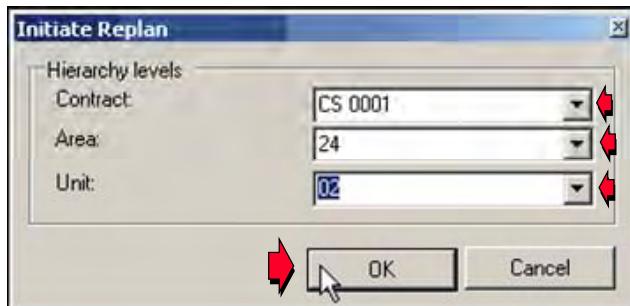


Enter the configuration information.



## Using Replan

- ❑ Enter the information for the configuration to be placed in replan mode. Click **OK**.



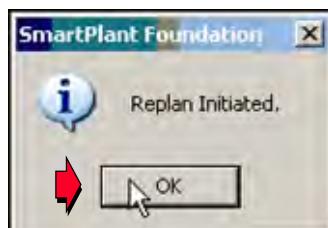
© 2008, Intergraph Corp.  
All Rights Reserved.

The replan mode is initiated and any active workpacks for the configuration are set to replan mode. Every deliverable in those workpacks is placed in replan mode, meaning only the replan dates can be modified.



## Using Replan

- ❑ The replan is initiated and associated workpacks are placed in replan mode. Click **OK**.



© 2008, Intergraph Corp.  
All Rights Reserved.

The replan dates are applied to each deliverable.

**Using Replan**

Update progress on a deliverable (document) to adjust the **Replan dates**.

Step name	Start	IFP	IFC	IAD
Step description	Start	Issued For Review	Issued for Construction	Issued As Built
Step duration	10	10	10	0
Plan date	4/15/2008	4/30/2008	5/14/2008	5/28/2008
Actual date	4/16/2008			
Forecast date		4/30/2008	5/14/2008	5/29/2008
Replan date	4/7/2008	4/30/2008	5/14/2008	6/2/2008
Progress	100	80	0	0
Step weighting (%)	0	20	50	30
Step status	Complete	Pending	Not due	Not due

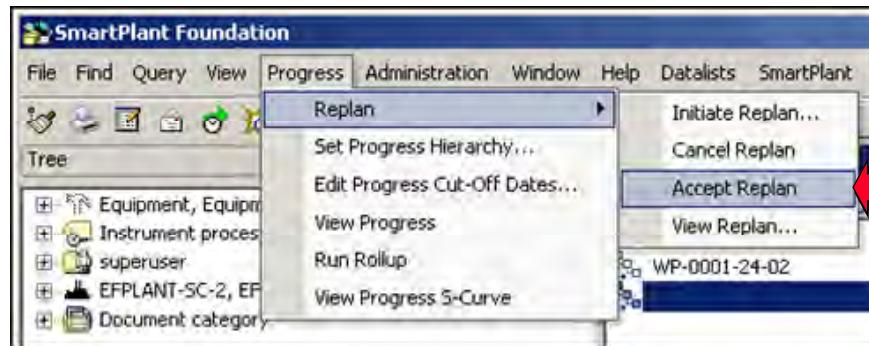
© 2008, Intergraph Corp.  
All Rights Reserved.

Replan dates are based on the actual dates. If actual dates do not exist, the replan date is based on the forecast date. If no forecast date exists, the replan date is based on the plan date. Replan dates do not have to follow time strings set for the deliverable. When the replan is accepted, new time string are created as required.

Accept the replan to apply the altered dates.

## Accepting the Replan

- ❑ From the menu, click **Progress > Replan > Accept Replan**.



Replan mode can also be canceled. Canceling a replan returns all workpacks and deliverables to the previous state.

The following changes are made to the workpack details.

- The plan start and end dates for the workpack are replaced with the replan start and end dates.
- The construction start and end dates are replaced with the replan construction start and end dates.
- All the replan date fields are cleared.



## Accepting the Replan

- Dates for the affected workpacks are updated. Replan date fields are cleared.

Dates		
	Start:	End:
Plan:	4/1/2008	
Float:		
Construction:		
Replan:		
Construction replan:		

© 2008, Intergraph Corp.  
All Rights Reserved.

---

For each deliverable in the workpack, the following changes are made:

- The plan dates for each step are replaced with the replan dates.
- The forecast dates and replan dates for each step are cleared.
- The actual dates for each step are unaffected.

If a new plan date for a deliverable does not correspond to an available time string, a new time string is created and related. The new time string is available on the appropriate workpack signified with a prefix of "RP".



## Accepting the Replan

- The **Time strings** are automatically adjusted by the replan.  
Adjusted dates are signified by the “RP” prefix.

Workpack Details   Steps   Time Strings   Plan Details						
	Name	Description	START	IFR	IFC	IAB
▶	Complex	Complex	15	15	10	0
	Normal	Normal	10	10	10	0
	RP1	Created via	17	10	13	0
*	Simple	Simple	5	5	5	0

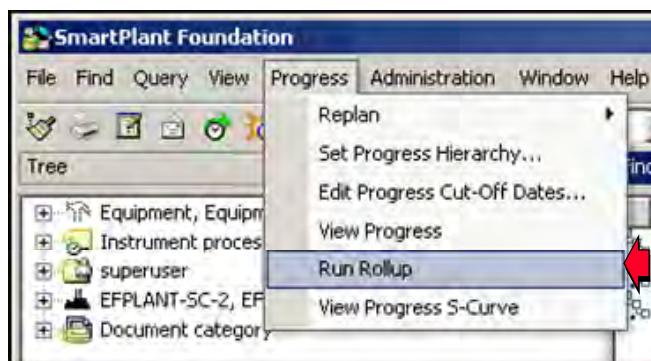
## 8.9 Using Rollups and Reports

The rollup process provides the ability to calculate, store, and report accumulated progress at each level in the progress reporting hierarchy.

---

### Using Rollups and Reports

- From the menu, click **Progress > Run Rollup**.

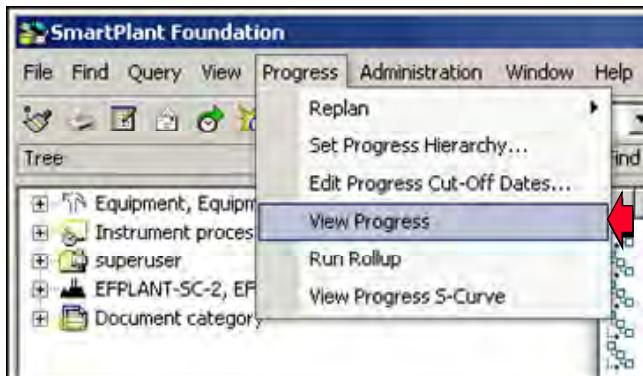


Once the rollup is complete, progress can be viewed.



## Using Rollups and Reports

- From the menu, click **Progress > View Progress**.



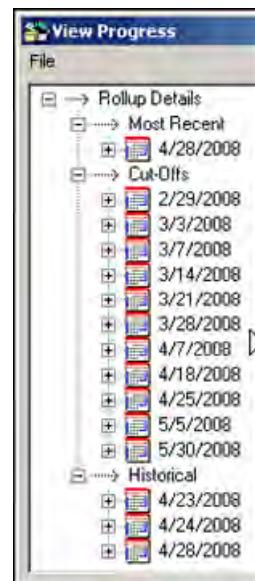
© 2008, Intergraph Corp.  
All Rights Reserved.

Progress information is available on date of a rollup or cut-off dates.



## Using Rollups and Reports

- Progress can be viewed for recent and **Historical** rollups, as well as **Cut-off dates**.



© 2008, Intergraph Corp.  
All Rights Reserved.

Select a date and a level in the hierarchy to view more detailed information.

**Using Rollups and Reports**

- ❑ Information can be viewed at any level in the Hierarchy.

© 2008, Intergraph Corp.  
All Rights Reserved.

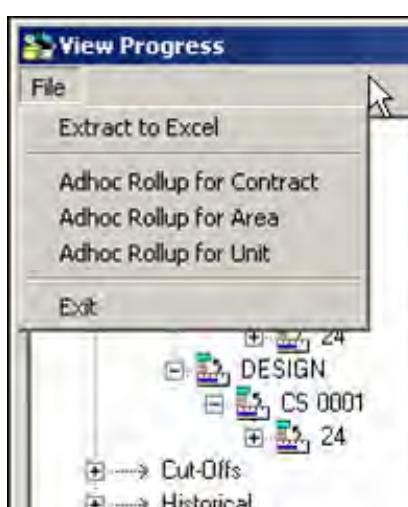
**Using Rollups and Reports**

- ❑ Sample Progress View

Name	ManHo.	Planned	Actual	Forecast	(ManH...	(Plann...	(Actual)	(Forec...
U202	250	97.2	100	100	250	97.2	100	100
U203	400	98.2	100	100	400	98.2	100	100
U201	0	0	0	0	350	97.787	100	100
02	650	97.815...	100	100	1000	97.805...	100	100

© 2008, Intergraph Corp.  
All Rights Reserved.

Reports are also available from the *File* menu.

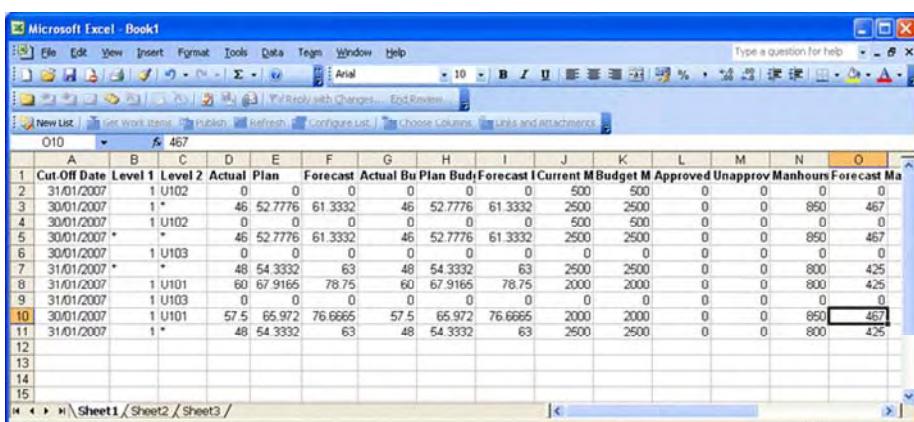


**Using Rollups and Reports**

- Progress information can also be viewed quickly by using **Adhoc Rollup** reports.

© 2008, Intergraph Corp.  
All Rights Reserved.

Progress information from the rollups can be populated to Excel.

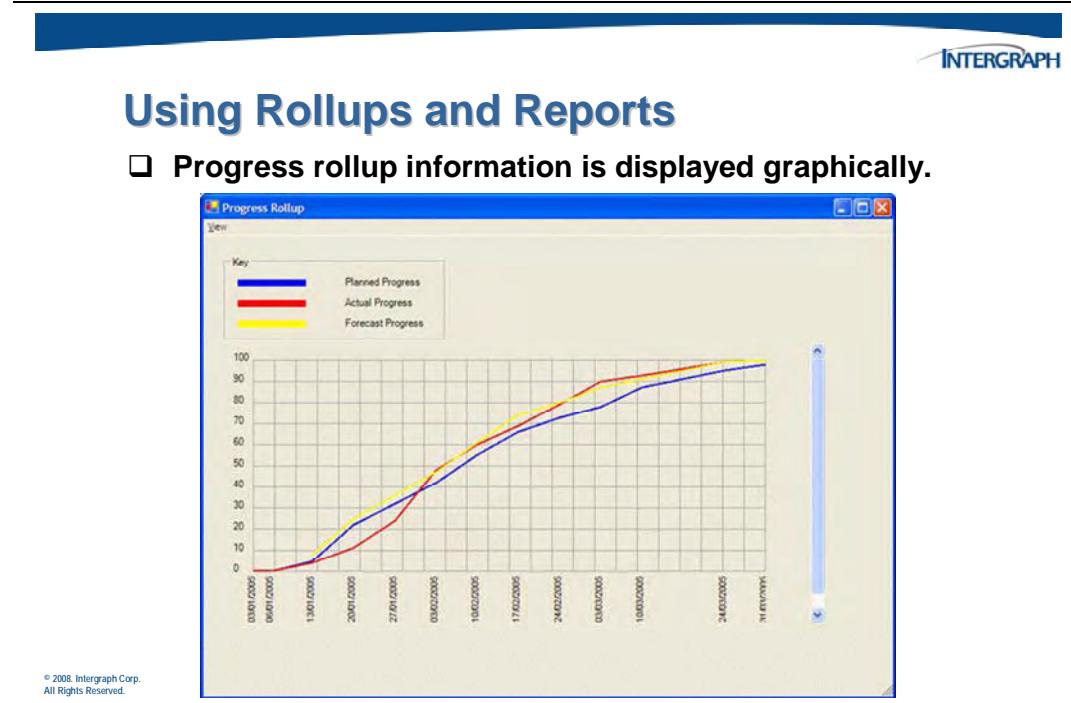
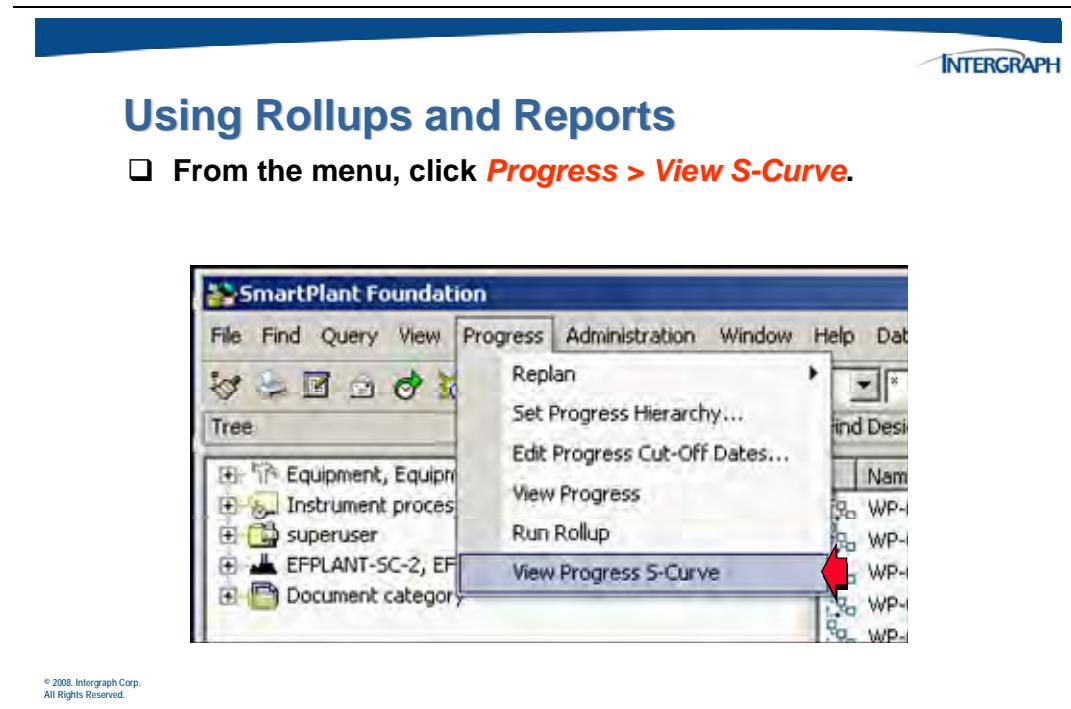


**Using Rollups and Reports**

- Select **Extract to Excel** to populate the progress rollup information to an Excel spreadsheet.

© 2008, Intergraph Corp.  
All Rights Reserved.

A graphical view of progress information is also available.



## 8.10 Activity - Progress Model

Complete the **Chapter 8 – Activity** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.



# 9

CHAPTER

---

## System Administration Overview



## 9. Introduction to SPF Security

The SmartPlant Foundation security model is a flexible mechanism to control role-based user access to data and the operations that can be performed on that data.

---



### Introduction to SPF Security

**The security model is comprised of:**

- Users**
- Roles, domains and access groups**
- Configurations**
- Role assignments**

---

© 2008, Intergraph Corp.  
All Rights Reserved.

The *Desktop Client* is used to configure the security model by creating and relating security objects. No additional schema modeling of classes, interfaces, or relationship definitions is required.

Once the security access model is designed, the various levels of access are modeled by creating access groups and relating them to roles. The access groups are related to the relevant methods, interfaces, and view definitions to which they have to grant access.

A user is assigned a role within a configuration, for example, to work as a **Designer** in **Project1**. Roles are related to access groups, which control access to the different components of the system.



## Introduction to SPF Security

**The security model controls user access to:**

- Menus and toolbars**
- Shortcut menu commands**
- Relationship manipulation and navigation**
- Data segregation based on user and tool ownership**
- Conditional data access supported by query, FTR, and reporting**

## 9.1 Components of the Security Model

The following components make up the security model and will be addressed in the following sections: *Domains*, *Configurations*, *Access Groups*, *Owning Groups*, and *Roles and Role Assignments*.

## 9.1.1 Domains and Data Segregation

Authoring tools such as SmartPlant P&ID and SmartPlant 3D each publish their own data, which is then consolidated on approval.



### Domains and Data Segregation

**Data sets published by the authoring tools need to be segregated and managed independently of each other and independently from the consolidated data set.**

**Each of these data sets is referred to as a **domain**.**

**Domains are used to segregate the data sets for the schema, system administration, and central SmartPlant Foundation data.**

**The role definition determines which domains a user can access.**



## Domains and Data Segregation

**Domains segregate the data in the database for both performance and data integrity.**

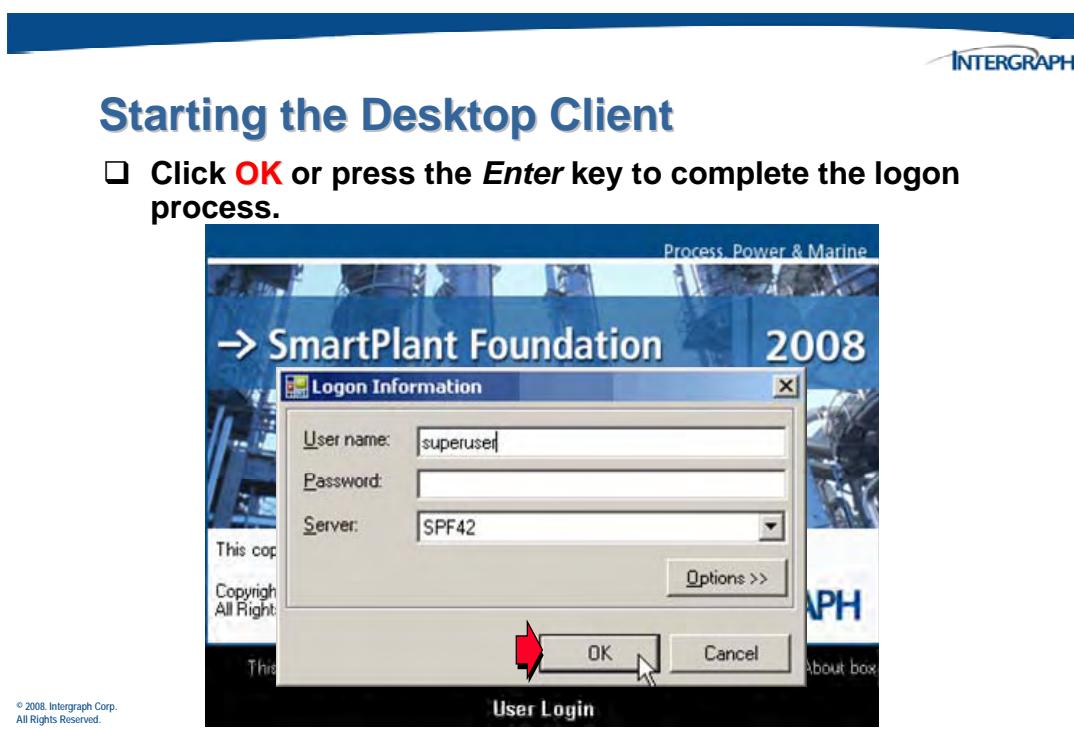
**The SmartPlant Foundation authoring tools create their data in one domain and publish into a second domain.**

---

© 2008, Intergraph Corp.  
All Rights Reserved.

Domains are also used by SmartPlant Foundation authoring to segregate the data in a similar way to the tool databases of applications like SmartPlant P&ID.

Use the following example to review the existing definitions. First, start the Desktop Client user interface. Click **Start > Programs > Intergraph SmartPlant Foundation > SmartPlant Foundation Desktop Client**. When the *Logon* dialog appears, enter the user name *superuser*.

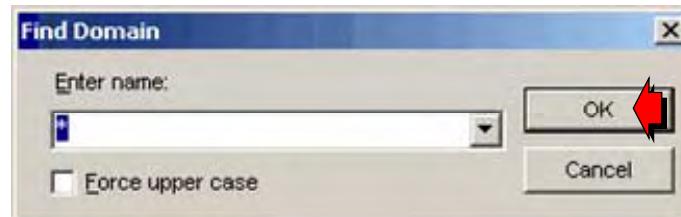


Perform a search to review the existing domains. Click **Find > Administration > Domain**. The *Find Domain* dialog displays.



## Domains

- Select OK to find and display all Domains.



© 2008. Intergraph Corp.  
All Rights Reserved.



## Domains

The results of the Find command will appear in a browser window.

Name	Description	Container ID	Creation Date	Created By
ADMIN	Administration objects	BootStrap.BootStrap	2/7/2008 2:09...	superuser
AUDIT	Audit data model	BootStrap.BootStrap	2/7/2008 2:09...	superuser
CSC	Control System Component	DW_A_General	2/7/2008 2:09...	superuser
DDS	Dimensional Data sheet domain	DW_A_General	2/7/2008 2:09...	superuser
DWShared		DW_A_General	2/7/2008 2:09...	superuser
ELE	Electrical Component	DW_A_General	2/7/2008 2:09...	superuser
EQL	Electrical Component	DW_A_General	2/7/2008 2:09...	superuser
GenD	Generic Document domain	DW_A_General	2/7/2008 2:09...	superuser
IDX	Intools domain	DW_A_General	2/7/2008 2:09...	superuser
IIC	Instrument Index Component	DW_A_General	2/7/2008 2:09...	superuser
IML	IML Component	DW_A_General	2/7/2008 2:09...	superuser
InstD	Instrument Design domain	Auth_A_Instrument	2/7/2008 2:09...	superuser
MechanicalD	Mechanical Design domain	Auth_A_Mechanical	2/7/2008 2:09...	superuser
METASHEMA	MetaSchema model	BootStrap.BootStrap	2/7/2008 2:09...	superuser
PBS	PBS domain	DW_A_General	2/7/2008 2:09...	superuser
PD-	Process Data Component	DW_A_General	2/7/2008 2:09...	superuser
PDS	PDS Component	DW_A_General	2/7/2008 2:09...	superuser
PPD	PPD domain	DW_A_General	2/7/2008 2:09...	superuser
PID	PID domain	DW_A_General	2/7/2008 2:09...	superuser
ProcessD	Process Design domain	Auth_A_Process	2/7/2008 2:09...	superuser
SCHEMA	Schema model	BootStrap.BootStrap	2/7/2008 2:09...	superuser
SP3D	Smartplant 3D domain	DW_A_General	2/7/2008 2:09...	superuser
SPF	SPF shared data	BootStrap.BootStrap	2/7/2008 2:09...	superuser
SPFAUTHORING	SPF private publishable data	BootStrap.BootStrap	2/7/2008 2:09...	superuser
SPFPREFERENCE	SPF reference data	BootStrap.BootStrap	2/7/2008 2:09...	superuser
WBS	WBS domain	DW_A_General	2/7/2008 2:09...	superuser

© 2008. Intergraph Corp.  
All Rights Reserved.

## 9.1.2 Configurations

Configurations are used to manage controlled change to data.

---



### Configurations

The top-level configurations are usually **plants** with **projects** beneath them.

Objects created in one configuration are not visible from parallel or higher configurations.

Projects are used to perform staged changes to the plant.

Objects are claimed from the plant to the project to be modified and new items created in the project.

When changes are approved, they are merged up to the plant.

---

© 2008. Intergraph Corp.  
All Rights Reserved.

For example, data created in Project1 is not visible in Project2 or at the plant level.

---



### Configurations

Configurations are relevant to the security model in that:

- A user can be assigned different roles in different configurations.
- A user can query across multiple configurations. These are known as **query configurations**.
- A user creates and manipulates data in a single configuration. This is known as the "**create configuration**" and must be one of the selected query configurations.

---

© 2008. Intergraph Corp.  
All Rights Reserved.

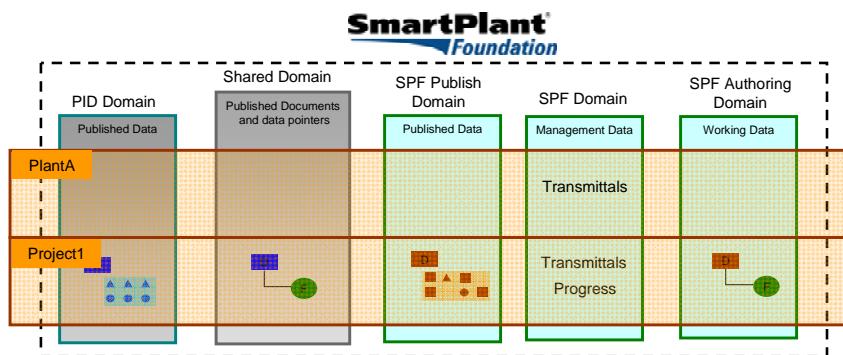
Configurations slice the data in a different way than domains.



## Configurations

**Domains are vertical splits of data**

**Configurations are horizontal splits of data**



© 2008, Intergraph Corp.  
All Rights Reserved.



## Configurations

**Not all objects are configuration controlled:**

- If a class definition (ClassDef) is defined as not configuration controlled, then objects of that ClassDef are always created with no configuration.
- If a ClassDef is defined as configuration controlled, then objects of that ClassDef can be created in a configuration or with no configuration. For example, a *Designer* may create a folder in Project1, but a system administrator with no access to projects would create a configuration independent folder for their use. To create a configuration independent item, the user sets the create configuration to **Scope Not Set**.

© 2008, Intergraph Corp.  
All Rights Reserved.

### 9.1.3 Access Groups

Access groups determine what actions a user can perform in the system.



#### Access Groups

**Access Groups control a user's level of access to a particular functional component of the system, such as:**

- DocumentView**
- TransmittalUpdate**
- InstallationAdmin**

A **user** is related to the access groups through a role. Roles control:

- Conditional access to menu commands and toolbar buttons**
- Conditional access to object shortcut menu commands**
- Conditional access to relationship creation and navigation**

© 2008. Intergraph Corp.  
All Rights Reserved.

---

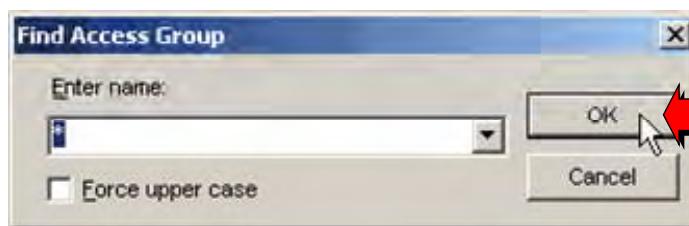
Access Groups may also be referred to as Message Access Groups or Method Access Groups. However the correct name is simply Access Groups.

Use the **Find** command to review the existing Access Groups. Click **Find > Administration > Access Group**. The *Find Access Group* dialog displays.



## Access Groups

- Select OK to find and display all Access Groups.



© 2008. Intergraph Corp.  
All Rights Reserved.



## Access Groups

The results  
of the Find  
command  
will appear  
in a browser  
window.

Name	Description	Creating	Container ID	Created
AuthoringAdministrator	Framework Administrator	True	Auth.A_Administr...	2/7/20
ConfigAdmin	Manage configurations	True	Core.ConfigAdmin	2/7/20
ConfigUpdate	Can make configuration changes by claiming	True	Core.Config	2/7/20
ConfigView	Can view configuration changes and reports	False	Core.Config	2/7/20
DatasheetAdministrator	Create and Modify datasheet definitions	True	Core.DatasheetA...	2/7/20
DocControl	Very system specific - eg labels, watermarks	True	Core.DocControl	2/7/20
DocumentAdmin	Sign off documents	True	Core.DocMgt	2/7/20
DocumentUpdate	Update of documents	True	Core.DocMgt	2/7/20
DocumentView	View documents	False	Core.DocMgt	2/7/20
DWAdministrator	TEF Administrator	True	DW.A_General	2/7/20
DWEeditor	Datawarehouse Editor	True	DW.A_General	2/7/20
DWViewer	Datawarehouse Viewer	True	DW.A_General	2/7/20
InstallationAdmin	Set up hosts, vaults, reports etc	True	Core.InstallationA...	2/7/20
InstrumentationEngineer	Manage publish/retrieve operations	True	Auth.A_Instrument	2/7/20
InstrumentationViewer	Manage publish/retrieve operations	True	Auth.A_Instrument	2/7/20
MatrixAdmin	Configure workflow step distribution matrix	True	Core.Workflow	2/7/20
MechanicalEngineer	Manage publish/retrieve operations	True	Auth.A_Mechanical	2/7/20
MechanicalViewer	Manage publish/retrieve operations	True	Auth.A_Mechanical	2/7/20
PBSAdmin	Manage PBS Items	True	Core.PBSAdmin	2/7/20
PBSAdministrator	Manage publish/retrieve operations	True	Auth.A_PBSAdmin	2/7/20
PlantItemUpdate	Update plant items	True	Core.PlantItemMgt	2/7/20

© 2008. Intergraph Corp.  
All Rights Reserved.

Use the scroll bar to view the remaining existing Access Groups.

**Access Group find results con't.**

**Access Groups**

**Find Access Group = "\*"**

Name	Description	Creating	Container ID	Created
PlantItemView	View plant items	False	Core.PlantItemMgt	2/7/20
ProcessEngineer	Manage publish retrieve operations	True	Auth.A_Process	2/7/20
ProcessViewer	Manage publish retrieve operations	True	Auth.A_Process	2/7/20
ProgressAdmin	Progress Administration	True	Core.Progress	2/7/20
ProgressUpdate	The access group in order to update prog...	True	Core.Progress	2/7/20
ProgressView	The access group in order to view progre...	False	Core.Progress	2/7/20
RoleAssignment	Create role assignments for configurations	True	Core.RoleAssignm...	2/7/20
SchemaAdministrator	Schema Administrator	True	DW\PlantData.A_S...	2/7/20
SmartPlantPublisher	SmartPlant Publish Operations	True	DW.A_General	2/7/20
SmartPlantRetriever	SmartPlant Retrieve Operations	True	DW.A_General	2/7/20
SuperUserGroup	Can do anything	True	BootStrap.BootStrap	2/7/20
SystemAdmin	Forms, Methods, Menus etc	True	BootStrap.BootStrap	2/7/20
TransmittalAdmin	Issue transmittals, manage responses etc	True	Core.Xmtl	2/7/20
TransmittalUpdate	Create transmittal etc	True	Core.Xmtl	2/7/20
TransmittalView	View transmittal reports, history etc	False	Core.Xmtl	2/7/20
UserAdmin	Create, update and delete users	True	Core.UserAdmin	2/7/20
VIEWONLY		False	BootStrap.BootStrap	2/7/20
WBSAdministrator	Manage publish retrieve operations	True	Auth.A_Instrument	2/7/20
WorkflowAdmin	Configure workflow templates	True	Core.Workflow	2/7/20
WorkflowUpdate	Configure workflow step distribution metri...	True	Core.Workflow	2/7/20
WorkflowView	Configure workflow templates	False	Core.Workflow	2/7/20

© 2008, Intergraph Corp.  
All Rights Reserved.

The following roles and their access groups are delivered in core SmartPlant Foundation:

	Access Group	Roles:									
	Access Group Description	Super User	System Administration	Installation Administration	Workflow Administration	Progress Administration	Configuration Manager	Document Controller	Data Sheet Administration	Engineer	Viewer
SuperUserGroup	Can do anything	spf									
SystemAdmin	Forms, Methods, Menus, and so on										
InstallationAdmin	Set up hosts, vaults, reports, and so on										
DocControl	Companies, labels, watermarks (site specific)										
UserAdmin	Create, update, and delete users										
RoleAssignment	Create role assignments for configurations										
ConfigAdmin	Manage configurations										
WorkflowAdmin	Configure workflow templates										
MatrixAdmin	Configure workflow step distribution matrices										
ProgressAdmin	Set up workpack templates, role up, replan, and so on										
DatasheetAdmin	Configure templates and so on										
ProgressUpdate	Register for progress and so on								E		
ProgressView	View progress data										
WorkflowUpdate	Attach workflow, use To Do List, and so on									E	
WorkflowView	View workflow only										
ConfigUpdate	Can claim and merge and so on								E		
ConfigView	Can view config reports and so on										
TransmittalAdmin	Issue transmittals, manage responses, and so on										
TransmittalUpdate	Create transmittal and so on								E		
TransmittalView	View transmittal reports and so on										
DocumentAdmin	Sign off documents								E		
DocumentUpdate	Create, revise, update, delete of documents									E	
DocumentView	View documents										
PlantItemUpdate	Update plant items								E		
PlantItemView	View plant items										
VIEWONLY	Non destructive shortcut methods, Help, and so on	spf AEV	spf AEV	spf A	spf A	spf A	spf A	spf A	spf A	spf EV	spf V

#### Notes:

-  - Indicates the role is related to the access group
- spf – Indicates the SPFAUTHORING domain is configured on the relationship
- A - Indicates the ADMIN owning group is configured on the relationship
- V - Indicates the OPENTOALL owning group is configured on the relationship
- E - Indicates the ENGINEER owning group is configured on the relationship

## 9.1.4 Owning Groups

SmartPlant Foundation has two ownership relationships.



### Owning Groups

You can configure an object to be owned by a user or by an **owning group**, which is why groups are more commonly referred to as owning groups.

The link between users and owning groups is not a simple relationship; it is via the users **role**.

Owning groups are typically configured to set up ownership of data by department or discipline.

Owning groups can be used to control the user's access to objects or parts of objects based on its ownership.

© 2008. Intergraph Corp.  
All Rights Reserved.

---

This operates independently of domains and configurations, that is, both within and across multiple domains and configurations.

Owning Groups are tied to vaulting and to data ownership. Owning Groups may also be referred to as Data Access Groups but the correct name is Owning Group.



## Owning Groups

Access control by object ownership can be configured to control the following:

- Shortcut menu command access (for example, check out of a document)
- Menus and toolbar access (for example, for the process group)
- Query access to objects (for example, documents)

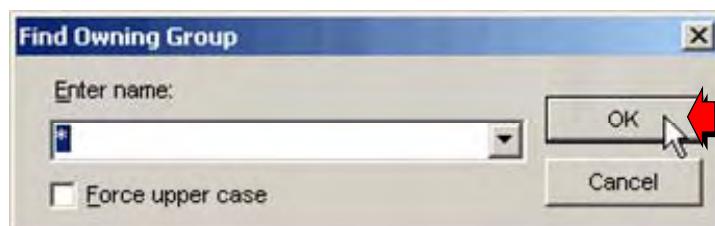
© 2008, Intergraph Corp.  
All Rights Reserved.

The following steps can be used to review the existing *Owning Groups*. From the menu, click **Find > Administration > Owning Group**. The *Find Owning Group* dialog displays.



## Owning Groups

- Select OK to find and display all *Owning Groups*.



© 2008, Intergraph Corp.  
All Rights Reserved.

**Owning Groups**

The results of the Find command will appear in a browser window.

Name	Description	Container ID	Creation Date
ADMIN	Core.Core	Core.Core	2/7/2008
ENGINEER	Core.PlantItemMgt	Core.PlantItemMgt	2/7/2008
OPEN TO ALL	Core.Core	Core.Core	2/7/2008

© 2008. Intergraph Corp.  
All Rights Reserved.

## 9.1.5 Roles and Role Assignments

Users perform different roles in different configurations (different plants or projects).



### Roles and Role Assignments

A user can perform a different role in two different projects at the same time.

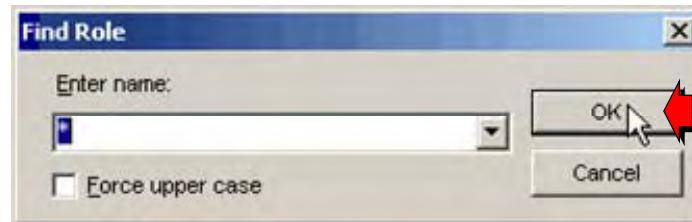
A role is made up of different sets of *access groups*, *domains*, and *owning groups*, and these sets are used separately when determining user access to the system.

- Roles determine the user's level of access in the system based on related access groups.
- Roles determine the domains accessed (queried) by a user.
- Roles determine the access to different data, based on owning groups configured on the role.
- Role assignments are configured by a dedicated GUI.

The following example can be used to review the existing *Roles*. From the menu, click **Find > Administration > Role**. The *Find Role* dialog appears.

## Roles

- Select OK to find and display all *Roles*.



© 2008. Intergraph Corp.  
All Rights Reserved.

Below is an example of some of the delivered roles in the class configuration.

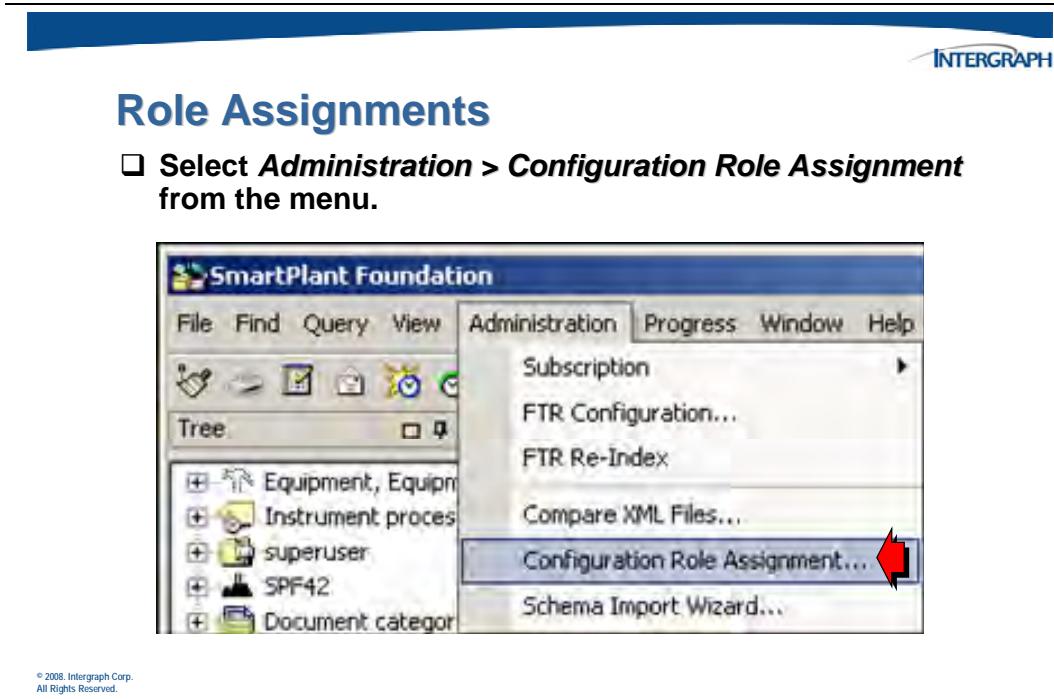
## Roles

**The results of the Find command will appear in a browser window.**

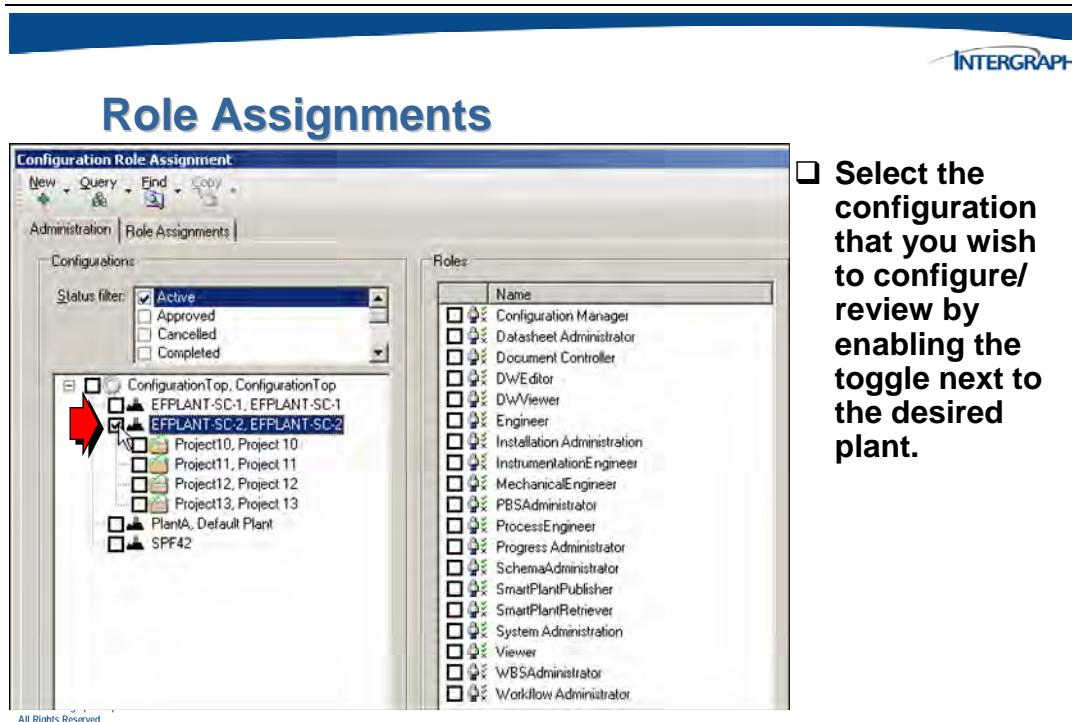
Name	Description	Container ID	Cr
AuthoringAdministrator	Framework Administrator	Auth.A_Administrator	2f;
Configuration Manager		Core.ConfigAdmin	2f;
Datasheet Administrator		Core.DatasheetAdmin	2f;
Document Controller		Core.DocControl	2f;
DWAdministrator	TEF Administrator	DW.A_General	2f;
DWEditor	Datawarehouse Editor	DW.A_General	2f;
DWViewer	Datawarehouse Viewer	DW.A_General	2f;
Engineer		Core.PlantItemMgt	2f;
FrameworkClientRole	Access to the Framework client for publish and retrieve	DWPlantData.A_Roles	2f;
Installation Administration		Core.InstallationAdmin	2f;
InstrumentationEngineer	Instrumentation Engineer	Auth.A_Instrument	2f;
InstrumentationViewer	Instrumentation Viewer	Auth.A_Instrument	2f;
MechanicalEngineer	Mechanical Engineer	Auth.A_Mechanical	2f;
MechanicalViewer	Mechanical Viewer	Auth.A_Mechanical	2f;
PBSAdministrator	PBS Administration	Auth.A_PBSAdmin	2f;
ProcessEngineer	Process Engineer	Auth.A_Process	2f;
ProcessViewer	Process Engineer	Auth.A_Process	2f;
Progress Administrator		Core.Progress	2f;
SchemaAdministrator	Schema Administrator	DWPlantData.A_SchemaAdministrat...	2f;
SmartPlantPublisher	SmartPlant Publisher	DW.A_General	2f;
SmartPlantRetriever	SmartPlant Retriever	DW.A_General	2f;
Super User		BootStrap.BootStrap	2f;
System Administration		Core.SystemAdmin	2f;
Viewer		Core.Core	2f;
WBSAdministrator	WBS Administration	Auth.A_Instrument	2f;
Workflow Administrator		Core.Workflow	2f;

© 2008. Intergraph Corp.  
All Rights Reserved.

Use the *Configuration Role Assignment* form to review the existing **Role Assignments**. Select **Administration > Configuration Role Assignment** from the menu. The *Configuration Role Assignment* form displays.



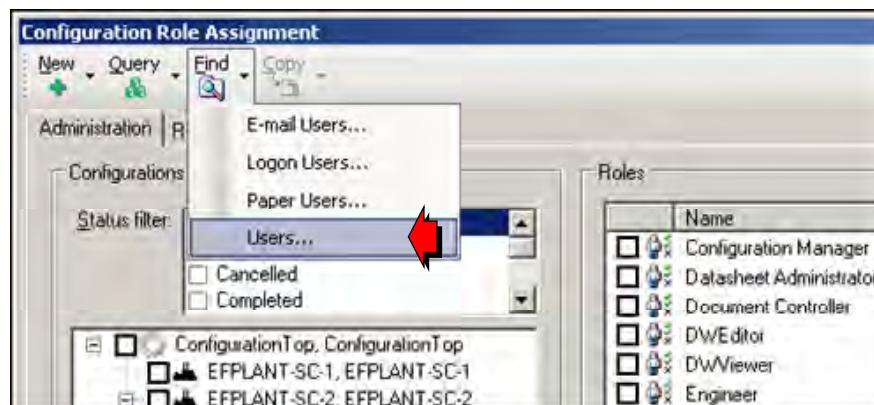
The *Configuration Role Assignment* form displays.



It isn't necessary to perform a search for users just to review existing role assignments. However, this will be necessary in order to add or change any assignments.

## Role Assignments

- Click **Find > Users** from the dialog menu.



© 2008. Intergraph Corp.  
All Rights Reserved.

The *Find User* dialog will appear.

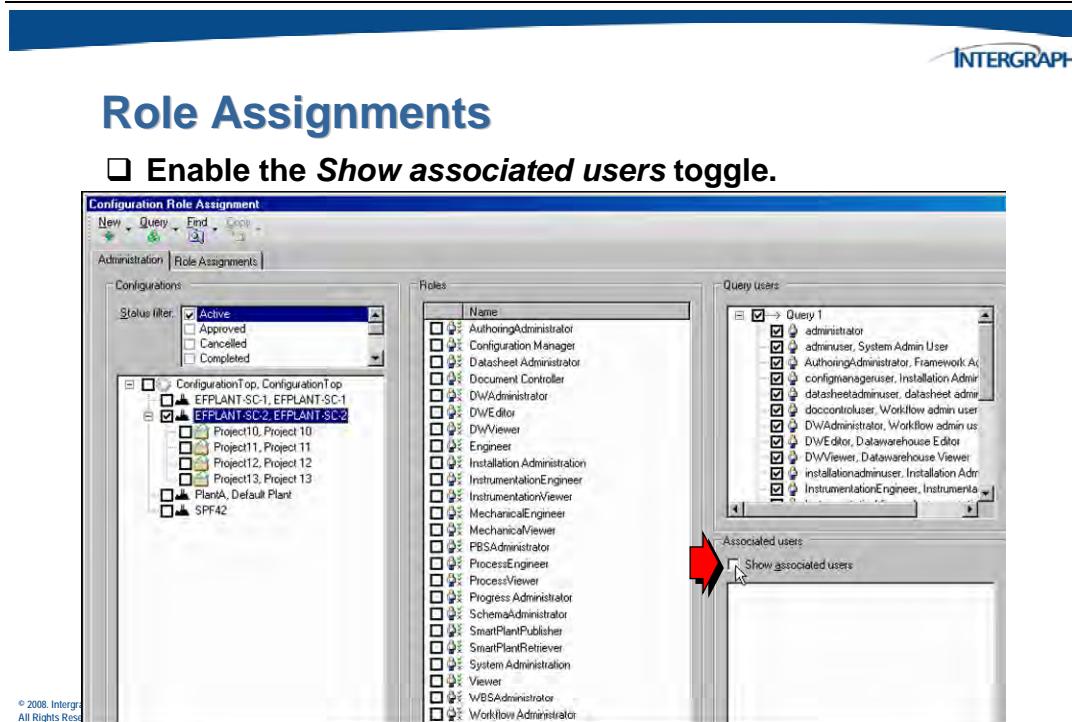
## Role Assignments

- Select OK to find all **Users**.



© 2008. Intergraph Corp.  
All Rights Reserved.

Locate the **Associated users** field in the lower right portion of the *Configuration Role Assignment* form.



In the **Roles** field, select the role in order to see the users associated with this role. Not all roles will have associated users by default.



## Role Assignments

- Select the role name toggle in order to view the associated users.

The screenshot shows the 'Configuration Role Assignment' application window. On the left, there's a tree view of configurations under 'Configurations'. A red arrow points from the 'Status filter' dropdown to the 'Active' checkbox, which is checked. Another red arrow points to the 'DWViewer' role entry in the 'Roles' list. On the right, there are two sections: 'Query users' and 'Associated users'. The 'Query users' section shows a list of users from 'Query 1' with checkboxes next to them. The 'Associated users' section shows a list of users with checkboxes, including 'DWViewer, Datawarehouse Viewer' and 'superuser, Super User', both of which have checkboxes checked. A red arrow points to the 'Show associated users' checkbox at the bottom of the 'Associated users' section.

Repeat this to view users for another role.



## Role Assignments

- Select the next role name in order to view the associated users.

This screenshot is similar to the one above, showing the 'Configuration Role Assignment' interface. A red arrow points to the 'DWViewer' role entry in the 'Roles' list. The 'Associated users' section at the bottom shows 'DWViewer, Datawarehouse Viewer' and 'superuser, Super User' with their checkboxes checked. A red arrow points to the 'Show associated users' checkbox.



## Role Assignments

- Continue this process in order to view additional role assignments.

The screenshot shows the 'Role Assignments' dialog box. On the left, the 'Roles' tab displays a list of roles with checkboxes. Several checkboxes are checked, including 'AuthoringAdministrator', 'Configuration Manager', 'Datashell Administrator', 'Document Controller', 'DWAdministrator', 'DWEeditor', 'DWViewer', 'Engineer', 'InstrumentationAdministration', 'InstrumentationEngineer', 'InstrumentationViewer', 'MechanicalEngineer', 'MechanicalViewer', 'PBSAdministrator', 'ProcessEngineer', 'ProcessViewer', 'Progress Administrator', 'SchemaAdministrator', 'SmartPlanPublisher', 'SmartPlanRetriever', 'System Administration', 'Viewer', 'WBSAdministrator', and 'Workflow Administrator'. A red arrow points to the 'DWAdministrator' checkbox. On the right, the 'Query users' tab shows a list of users from a query named 'Query 1'. The users listed include 'administrator', 'adminuser, System Admin User', 'AuthoringAdministrator, Framework Admin', 'configmanagernuser, Installation Admin', 'datashelladminuser, datashell admin', 'doccontroller, Workflow admin user', 'DWAdministrator, Workflow admin user', 'DWEeditor, Datawarehouse Editor', 'DWViewer, Datawarehouse Viewer', 'installationadminuser, Installation Admin', and 'InstrumentationEngineer, Instrumentation'. A red arrow points to the 'DWAdministrator' entry in the list. Below these tabs is a section titled 'Associated users' with a checkbox for 'Show associated users'. Underneath are two checkboxes: 'SchemaAdministrator, Schema Administrator' and 'superuser, Super User'. A red arrow points to the 'Cancel' button at the bottom right of the dialog.

Once you have finished reviewing role assignments, you can exit from this form.



## Role Assignments

- Select Cancel to exit from the **Configuration Role Assignment** dialog without making any changes.

The screenshot shows the 'Role Assignments' dialog box. It has the same structure as the previous one, with the 'Roles' tab on the left listing various roles and the 'Query users' tab on the right listing users from 'Query 1'. The 'Associated users' section at the bottom also contains the same checkboxes for 'SchemaAdministrator' and 'superuser'. A large red arrow points to the 'Cancel' button at the bottom right corner of the dialog box.

## 9.2 User Creation and Role Assignments

Access control of functionality and objects within SmartPlant Foundation is controlled by the relationship of *Users* to *Roles* and *Role Assignments*.

There are three classes of user in the system:

- Login user** – A fully functional SmartPlant Foundation user that can log on to the SmartPlant Foundation Desktop Client
- E-mail user** – A user that cannot log on to the Desktop Client, but can receive SmartPlant Foundation e-mail notifications, such as document transmittals.
- Paper user** – A user that cannot log on to the Desktop Client and cannot receive e-mail notifications from SmartPlant Foundation. However, they can be configured as recipients of transmittals, and as such, they will appear on a transmittal report that can be sent to the Print Room for distribution using some other media such as paper or CD.

To configure users, you need to log into the Desktop Client as a system administrator.

Remember from earlier in this chapter, **containers** segment components of the SPF configuration into sub-groups. Prior to creating new site specific object instances, use the Desktop Client to set the container ID, so anything created interactively will be stamped with the container ID.

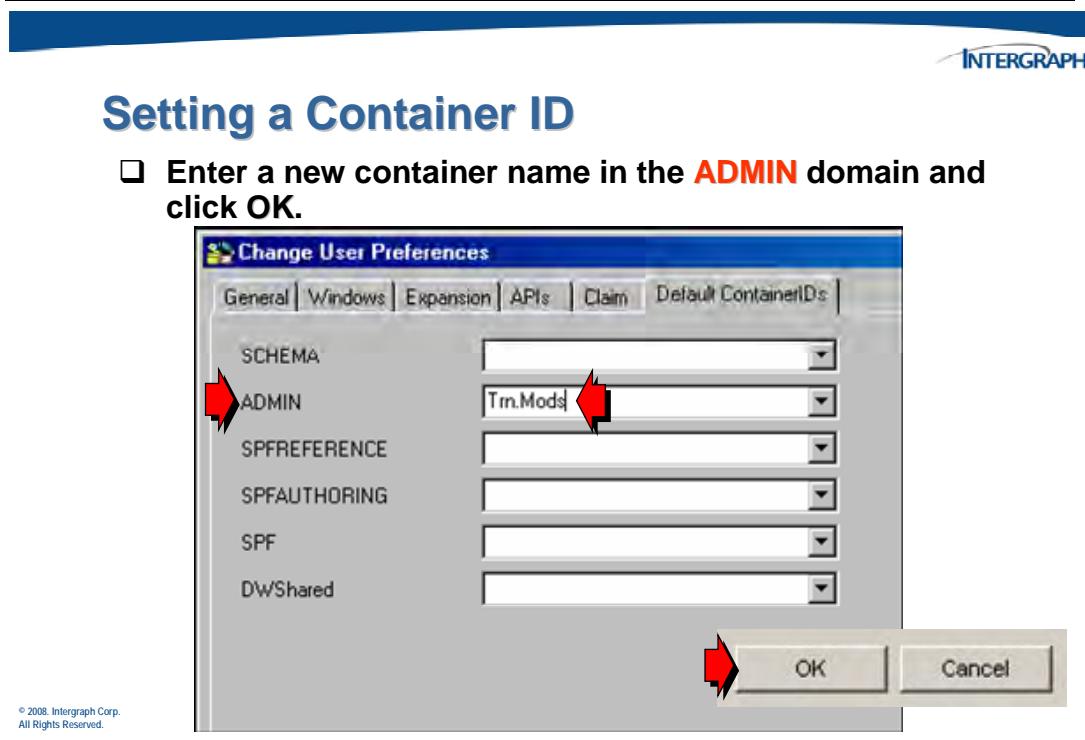
**Setting a Container ID**

**Select *File > Change User Preferences* from the menu.**



The screenshot shows the SmartPlant Foundation desktop client interface. At the top is a blue header bar with the INTERGRAPH logo. Below it is a white window titled "SmartPlant Foundation". The "File" menu is open, displaying various options like "New", "Find", "Query", "View", and "Administration". Under "Administration", the "Change User Preferences..." option is highlighted with a red arrow pointing to it. Other options in this menu include "Change Password...", "Change User...", "Set Active Scope...", "Reset User Profile", and "Exit". At the bottom left of the window, there is a small copyright notice: "© 2008, Intergraph Corp. All Rights Reserved."

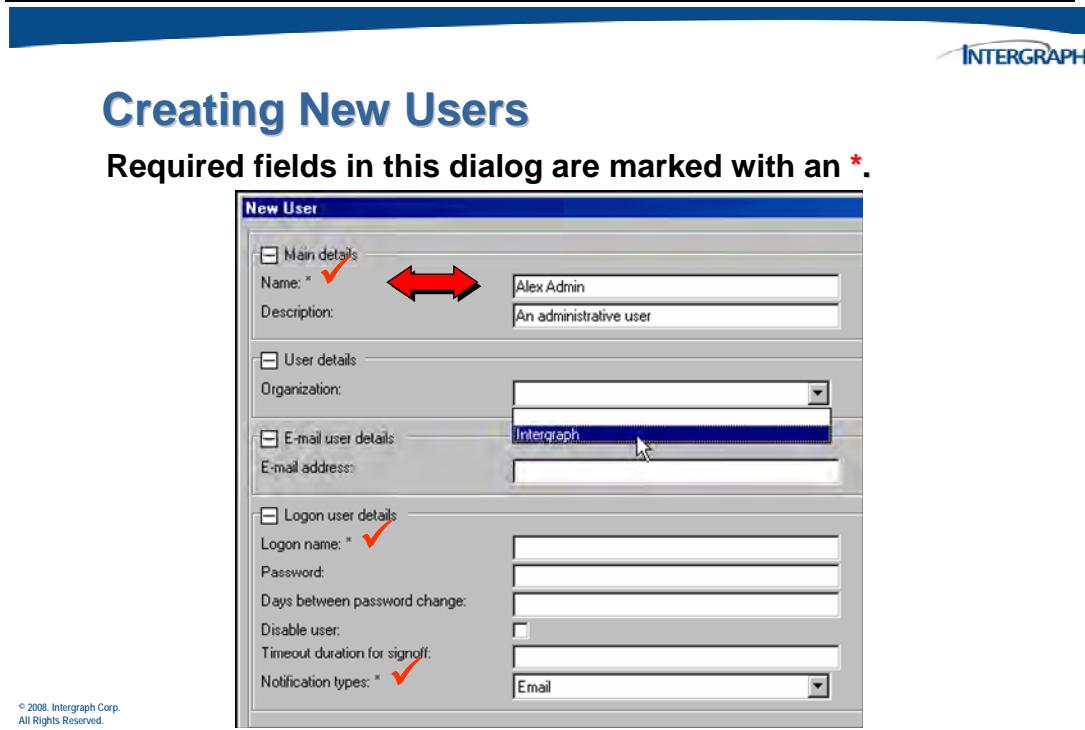
Click the **Default ContainerIDs** tab on the *Change User Preferences* form.



## 9.2.1 Creating Users

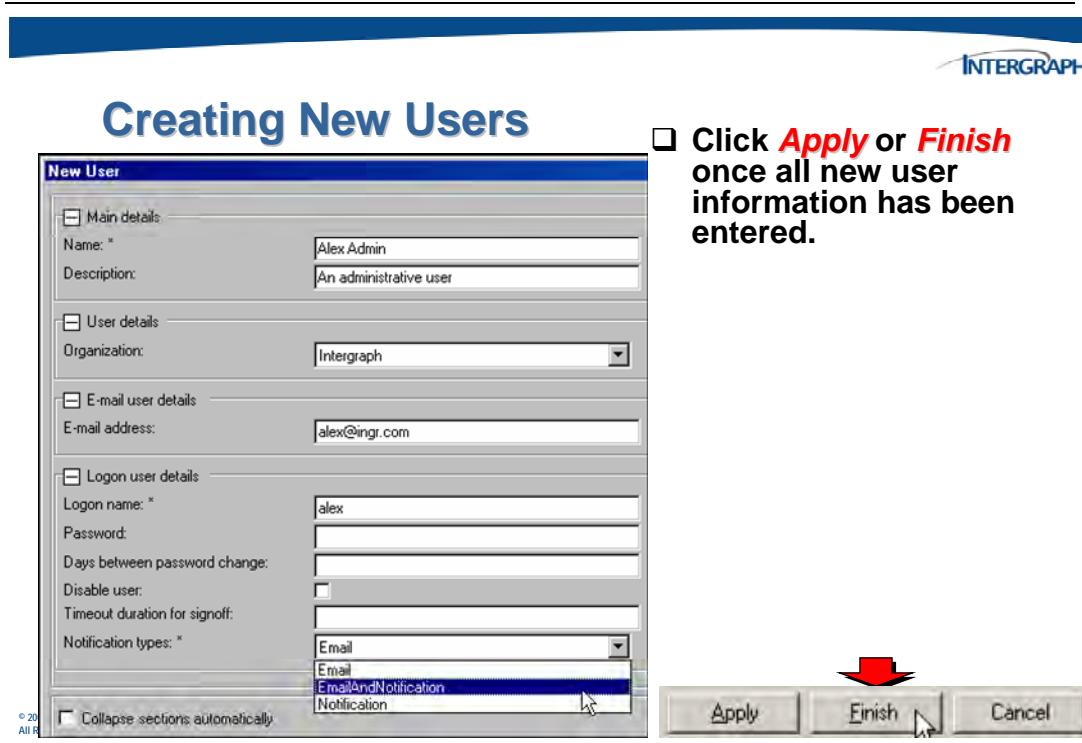
Before creating users and making role assignments, determine how each user and role assignment fits into the organization. The goal is to protect the system from unauthorized access. SmartPlant Foundation system security protects the integrity of the data at crucial points during the plant life cycle.

To create a new SmartPlant Foundation user, perform the following steps: From the menu, select **File > New > Administration > User**. The *New user* form displays.



Enter the following information to create a new *User*:

- Name** – Specifies the complete name of the user and is a required field.
- Description** – Specifies a description for this user.
- Organization** – Select an organization for the user. The organization has relationships to a host and print servers, which manage the physical location for file storage in vaults and the printers available to the user.



- Click **Apply** or **Finish** once all new user information has been entered.

- **E-mail address** – Specifies an e-mail address for all e-mail notifications to that user from SmartPlant Foundation.
- **Login name** – Unique login name for the user and a required field.
- **Password** – Specifies an optional password for the user.
- **Days between password changes** – Requires the user to change his/her password and allows the administrator to specify how often this change must occur.
- **Disable user** – Disables a user's access to the system. This field is display-only for queries.
- **Timeout duration for signoff** – Specifies the number of minutes before a user must re-type his or her password during a continuous signoff session. For certain steps in a workflow in the *To Do List*, a password is required for signing off. If a user is signing off several steps one after the other, the signoff expiration can be set higher so that the user does not have to enter the password over and over. A signoff time of 0 means that the user must enter a password for all steps that require them. This setting helps prevent unauthorized users from signing off steps that require a password if a user inadvertently leaves his or her SmartPlant Foundation To Do List running.
- **Notification types** – Select the notification mechanism preferred. These notifications are sent out by SmartPlant Foundation activities, such as completion of batch reports and user subscription processing. The notification mechanisms available are:

- **Email** – The user receives e-mails
- **Notification** – The user receives a notification in the SmartPlant Foundation *To Do List*
- **EmailAndNotification** – Both

Click **Finish** in the *New User* form to create the new user. If multiple users are to be created, enter the new user information and then use the **Apply** button.

The *New User* form is used for Logon users, Email users and Paper users. With the exception of Login users, the **Logon name** field will not be displayed for *Email* users and *Paper* users. Those user types will be identified by the **Name** field.

## 9.2.2 Configuring Role Assignments

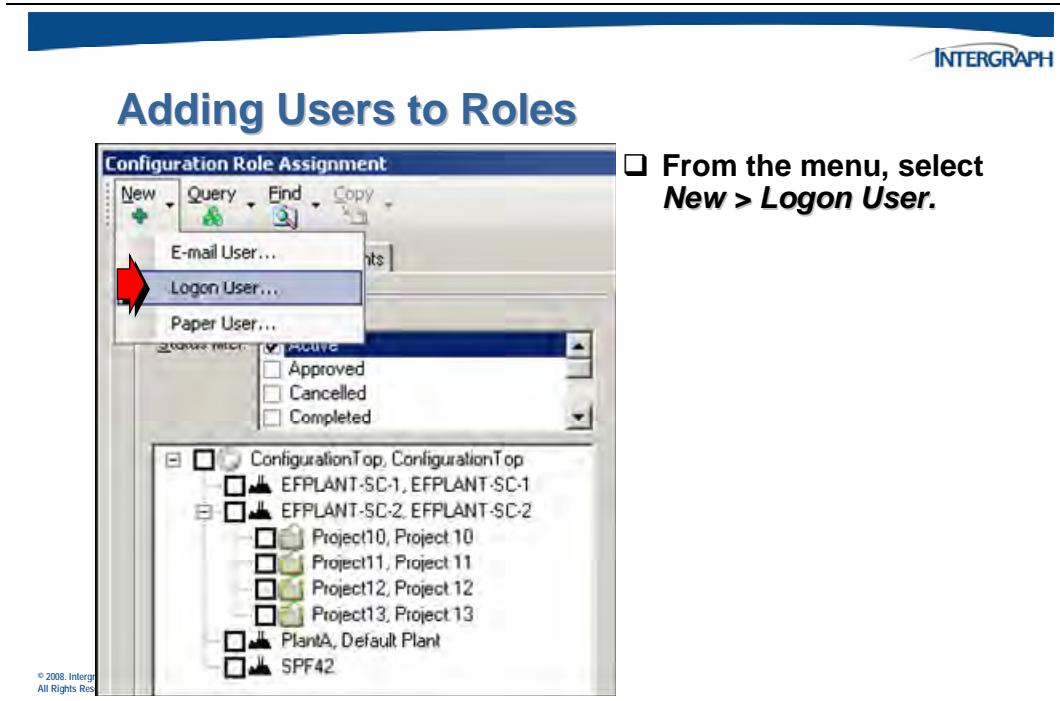
The role assignment links the user to a role in a given configuration, such as an *Engineer* (role) in *SPF42* (configuration).

To display the *Role Assignment* form, select **Administration > Configuration Role Assignment** from the menu.

*Configuration Role Assignment* has two tabs:

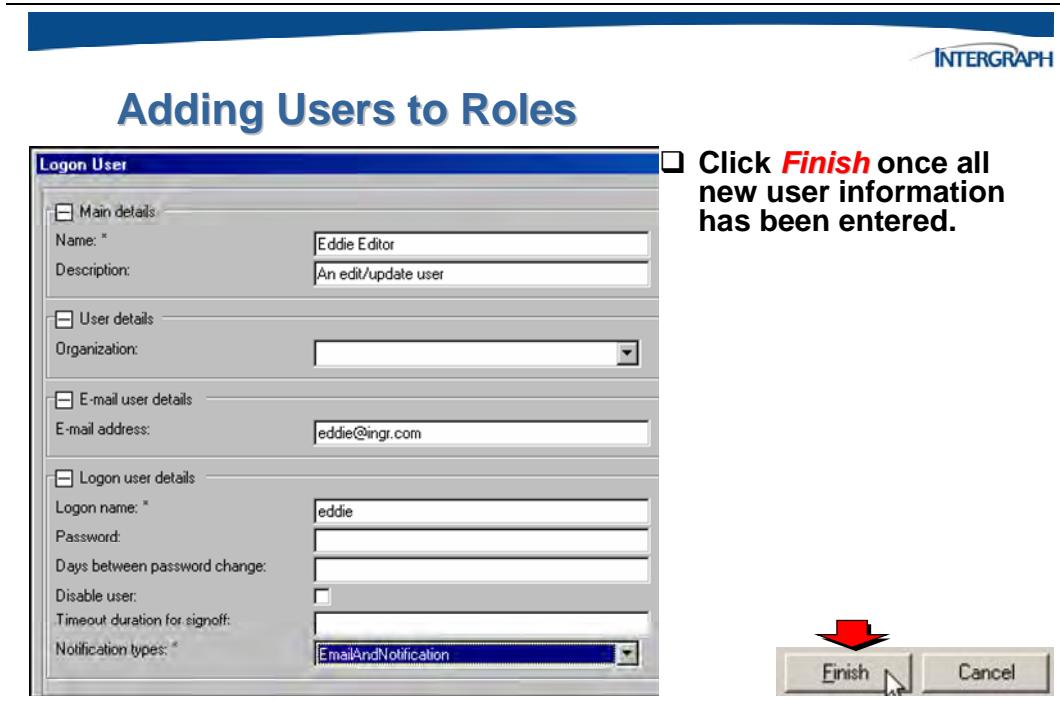
- Administration** – Used to create and delete users and to select the sets of user, configurations and roles for which role assignments are to be viewed and configured.
- Role Assignments** – Used to view and assign users to roles in configurations.

The *Configuration Role Assignment* form also offers the functionality to add new users. Below is another example of adding a new **Logon User** but from the *Configuration Role Assignment* form.



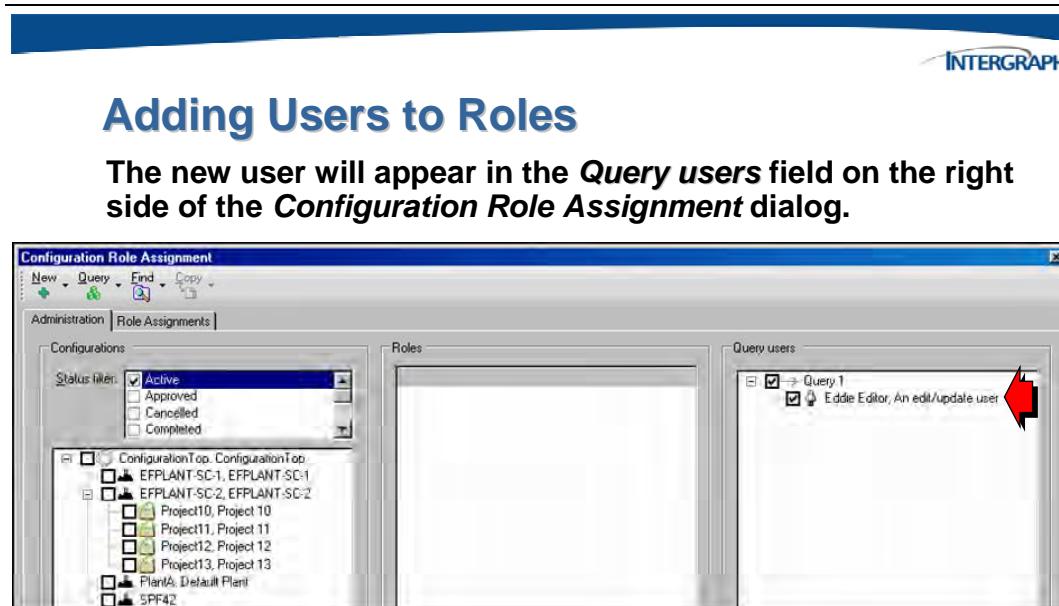
- From the menu, select New > Logon User.

The *New Logon User* form will be displayed and contains the same fields as described earlier in this chapter.



- Click **Finish** once all new user information has been entered.

Any users created from within the *Configuration Role Assignment* form will appear in the *Query users* field.



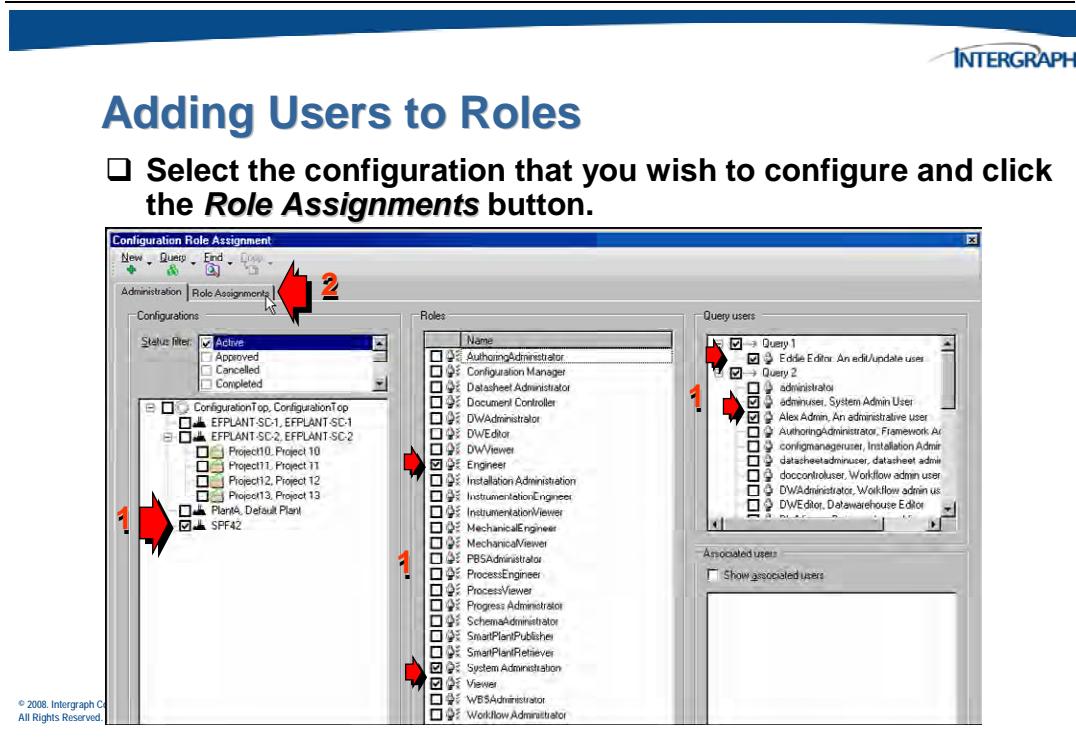
© 2008, Intergraph Corp.  
All Rights Reserved.

Before choosing the **Role Assignments** button the users to assign to roles must be queried.



© 2008, Intergraph Corp.  
All Rights Reserved.

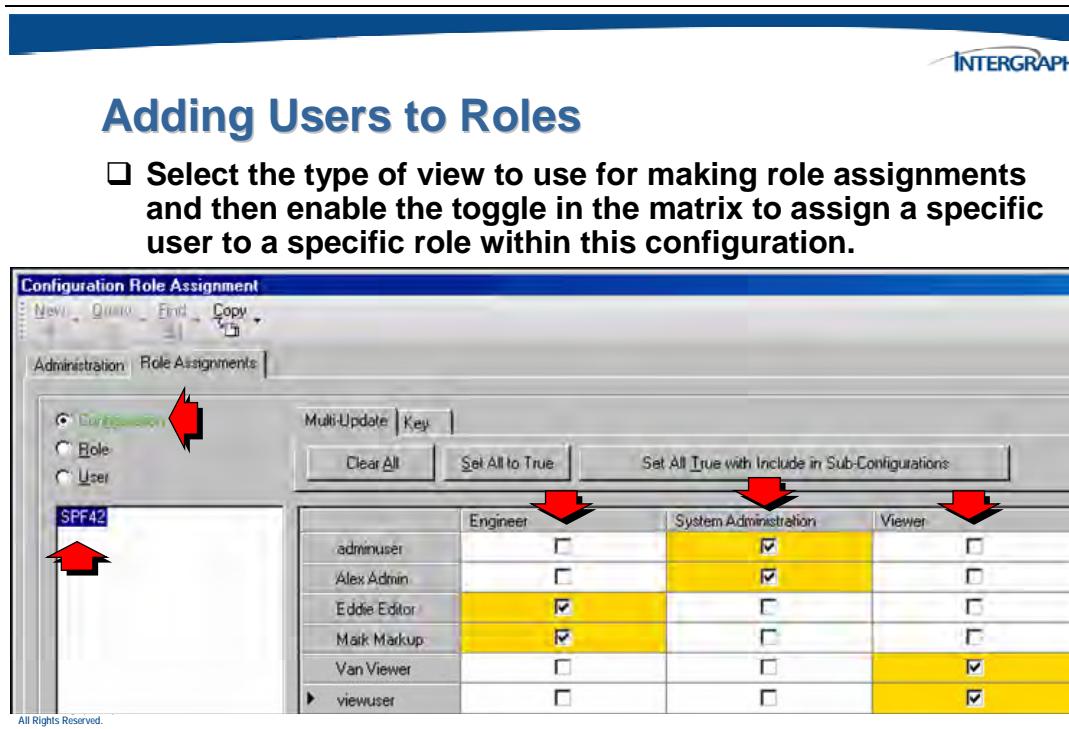
Choose the users and roles to assign before selecting the ***Role Assignments*** tab.



The user must first select the configurations, users, and roles under the ***Administration*** tab before moving to the ***Role Assignments*** tab to manage the assignments.

The roles available to the user to assign are dependent on the selected configurations. This is because the roles a user can assign depend on the role of the current user in each selected configuration. (The current user is assigned a role in each configuration, and that role may or may not be able to manage other roles.) Only roles common to all configurations are displayed.

When a configuration is selected, this populates the roles available to assign.



The screenshot shows a software window titled "Configuration Role Assignment". At the top, there are buttons for "New", "Delete", "Find", and "Copy". Below the buttons, there are tabs: "Administration" and "Role Assignments", with "Role Assignments" being the active tab. A radio button group allows selecting between "Configuration" (selected), "Role", or "User". To the right of the group are buttons for "Multi-Update" and "Key". Below these are buttons for "Clear All", "Set All to True", and "Set All True with Inherit in Sub-Configurations". The main area is a grid titled "SPF42" containing user names and their assigned roles. The grid has columns for "Engineer", "System Administration", and "Viewer". The rows list users: "adminuser", "Alex Admin", "Eddie Editor", "Mark Markup", "Van Viewer", and "viewuser". The "Eddie Editor" row is highlighted with yellow. The "System Administration" column for Eddie Editor has a checked checkbox. The "Viewer" column for Eddie Editor has an unchecked checkbox. The "System Administration" column for Van Viewer has an unchecked checkbox. The "Viewer" column for Van Viewer has a checked checkbox. The "System Administration" column for viewuser has an unchecked checkbox. The "Viewer" column for viewuser has a checked checkbox.

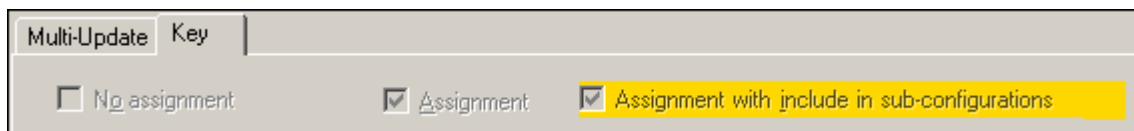
There are three possible views of the three dimensional role assignments data:

- Configuration** – Displays the list of configurations on the left for selection and a matrix of users against roles. When you select a configuration, you can see the users assigned to roles within that configuration.
- Role** – Displays the list of roles on the left for selection and a matrix of users against configurations. When you select a role, you can see which users are assigned to which configurations for that role.
- User** – Displays the list of users on the left for selection and a matrix of roles against configurations. When you select a user, you can see the role assignments for that user.

The role assignment cells have three states, and repeated selection steps through the following settings:

Cell Appearance	Description
<input type="checkbox"/>	Denotes no role assignment
<input checked="" type="checkbox"/>	Denotes a role assignment to that configuration only.
<input checked="" type="checkbox"/> <span style="background-color: yellow;"> </span>	Denotes a role assignment to that configuration with inheritance to all its sub-configurations (i.e. Plant → Project).

Selecting the **Key** tab displays this usage:



An *Assignment with include in sub-configurations* is one that is dynamically inherited by all the sub configurations. For example, an assignment at a plant can be automatically inherited to all its projects.

Click **Set All True** to make the assignments in all cells displayed.

In a similar way, click **Set All True with Include in Sub-Config** to make assignments that inherit to all the sub configurations in all the cells displayed.

Click **Clear All** to remove the assignments in all cells displayed.

When you select a role, you can see which users are assigned to which configurations for that role.



## Adding Users to Roles

- Select the **Role** option for a list of roles and a matrix of users against configurations.

The screenshot shows the 'Configuration Role Assignment' dialog box. On the left, there is a list of roles: 'Configuration' (radio button selected), 'Role' (radio button), and 'User' (radio button). Below the list is a tree view showing 'Engineer' expanded, with 'System Administration' and 'Viewer' as children. A red arrow points from the 'Role' radio button to the tree view. On the right, there is a toolbar with buttons: 'Clear All', 'Set All to True' (highlighted with a red arrow), and 'Set'. Below the toolbar is a grid table titled 'SPF42'. The grid has columns for 'adminuser', 'Alex Admin', 'Eddie Editor', 'Mark Markup', 'Van Viewer', and 'viewuser'. The rows correspond to the users listed in the tree view. Eddie Editor and Mark Markup have checked checkboxes in their respective grid cells, while the others are unchecked. Red arrows point from the 'Set All to True' button to the checked checkboxes in the grid.

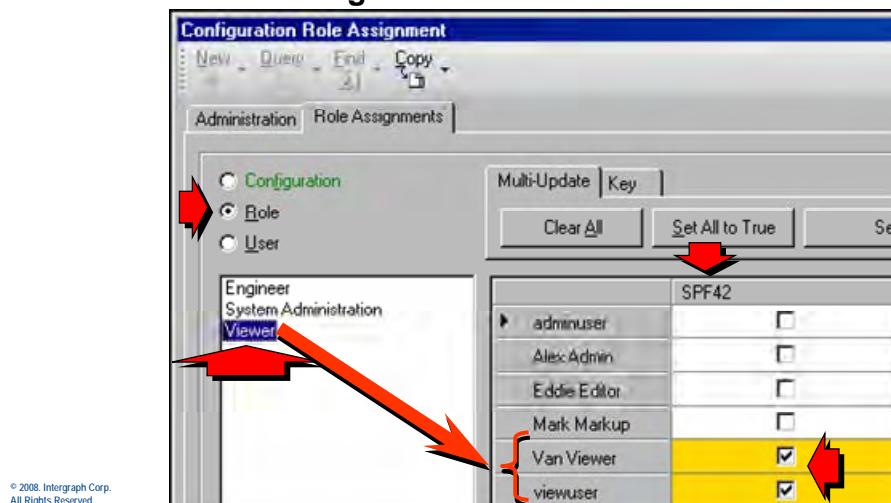
	adminuser	Alex Admin	Eddie Editor	Mark Markup	Van Viewer	viewuser
SPF42	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

© 2008. Intergraph Corp.  
All Rights Reserved.



## Adding Users to Roles

- Select a different role in the **Role** option to assign users for that role/configuration.

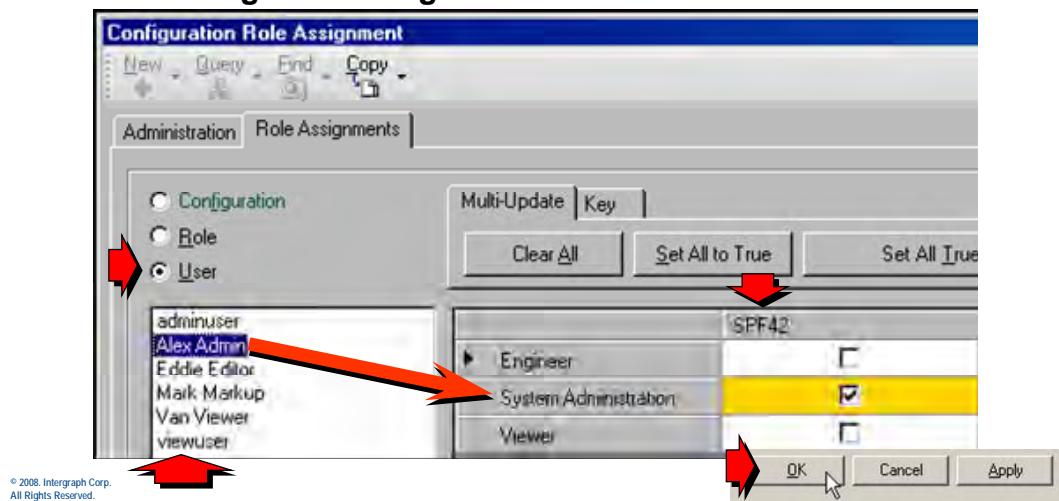


When you select a user, you can see the role assignments for that user.



## Adding Users to Roles

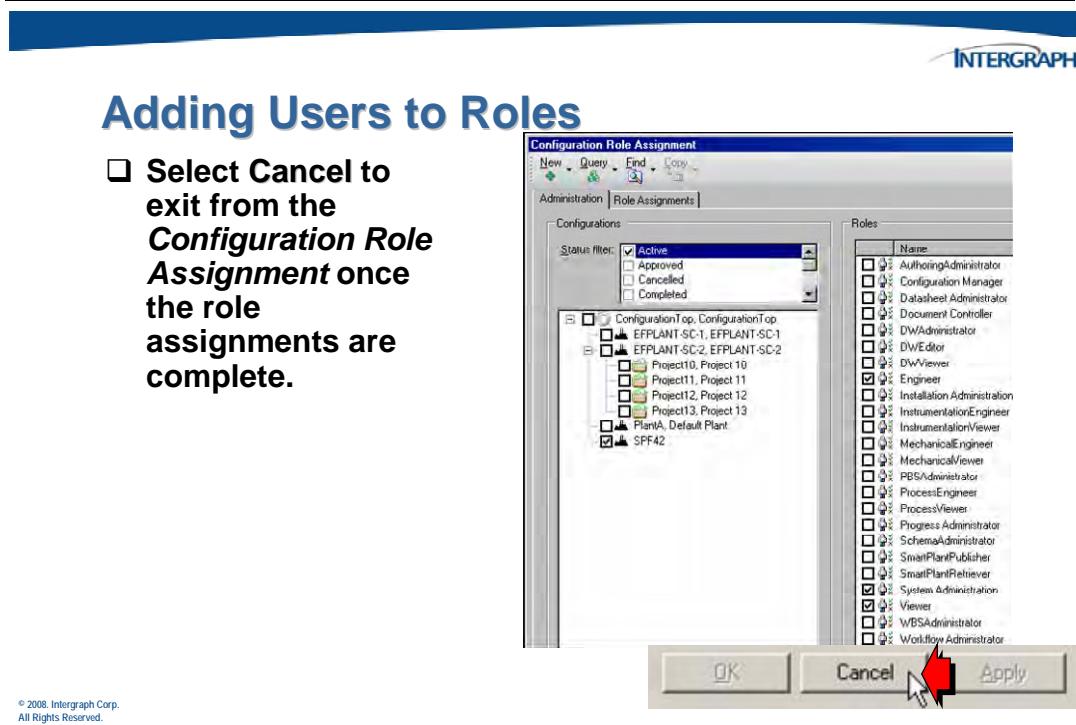
- Select the **User** option for a list of users and a matrix of roles against configurations.



The changes made to the cells are not immediately committed to the database. You can switch between the **Administration** and **Role Assignment** tabs without committing any

changes. Click **OK** to commit the changes to the database or **Apply** to commit the changes to the database without exiting the form to allow for further changes to be made.

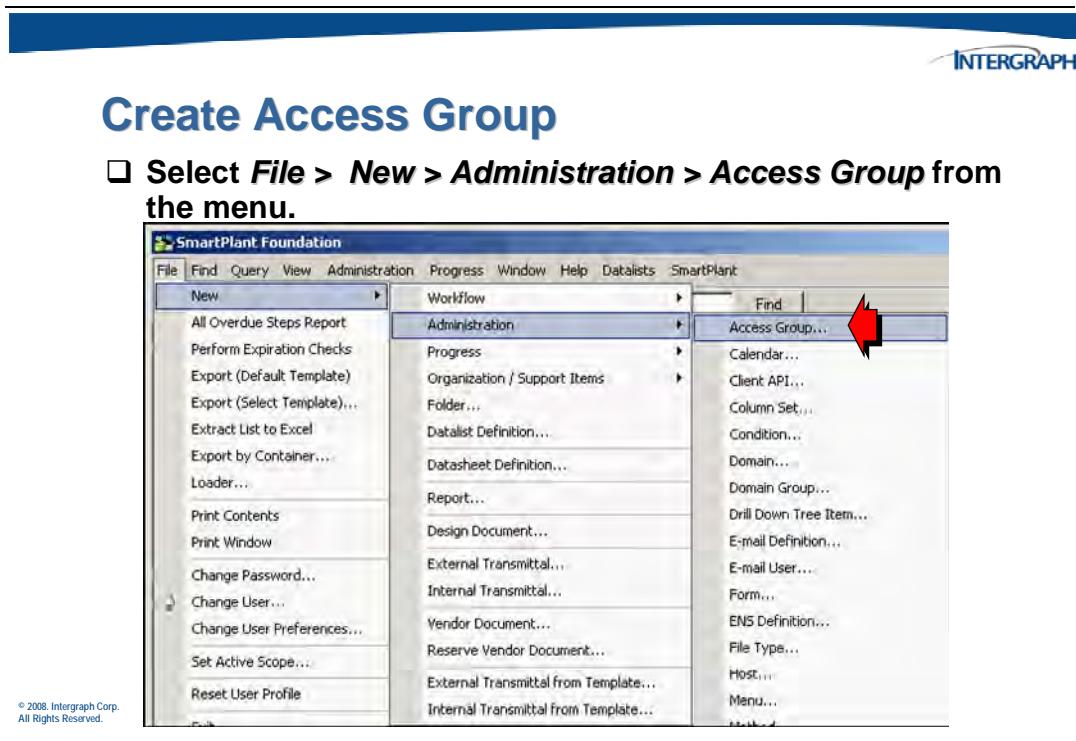
Since the role assignment changes have been saved, the **OK** button is now grayed out.



© 2008, Intergraph Corp.  
All Rights Reserved.

## 9.3 Creating Access Groups

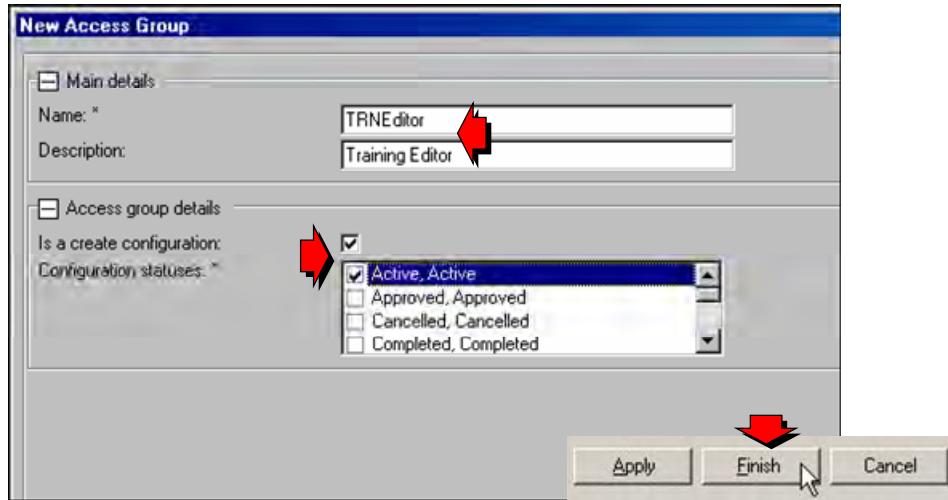
Access groups govern the user access to SmartPlant Foundation commands and relationship creation and navigation. Access groups should be modeled to represent different levels of functional access. They should not be used to separate user access based on object ownership, such as department or discipline; this is the job of owning groups.





## Create Access Group

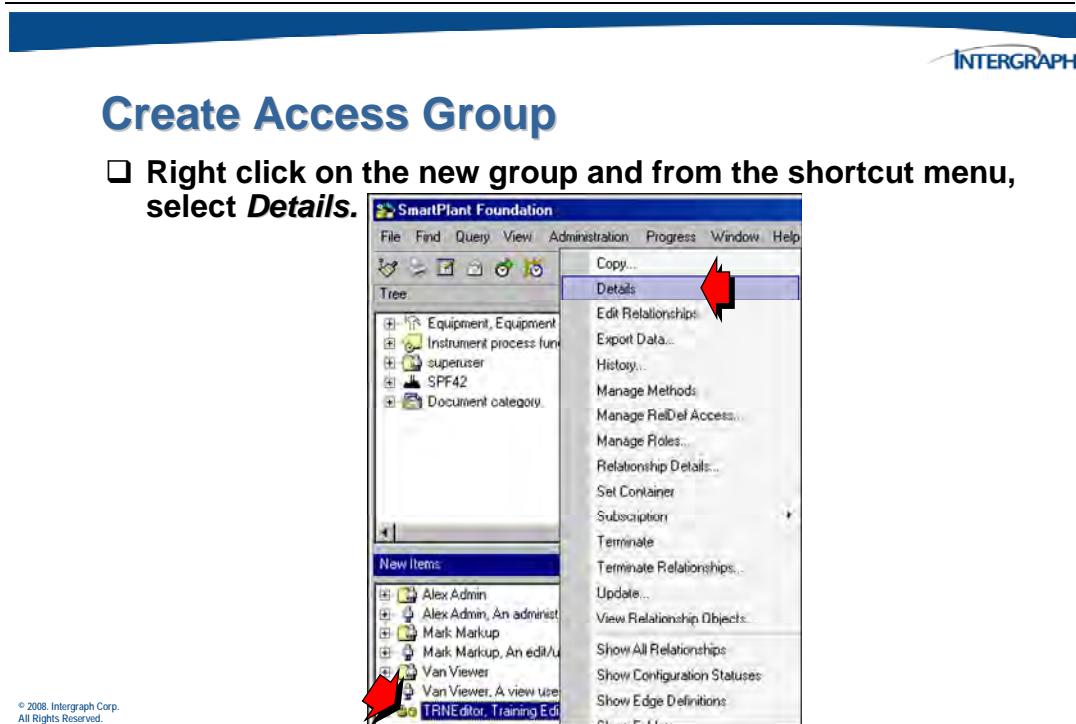
- ❑ Enter the required property information to define a new Access Group and click Apply or Finish.



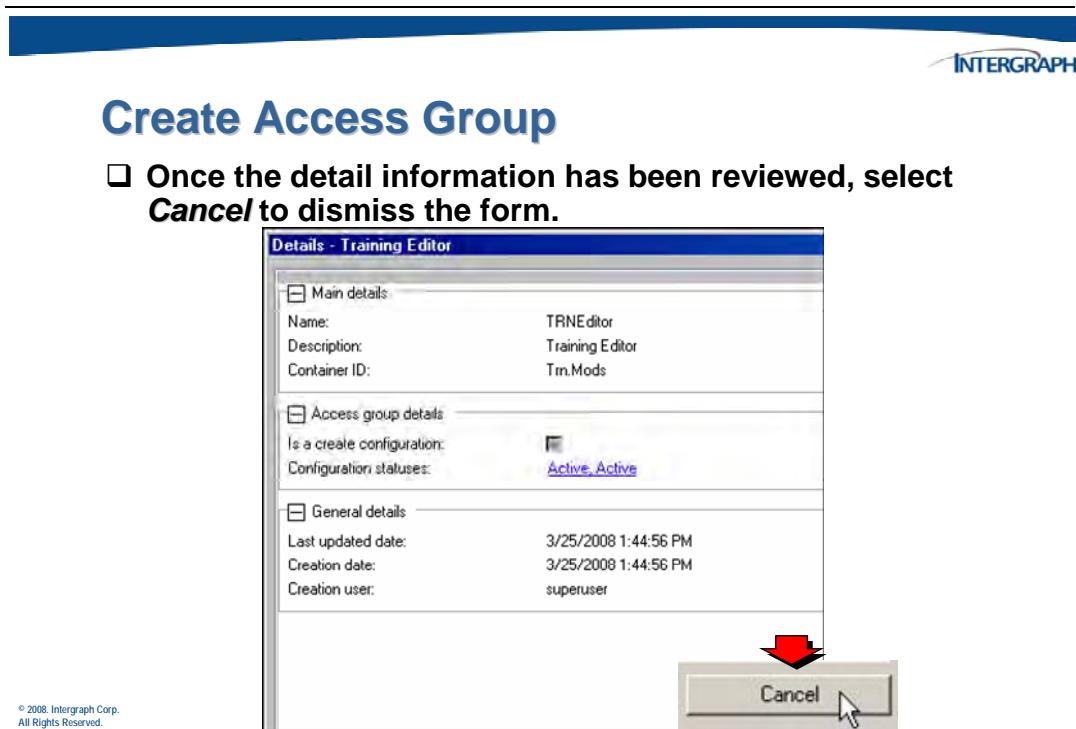
Enter the following information to create a new *Access Group*:

- ❑ **Name** – Specifies the name of the group and is a required field.
- ❑ **Description** – Specifies a description for this group.
- ❑ **Is a create configuration** – Enabling this check box specifies that roles containing this access group have permission to create objects in a configuration.
- ❑ **Configuration statuses** – Selects the configuration statuses applicable for this access group. Most access groups should be restricted to active configurations. This means that for objects created in a project, shortcut menu methods for the access group will only be available while the project is in the *Active* state. Access groups controlling management functions may use different statuses.

Once the new Access Group exists, the **Details** shortcut command can be used to review the results.



The *Details* form for the Access Group will appear.

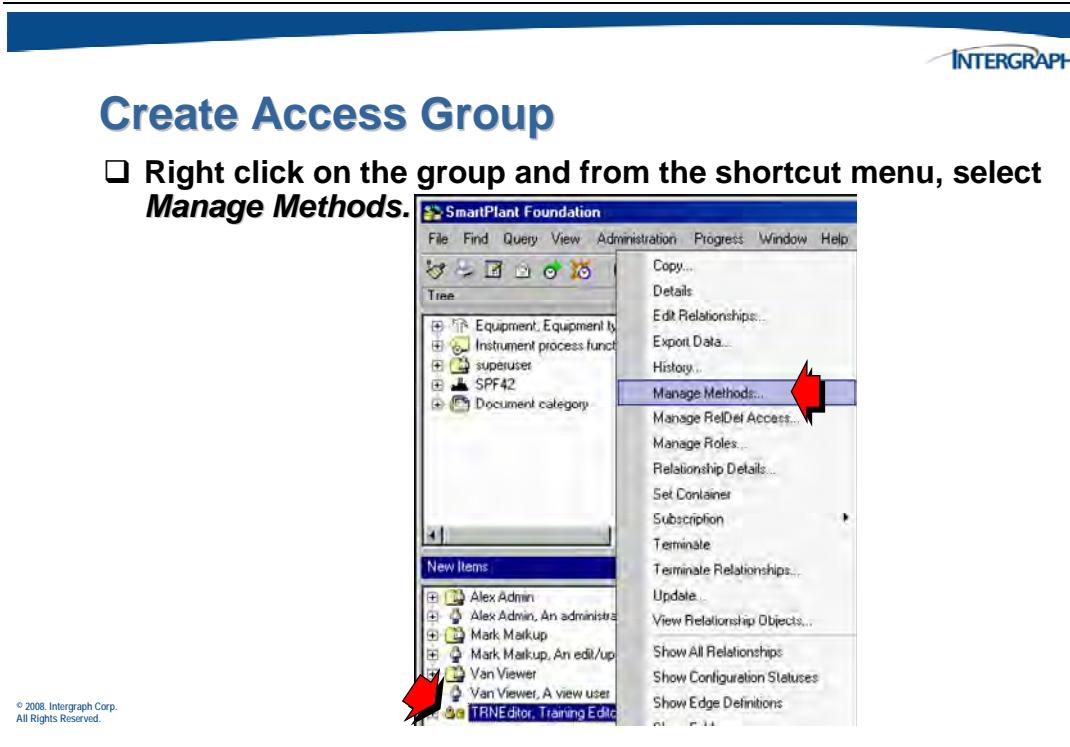


### 9.3.1 Configuring Method Access

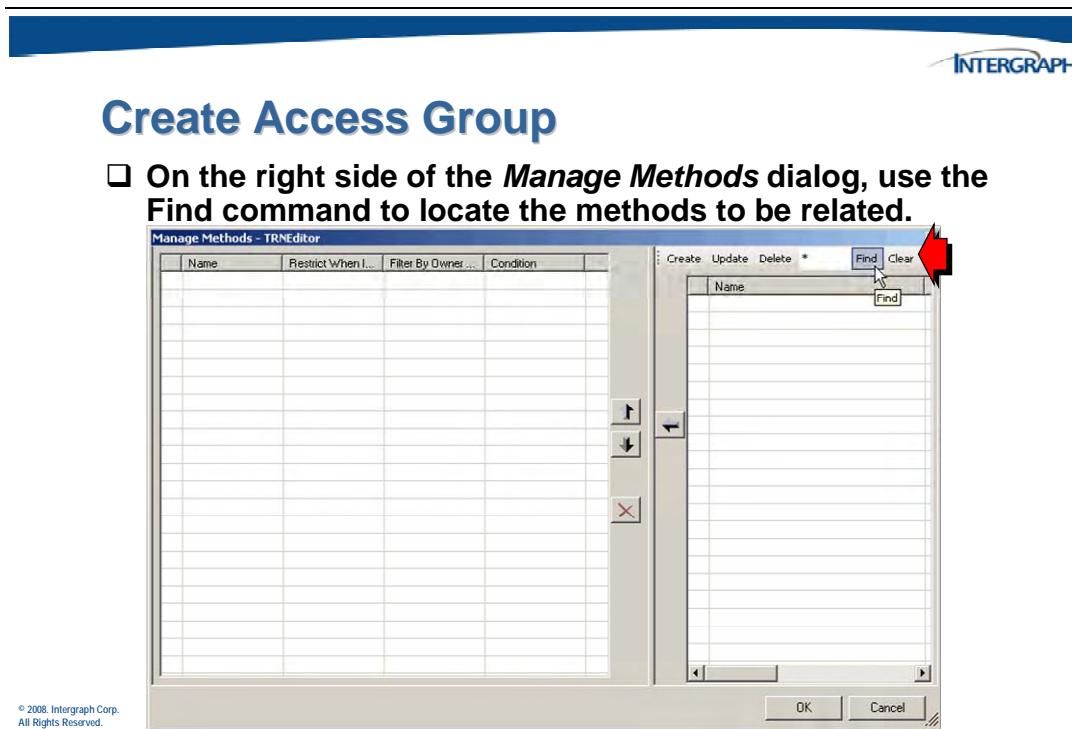
After the Access Group has been created, the next task is to configure the command and relationship access.

Methods are exposed on the shortcut menu of an object, menus, toolbar, and quick find options. The availability of these methods is controlled through the related access groups.

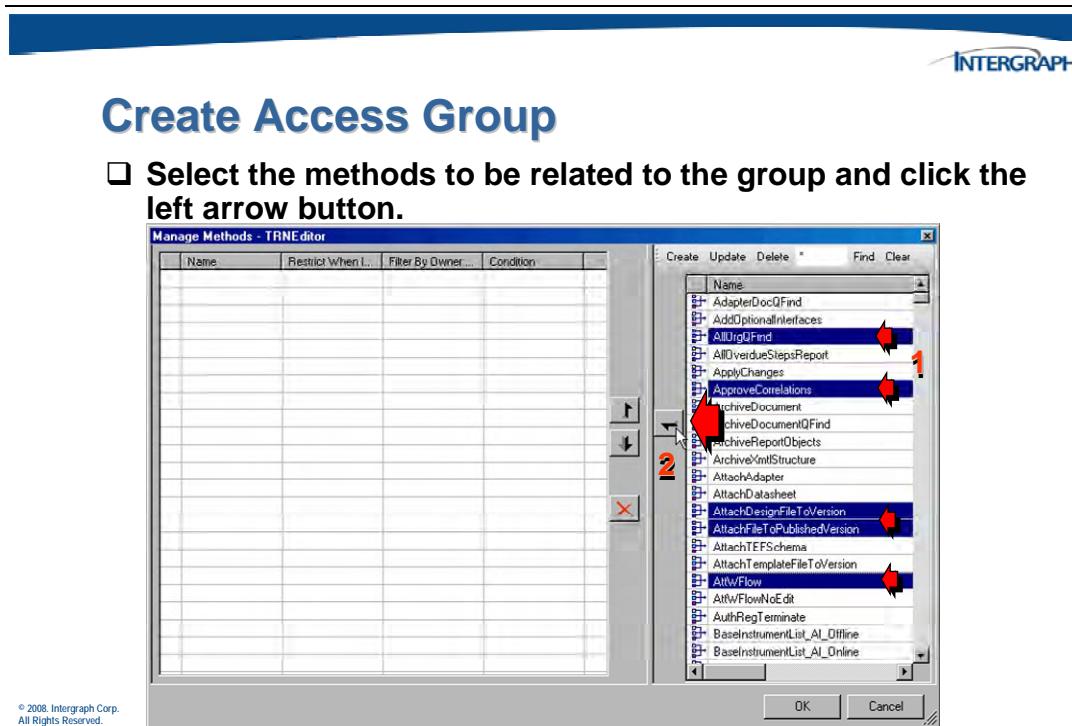
To configure method access, use the **Manage Methods** shortcut command from the access group. This allows for drag and drop of methods onto the access group and list editing of the relationship properties.



The *Manage Methods* form will display.



This will display a listing of methods based on the search criteria entered.



The selected methods will be “dragged” to the left side of the form as shown below.

**Create Access Group**

Verify that the correct methods have been associated to this group and click OK to complete this task.

Manage Methods - TRNEditor

Name	Restrict When I...	Filter By Owner ...	Condition
FrameworkCore...	False		
TEFSchematic...	False		
SharedDbUpdate	False		
SharedPipeRun...	False		
SharedEquipment...	False		
AllOrgDFind	False		
AllWorkflow	False		
SharedAreaQFind	False		
TEFQueueQFind	False		
GenerateMapFile	False		
TEFLoadPublic...	False		
ViewSharedData...	False		
ExecuteSaved...	False		
TEFLoadPublic...	False		
DesignBasisQu...	False		
TEFSchematic...	False		
SharedIntrinsic...	False		
TEFSchemaDo...	False		
PublishedDocQ...	False		
SharedInitDFind	False		
SetDesignBasis...	False		
SelectedCorrelat...	False		
RetryAssociated...	False		

© 2008, Intergraph Corp.  
All Rights Reserved.

OK Cancel

Method access can be restricted by a condition.

**Method Access**

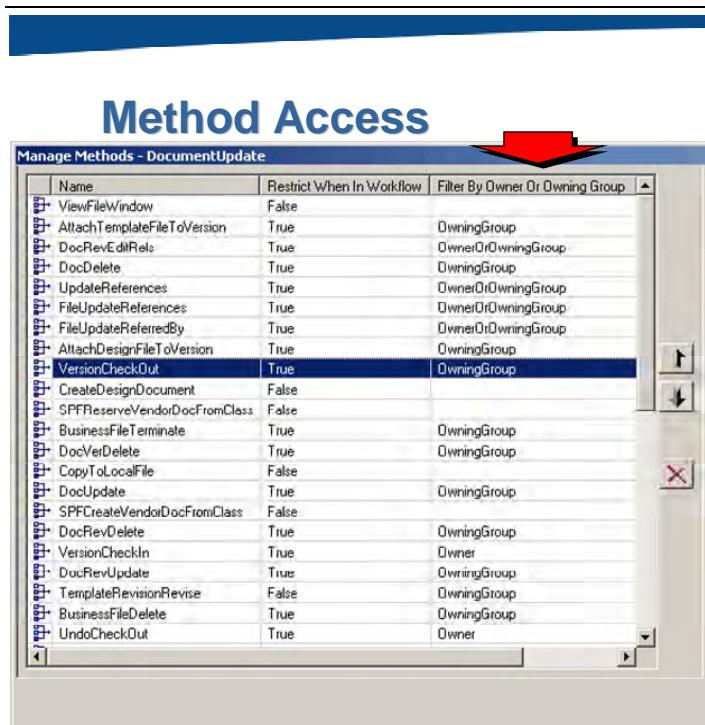
Manage Methods - WorkflowUpdate

Name	Restrict When I...	Filter By Owner ...	Condition
RejectWorkflow	True		IsNotTransmittal
WorkflowEdit	False		
DeleteWorkflow	True		
WFStepUnable...	False		
StepUpdateDesc	False		
StepUpdateRecip	False		
WFStepComplete...	False		
OffHold	False		IsNotTransmittal
AltWorkflowEdit	False		IsNotTransmittal
WorkflowDetails...	False		
OverdueStepsR...	False		
StepWorkflowEdit	False		IsNotTransmittal
ObjectWorkflow...	False		IsNotTransmittal
HoldWorkflow	False		IsNotTransmittal
AltWorkflow	False		IsNotTransmittal
WFStepApprove	False		
StepUpdateDates	False		
AllOverdueStep...	False		
WFStepReject	False		
TerminateWorkf...	True		
WFStepReAssign	False		

A condition can be configured on the method/access group relationship which means this condition must be satisfied when users in that access group try to run the method.

For example, the document revise method may only be available to engineers on CURRENT documents, but a manager may be able to revise a SUPERSEDED document as well. In this case, the condition on the method would be IsCURRENTOrSUPERSEDED, and the condition on the method/engineering access groups would be IsCURRENT. There would be no need for a condition on the method to manage access groups because it would pick up the one on the method.

Method access can also be controlled by object ownership.



**Method Access**

Manage Methods - DocumentUpdate

Name	Restrict When In Workflow	Filter By Owner Or Owning Group
ViewFileWindow	False	
AttachTemplateFileToVersion	True	OwningGroup
DocRevCdrRels	True	OwnerOrOwningGroup
DocDelete	True	OwningGroup
UpdateReferences	True	OwnerOrOwningGroup
FileUpdateReferences	True	OwnerOrOwningGroup
FileUpdateReferredBy	True	OwnerOrOwningGroup
AttachDesignFileToVersion	True	OwningGroup
VersionCheckOut	True	OwningGroup
CreateDesignDocument	False	
SPFReserveVendorDocFromClass	False	
BusinessFileTerminate	True	OwningGroup
DocVerDelete	True	OwningGroup
CopyToLocalFile	False	
DocUpdate	True	OwningGroup
SPFCREATEVendorDocFromClass	False	
DocRevDelete	True	OwningGroup
VersionCheckIn	True	Owner
DocRevUpdate	True	OwningGroup
TemplateRevisionRevise	False	OwningGroup
BusinessFileDelete	True	OwningGroup
UndoCheckOut	True	Owner

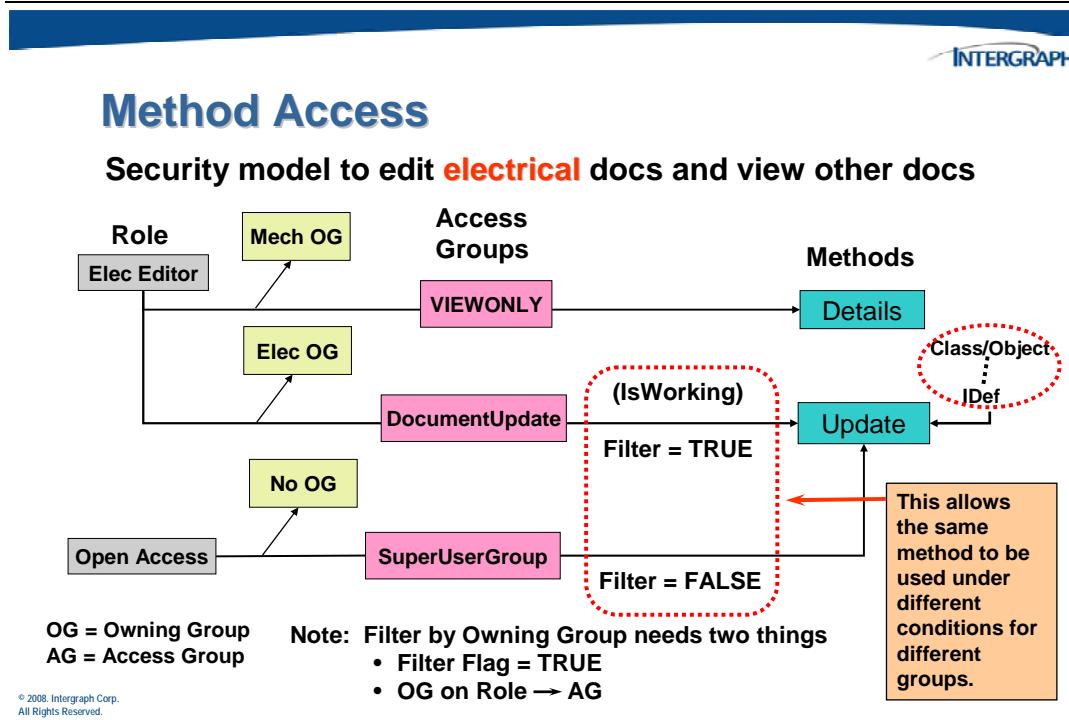
**Method access can be restricted based on the ownership of an object so that the user has to be either the owner of the object or related to the owning group found on the role/access group relationship for the access group.**

To do this, when the access group is related to a method, the *Filter By Owner Or Owning Group* property needs to be set.

When an owning group is set on the *Role → Access Group* relationship, this means that all the functionality granted by that access group can be restricted to objects that have that owning group – the methods on the access group are not automatically restricted in this way, the filter by ownership property also needs to be set on the *Method → Access Group* relationship.

When the shortcut menu is evaluated, the system first checks if the owning group filter flag is set on the *Method → Access Group* relationship. Then if set, it also checks if the *Role → Access Group* relationship has an owning group. If the selected object has an owning group it must be one of those on the *Role → Access Group* relationship for the method to be available to the user.

Below are some examples of controlling method access with conditions and ownership.

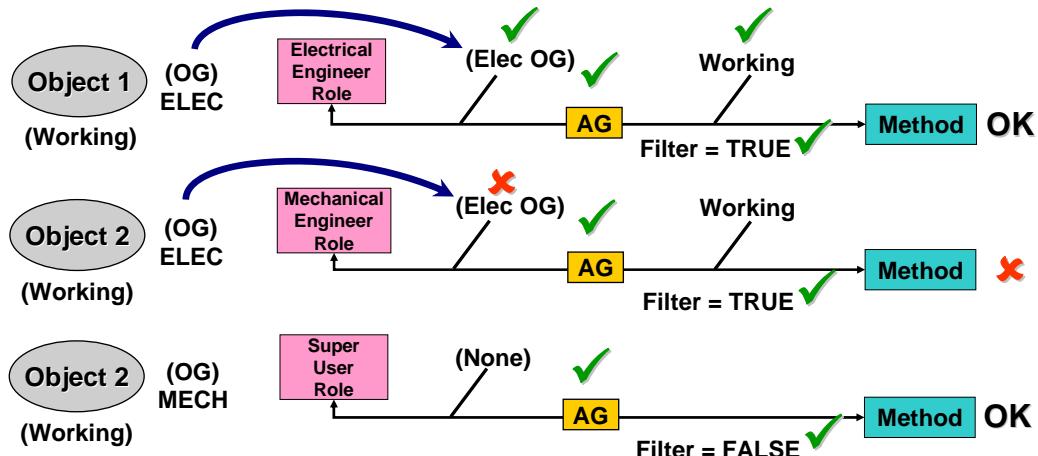


In the above diagram, the **Elec Editor** has access to the *DocumentUpdate* access group which gives **Update** access to working documents (but only electrical documents due to the owner filter being set to true).

In the next example, if an access group is related to a role with an owning group identified on the relationship, then all method access granted by that group will only be available on objects that have that owning group (or no owning group). If there is no owning group on the *Role→AccessGroup* relationship, then there is no such restriction and the methods will be valid for any object irrespective of the objects owning group.

## Method Access

A user with open access can update any checked in document because there is no condition on their filter.

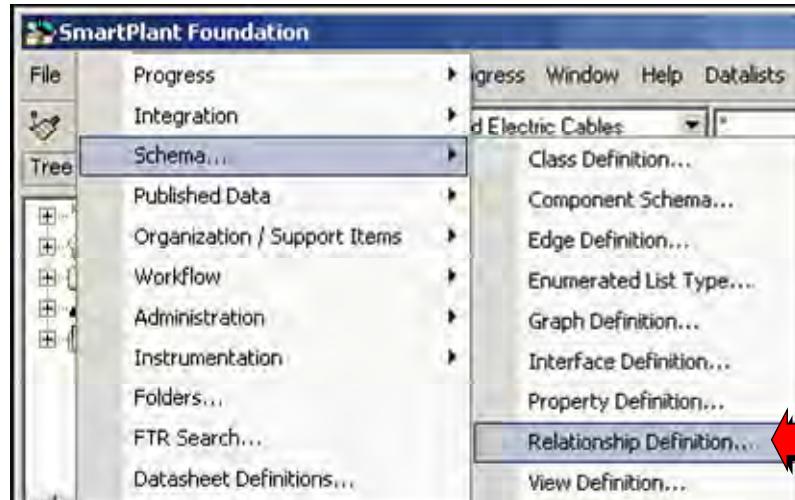


© 2008, Intergraph Corp.  
All Rights Reserved.

Access groups are used to control relationship navigation, creation, and termination with optional conditions further qualifying the access. Access groups are related to Relationship Definitions, and the properties are set on these relationships.

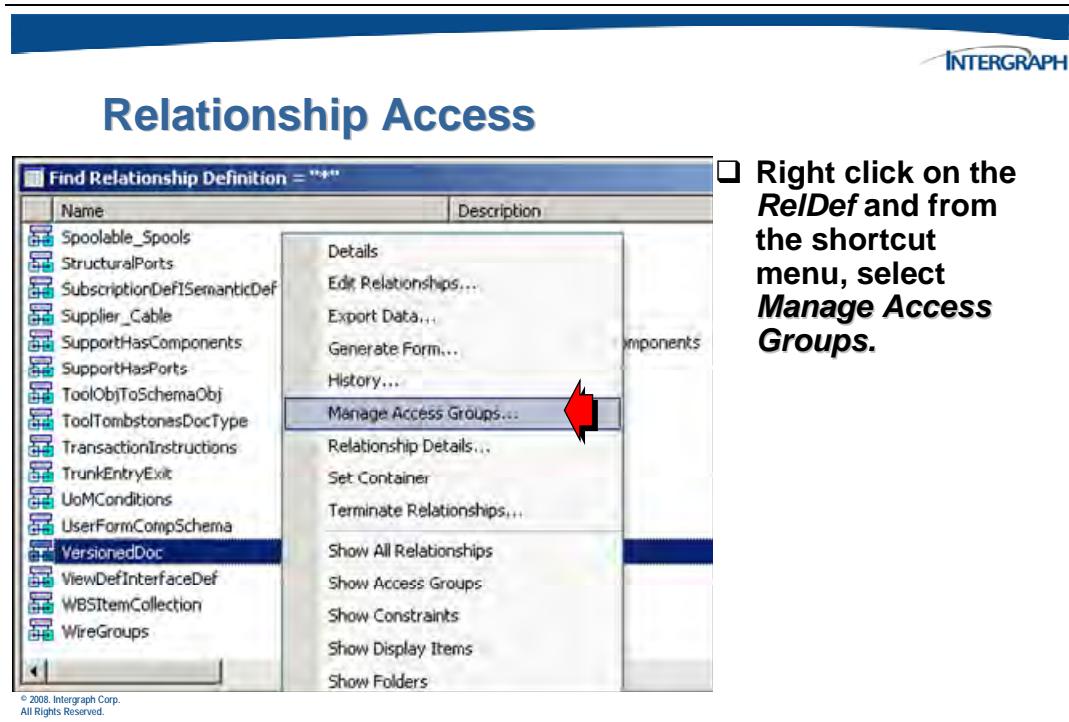
## Relationship Access

- Select **Find > Schema > Relationship Definition** from the menu.



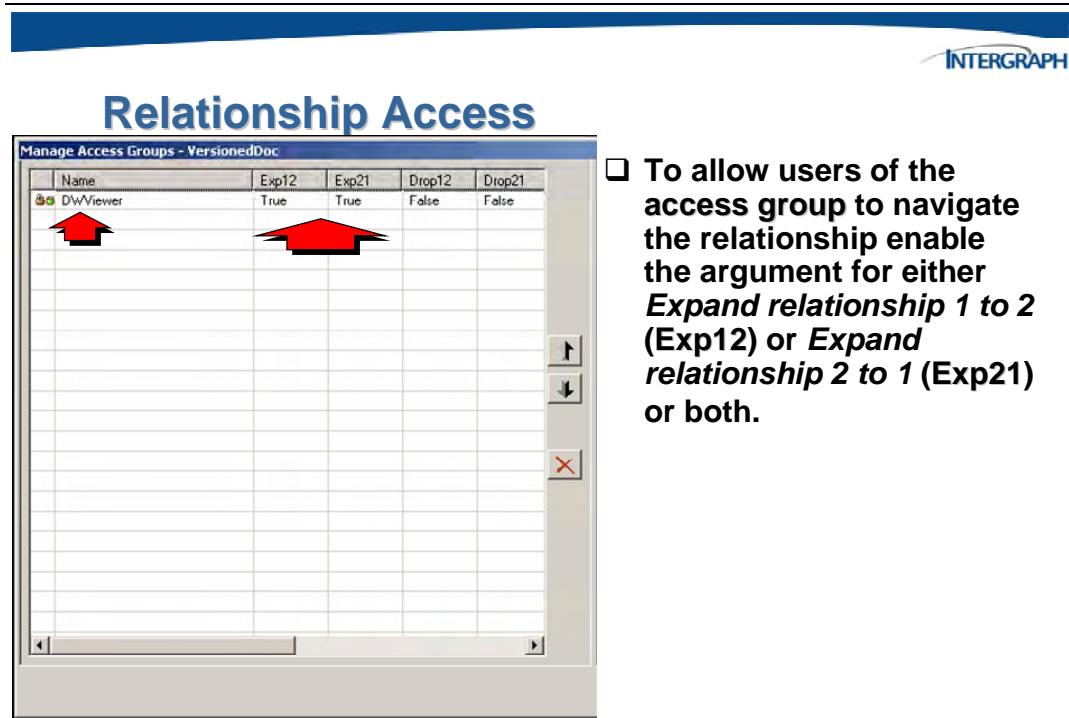
© 2008, Intergraph Corp.  
All Rights Reserved.

The relationships can be configured in a number of ways. One way is to use the **Manage Access Groups** command from the Relationship Definition. First, perform a search to find a list of Relationship Definitions.



- ❑ Right click on the RelDef and from the shortcut menu, select **Manage Access Groups**.

This form allows for drag and drop of Access Groups onto the RelDef and list editing of the relationship properties.



- ❑ To allow users of the access group to navigate the relationship enable the argument for either **Expand relationship 1 to 2 (Exp12)** or **Expand relationship 2 to 1 (Exp21)** or both.

To allow users of the access group to create the relationship, select the field for either *Allow drop of object 1 onto object 2* or *Allow drop of object 1 onto object 2* or both. (These are **Drop12** and **Drop12** in the **Manage Access Groups** form.)

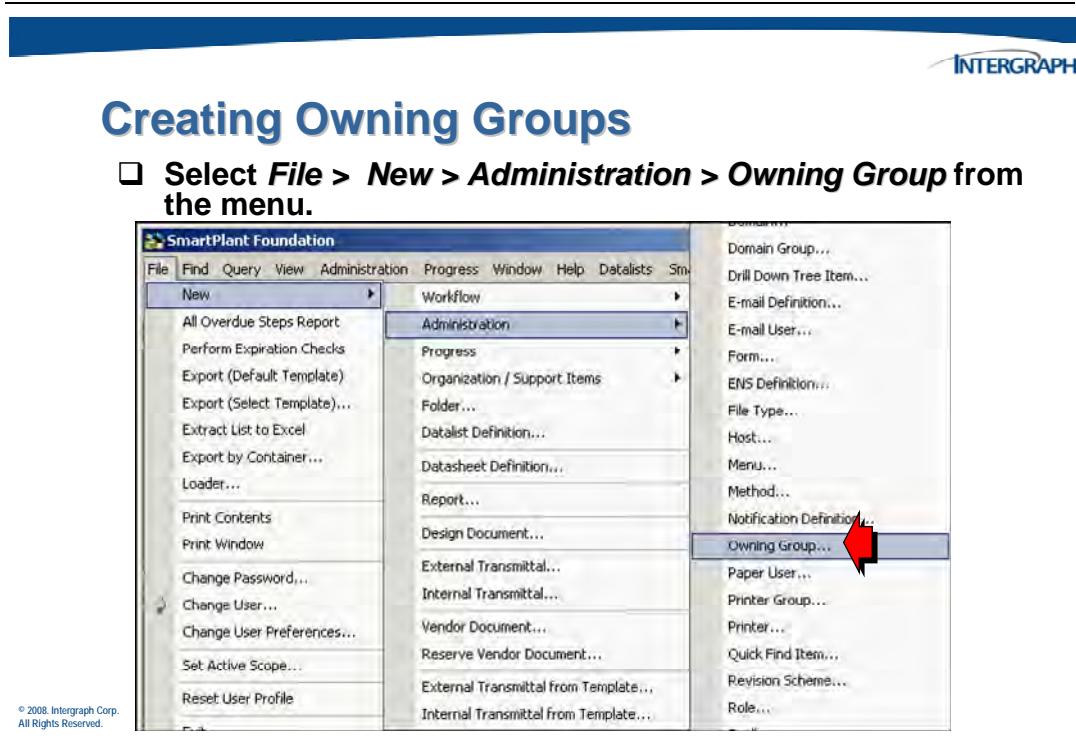
To make this navigation conditional, select a condition for *Forward expansion filter condition* or *Backward expansion filter condition* or both. Note that the condition definition is based on the two objects being related, and these are identified as Obj1 and Obj2. (These are **Condition12** and **Condition21** in the **Manage Access Groups** form.)

## 9.4 Creating Owning Groups

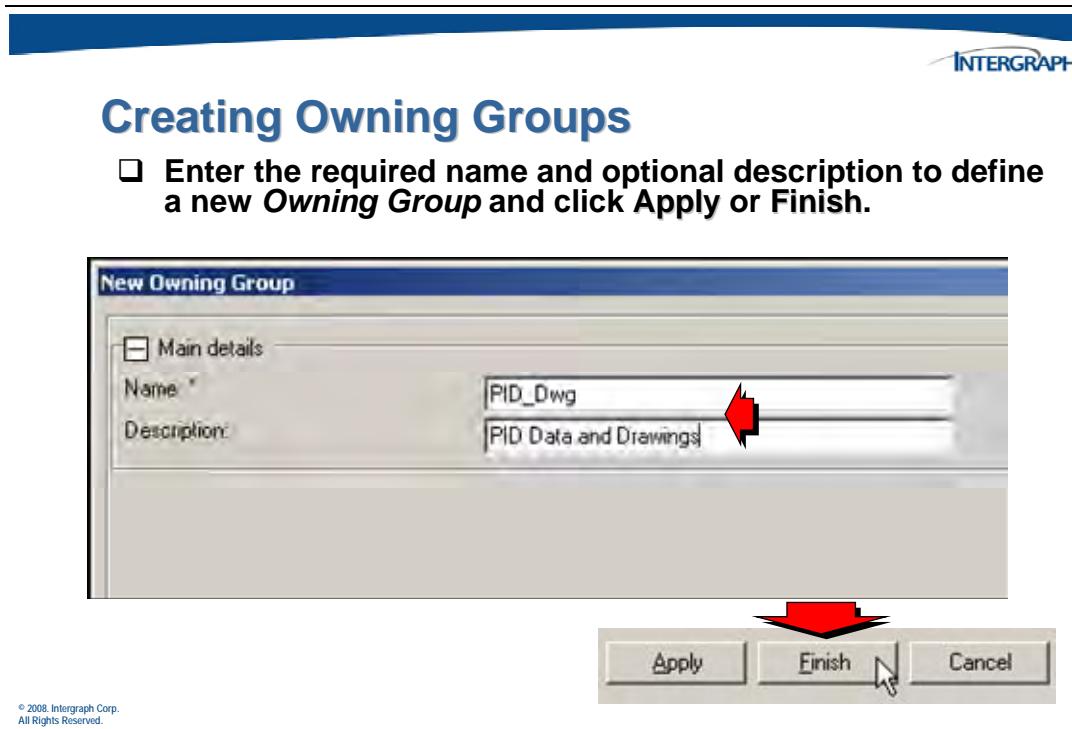
*Owning groups* govern the ownership of data and is sometimes referred to as data access groups. Owning groups should be modeled for separate user access based on object ownership, such as its department or discipline.

Owning groups can also be used to determine the file vaulting strategy. Vaulting strategies can be based on object properties, such as project and status, but the simplest strategy is to relate a vault to an owning group.

To create a new Owning Group:



The *New Owning Group* form will display.



Enter the following information to create a new *Owning Group*:

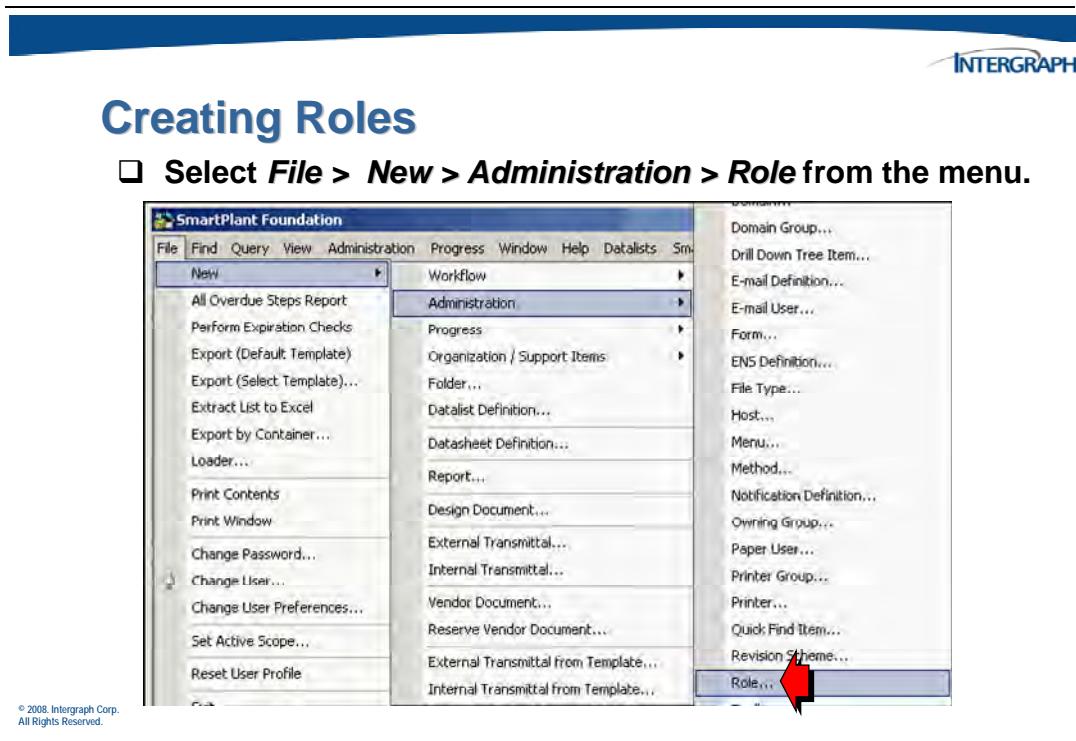
- Name** – Specifies the name of the group and is a required field.
- Description** – Specifies a description for this group.

Roles are used to control access to data and are based on a relation to the Owning Groups configured for each role. In the next section, role creation will be discussed along using owning groups to configure the role configuration.

## 9.5 Creating New Roles

Roles govern the user access to commands and data. Users perform different roles in different configurations (different plants or projects).

- Roles determine the user's level of access in the system based on related message access groups.
- Roles determine the domains queried by a user.
- Roles determine the access to different data, based on owning groups configured on the role.
- Roles determine the access to different data, based on domains configured on the role.



The *New Role* form will appear.

**Creating Roles**

Enter the required name and optional description and select the appropriate *Role details*.

**New Role**

Main details

Name: \* PIDDesigner  
Description: PID Design Engineer

Role details

Manage role:  AuthoringAdministrator, Framework Admin...  
 Configuration Manager  
 Datasheet Administrator  
 Document Controller

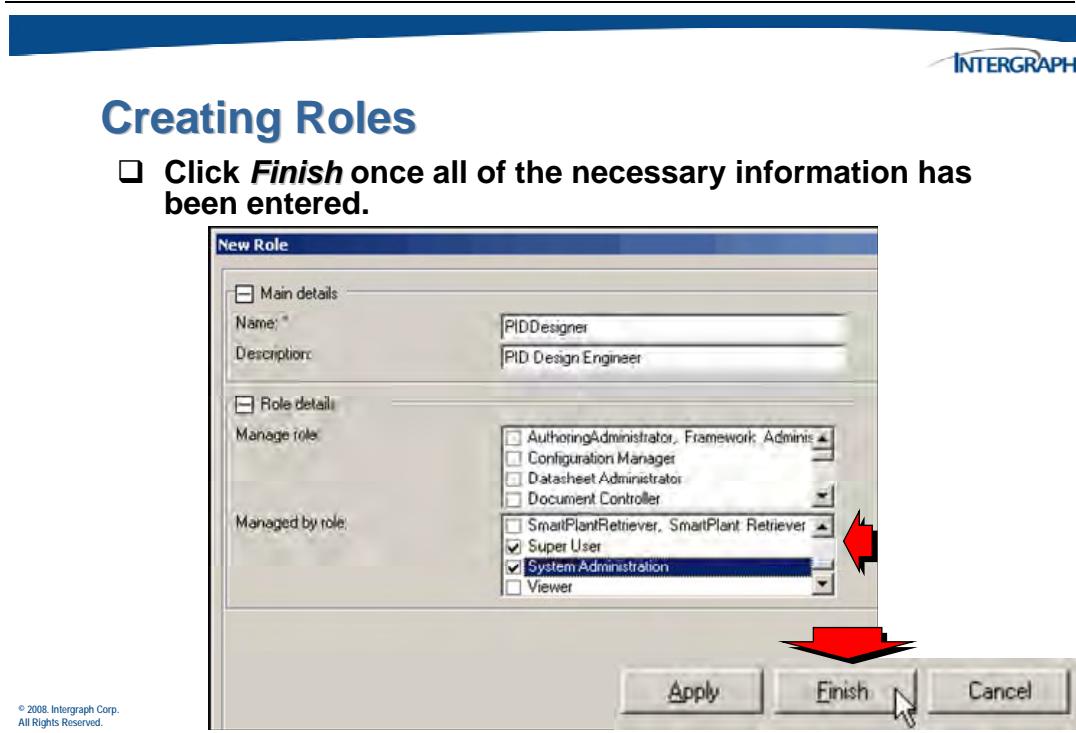
Managed by role:  AuthoringAdministrator, Framework Admin...  
 Configuration Manager  
 Datasheet Administrator  
 Document Controller

© 2008. Intergraph Corp.  
All Rights Reserved.

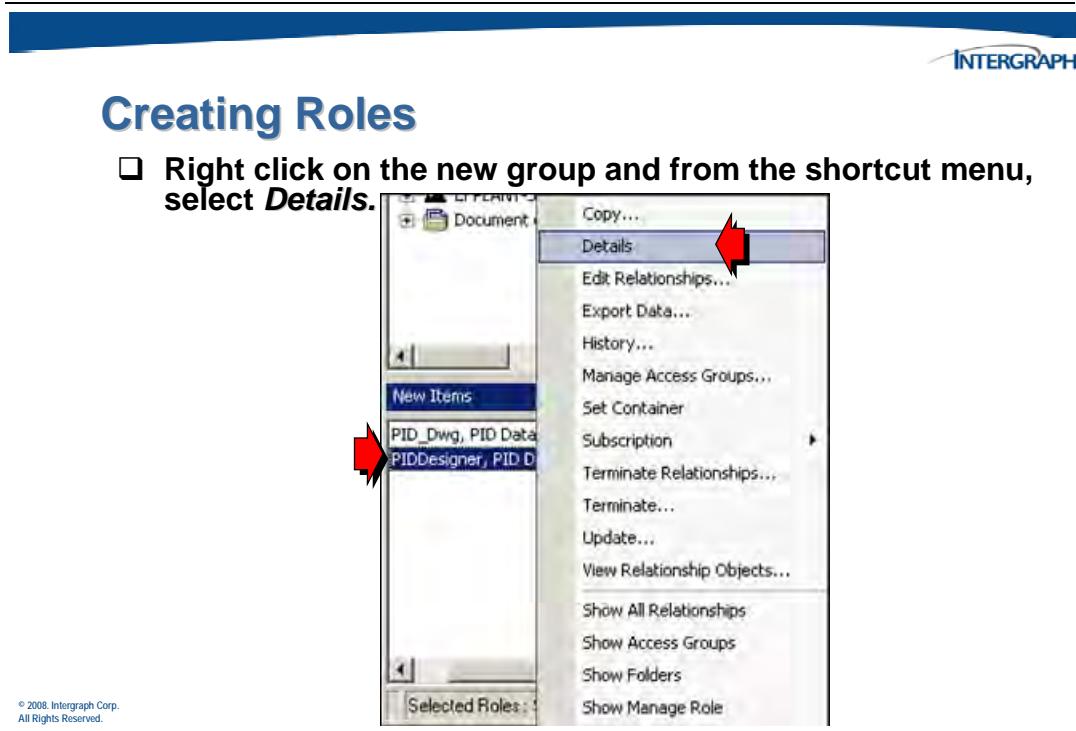
Enter the following information to create a new *Role*:

- Name** – Specifies the name of the role and is a required field.
- Description** – Specifies a description for this role.
- Role details** – A user of one role can only assign users to roles that are managed by the role that they are in. For example a project manager may be able to assign engineers to that project but they can not assign other project managers. This is controlled by relating the roles to each other using:
  - **Manage role** – Select the roles that this new role will manage.
  - **Managed by role** – Select the roles that manage this role.

Continue to select the *Role details*.



Now that the new Role exists, the **Details** shortcut command can be used to review the results.



The *Details* form for the Role will appear.

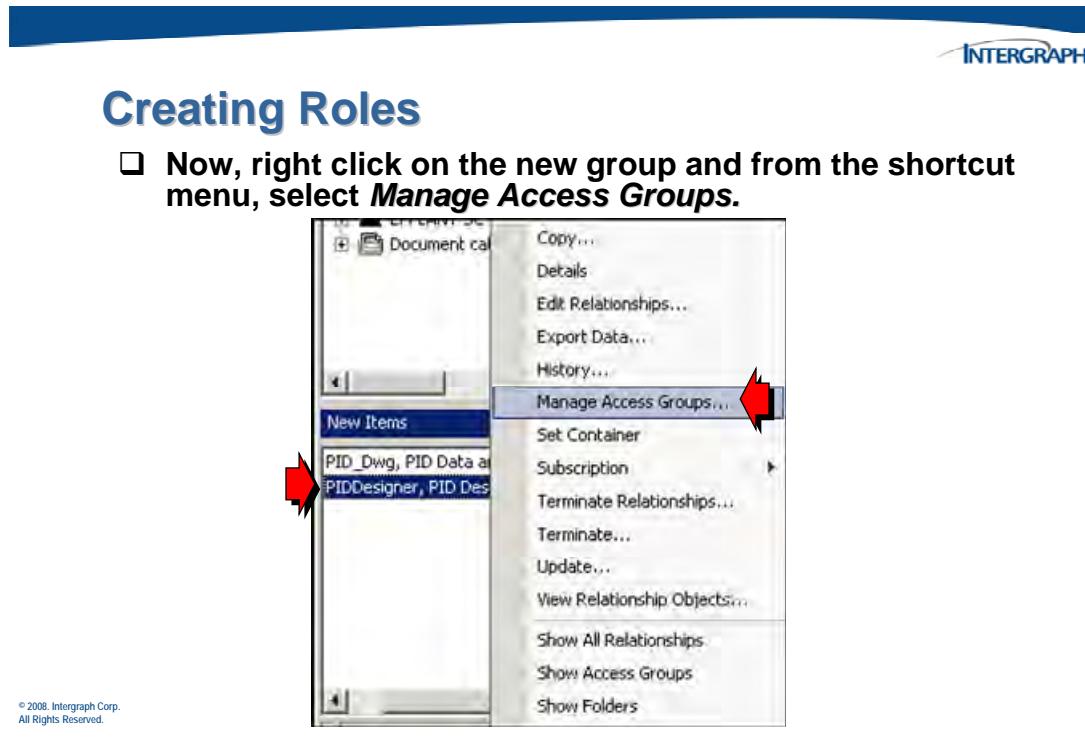
The screenshot shows a Windows-style application window titled "Details - PID Design Engineer". The window has three main sections: "Main details", "Role details", and "General details". In the "Role details" section, there is a list of roles under "Managed by role:" which includes "Configuration Manager", "Document Controller", "Super User", and "System Administration". Each of these listed roles is highlighted with a blue background and white text. A red arrow points from the text "Once the detail information has been reviewed, select Cancel to dismiss the form." to the "Cancel" button at the bottom right of the window. Another red arrow points to the "Configuration Manager" link in the list. The "Cancel" button is a standard grey button with the word "Cancel" in black text. A mouse cursor is shown clicking the "Cancel" button. The bottom left corner of the window contains the copyright notice: "© 2008. Intergraph Corp. All Rights Reserved."

In the *Role Details* section, any role relationship (hyperlink) can be clicked to see additional details.

## 9.5.1 Managing Roles

The next task is to configure the *Access Groups*, *Domains* and *Owning Groups* for the role. Roles are related to a set of access groups with domains and owning groups optionally configured on these relationships.

To relate Access Groups, use the **Manage Access Groups** shortcut command from the role. This allows for drag and drop of access groups onto the role as well as optionally configuring domains and owning groups relationships.

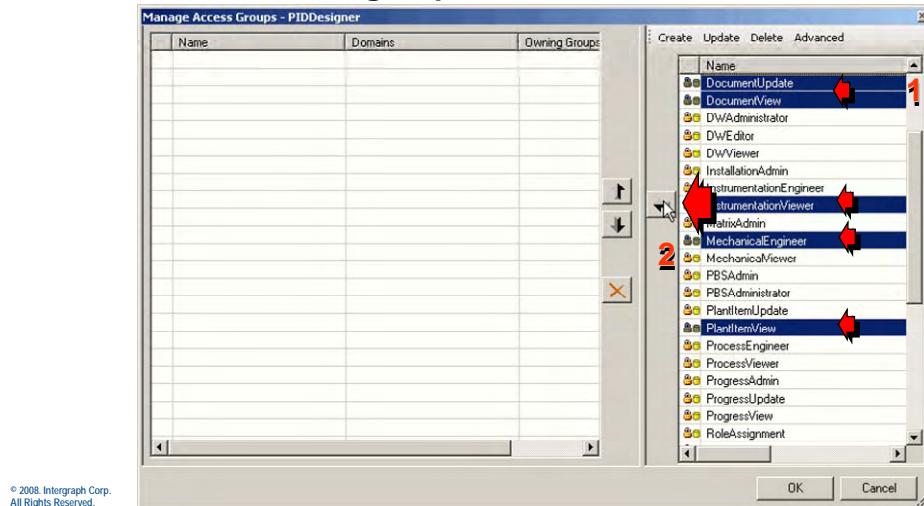


The *Manage Access Groups* form will display.

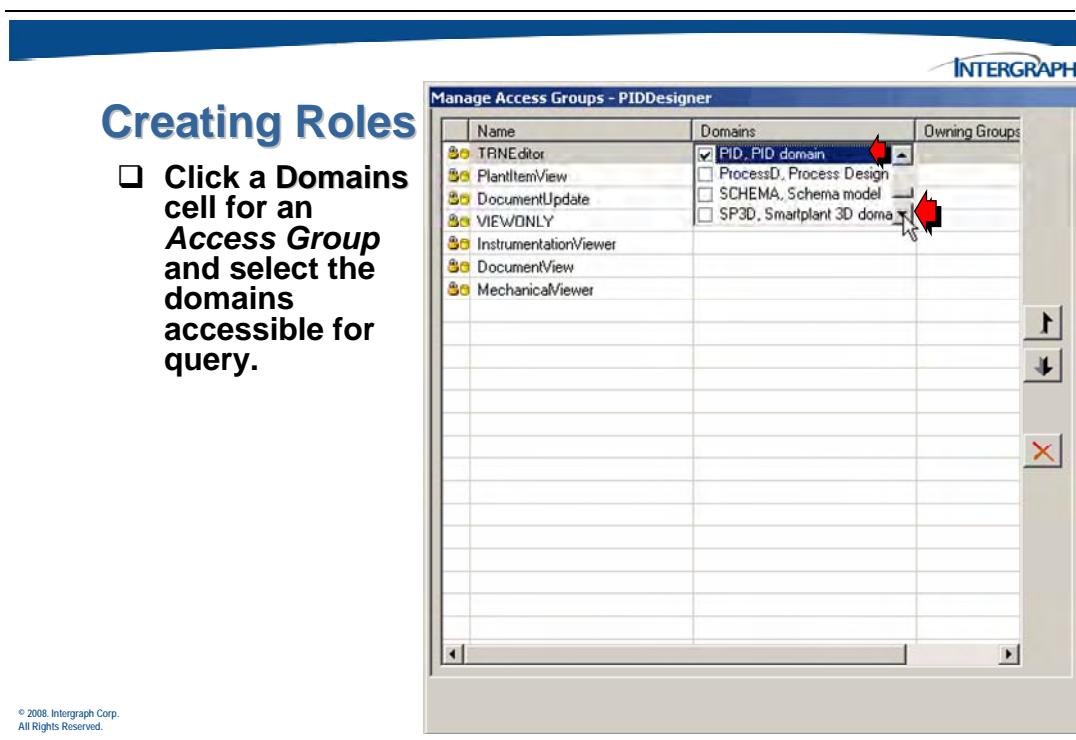


## Creating Roles

- ❑ On the right side of the dialog, select the methods to be related to the group and click the left arrow button.



The selected access groups will be “dragged” to the left side of the form as shown below.



## Configure Query Domains for the Role

The domains accessible for query are all the domains configured on the users role/access group relationships and all their dependent domains.

The typical way to do this is to relate the top-level domain to the role's VIEWONLY access group relationship. For example, the Document Controller's VIEWONLY access group has the SPFAUTHORING domain linked to it. The SPFAUTHORING domain is the top domain in the hierarchy for interactive SmartPlant Foundation users. This means that this domain and all its dependent domains are accessible.

### Notes:

- At least one domain must be configured on the role/access group relationships; otherwise the user will not be able to access any domains.

## Restrict Method Access by Object Domain

You can restrict method access based on the domain of the object.

The access granted by any access group in a role can be restricted to a set of domains by identifying them on the role/access group relationship. This enables the same access group to be used in different roles in different domains.

For example, a generic group, such as *DocumentUpdate*, can be related to the contract manager role for the **Contracts** domain and to the engineering roles for the **Engineering** domain.

### Notes:

- To restrict access to a method by domain, you must also set the *Filter by domain* property on the relevant method to access group relationships as described previously.
- By not identifying a domain on the role/access group relationship, the access group will grant access to objects in any domain.
- The delivered model does not restrict access to any methods based on domain.

## Restrict Method Access by Object Ownership

You can restrict method access based on the ownership of an object.

The access granted by any access group in a role can be restricted to a set of owning groups by identifying them on the role/access group relationship. This enables the same access group to be used in different roles on different sets of data identified by their owning group.

The most typical use of this is to restrict access to documents and data by their department or discipline by using the owning groups to represent a department or discipline.

### Notes:

- To restrict access to a method by owning group, you must set the "Filter by ownership" property on the relevant method/access group relationships as described previously.

- By not identifying an owning group on the role/access group relationship, the access group will grant access to objects in any domain.

**Creating Roles**

Click an **Owning Groups** cell for an **Access Group** and choose the owning groups used to restrict method access.

Select **OK** once all the relationships have been selected and configured.

Name	Domains	Owning Groups
TRNEditor	SPFAUTHORING, PID	PID_Dwg, OPEN TO ALL
PlantItemView		PID_Dwg, ENGINEER
DocumentUpdate		
VIEW/ONLY		
InstrumentationViewer	InstD	
DocumentView		
MechanicalViewer		

© 2008, Intergraph Corp.  
All Rights Reserved.

Once the role/access groups relationships have been configured, assign a user (users) to this role.

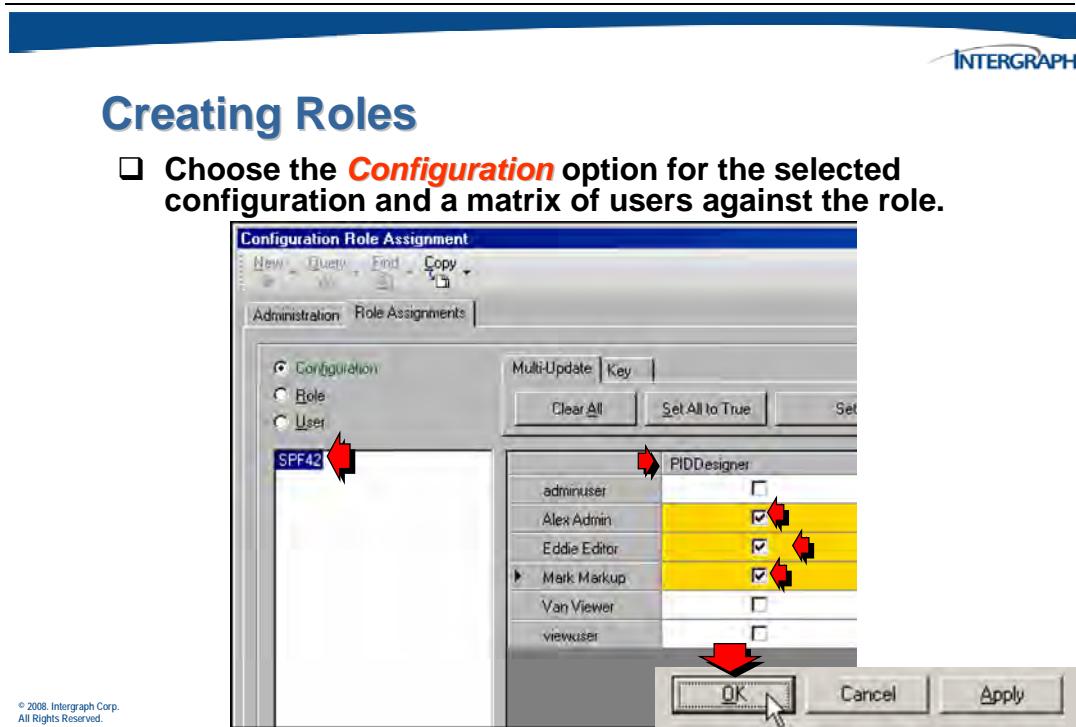
**Creating Roles**

Select the configuration that you wish to configure and click the **Role Assignments** button.

Name
AuthoringAdministrator
Configuration Manager
Datasheet Administrator
Document Controller
DW/Administrator
DW/Editor
DW/Viewer
Engineer
Installation Administration
Instrumentation/Engineer
InstrumentationViewer
MechanicalEngineer
MechanicalViewer
PBSAdministrator
PIDDesigner

© 2008, Intergraph Corp.  
All Rights Reserved.

Use one of the methods discussed earlier in this chapter to make the role assignment.



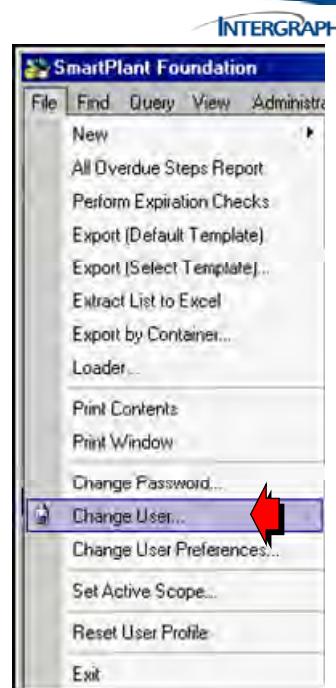
Once the role has been assigned to one or more users, use the **OK** button to save the changes, then exit from the *Configuration Role Assignment* form.

## 9.5.2 Testing New Users and Role Assignments

After creating new users and assigning those users to roles, test the new user accounts by logging in. Use the **Change User** command from the Desktop Client to do this.

### Testing New Users

- Select **File > Change User** from the menu.



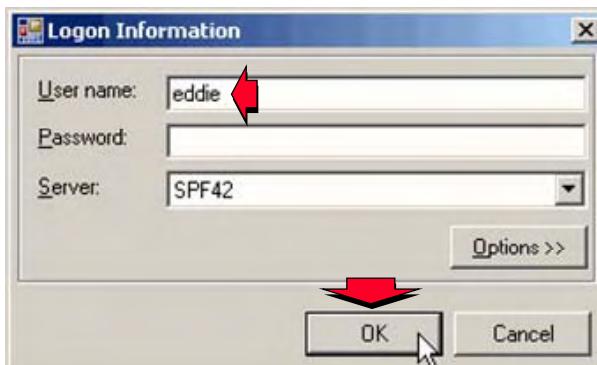
The new users that have been created and configured are *alex*, *eddie*, *mark*, and *van*. **Eddie** has been assigned to the **Engineering** role and is the example shown in this section.

The *Logon* dialog will appear.



## Testing New Users

- Key-in one of the newly created users, then click **OK** or press the *Enter* key to complete the logon process.



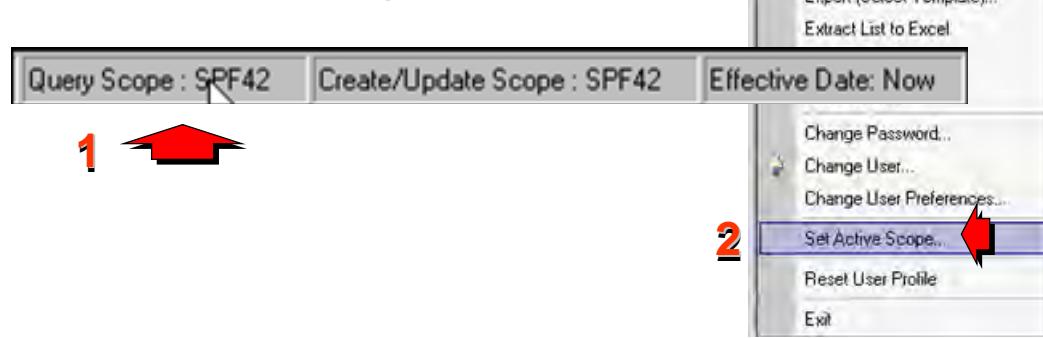
© 2008, Intergraph Corp.  
All Rights Reserved.

On the initial login for a new user, you may not see any menu commands or toolbars. In order to have access to functionality, you will need to set the active scope.



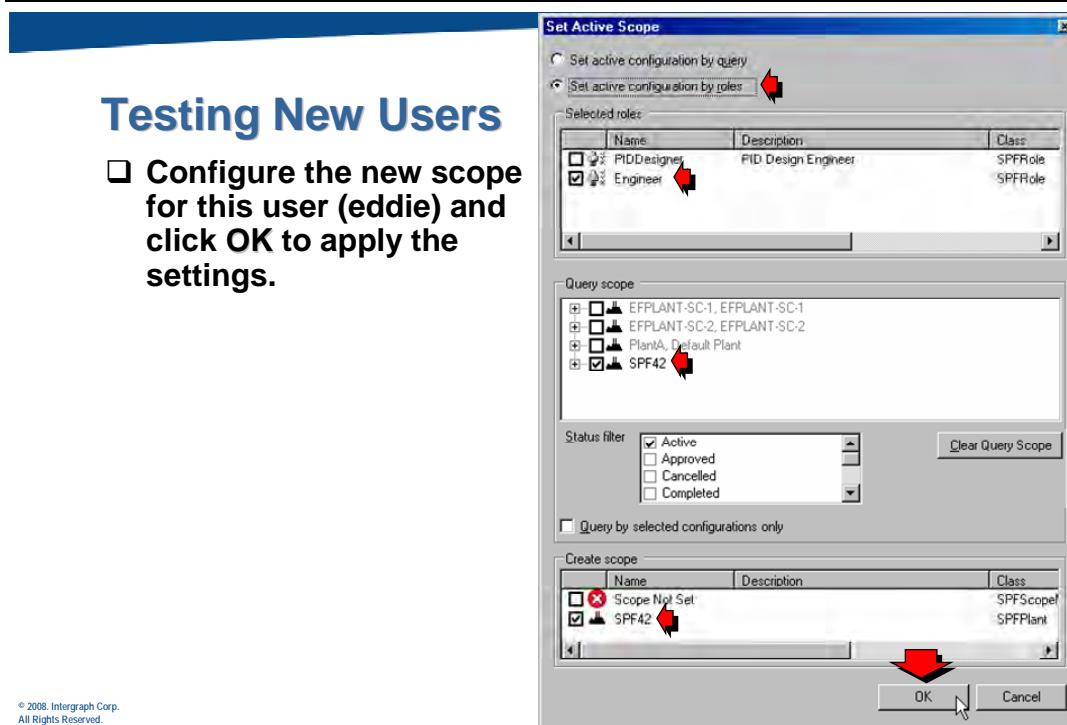
## Testing New Users

- Set the **Active Scope** by either
  1. double-clicking a scope in the **Status bar** or
  2. from the menu, click **File > Set Active Scope**.



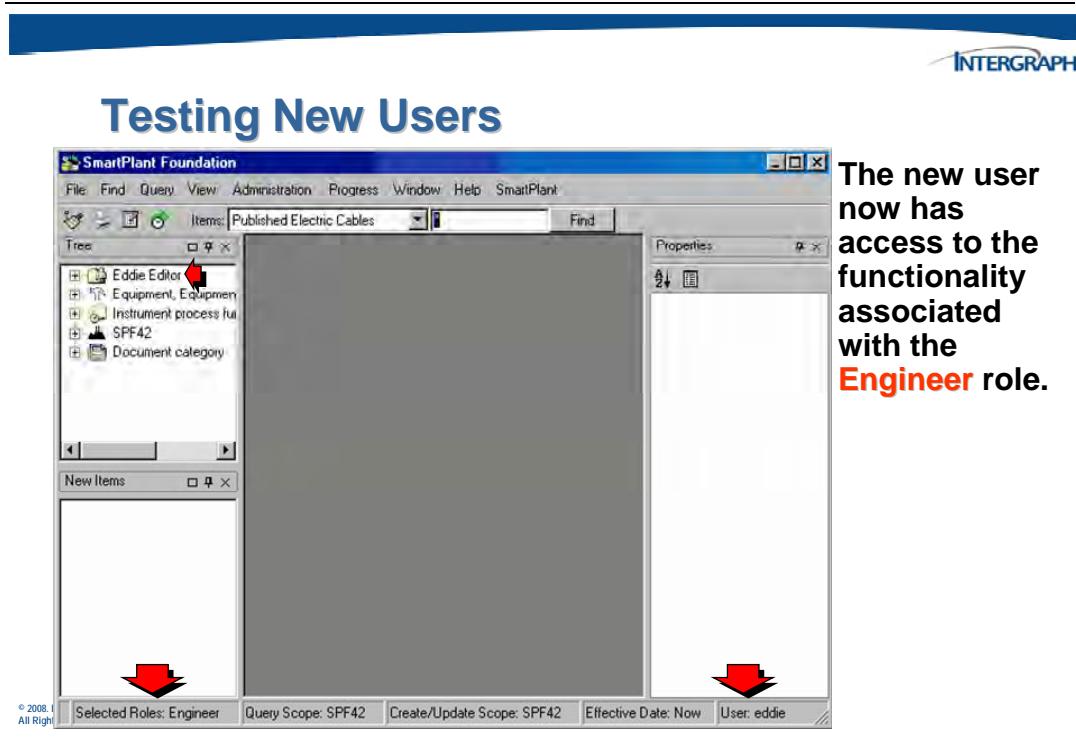
© 2008, Intergraph Corp.  
All Rights Reserved.

When the *Set Active Scope* form appears, enable the *Set active configuration by roles* radio button.



Select the **Engineer** role as well as the *Query scope* of **SPF42** and the *Create scope* of **SPF42**.

The Set Active Scope form will disappear but the settings will be applied to the logged on user. *Menus*, *toolbars* and *Tree View* options will be displayed based on the configuration scope.



In the **Status bar** note the **Selected Roles** and the current **User** fields.

## 9.6 Activity 1 – Configuring Basic SPF Security

Complete the **Chapter 9 – Activity 1** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.



## 9.7 Organizations

Organizations, now created using the Desktop Client, are now used, not only when working with transmittals, but also with printing, to determine which users have access to which printers.

---



### Organizations

- Users in SPF can be grouped together into organizations.**
- Organizations can be internal groups, like departments or offices, or external groups, like other companies whose employees may need access to SPF or SPF-generated information.**
- Organization relationships controls access to printers and support transmittal processing.**
- SPF provides the following class definitions for defining organizations: SPFCompany, SPFDepartment, SPFManufacturer and SPFSupplier.**

Organizations are broken down into two basic types: external and internal.



## External Organizations

- External organizations include other companies with which you work and share information, suppliers, and manufacturers.
- External companies to which you want to send information with external transmittals, must be defined in the database as one of these types of objects.

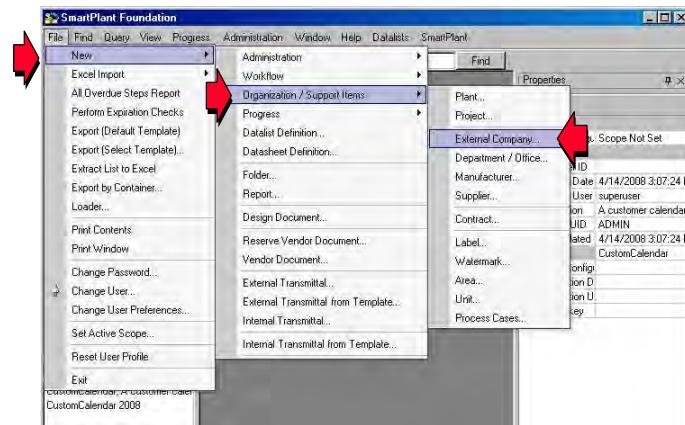
© 2008, Intergraph Corp.  
All Rights Reserved.

The command for creating external organizations is illustrated below:



## External Organizations

- Use the **File > New > Organization / Support Items > External Company** command to create a new external organization object in the database.



© 2008, Intergraph Corp.  
All Rights Reserved.

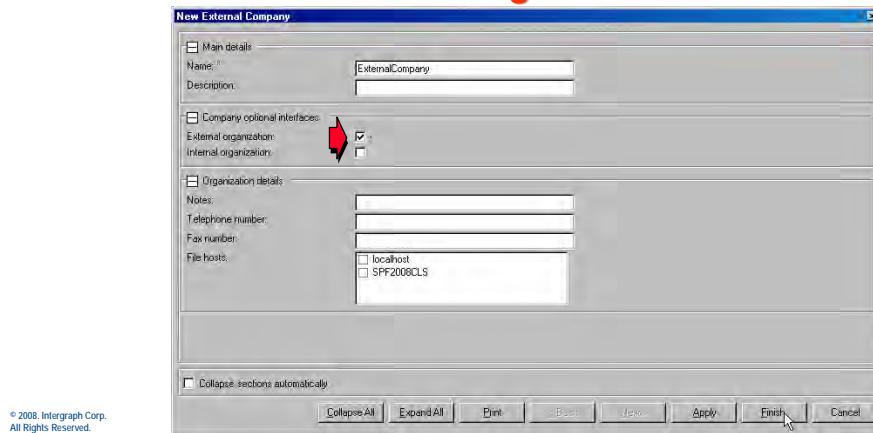
From the **New External Company** form, you can define properties for the new organization, such as the name of the company, the telephone and fax numbers, and even the hosts associated with the organization.

**Note:**

- ❑ Hosts may be associated with only one organization at a time.

## External Organizations

- ❑ The **New External Company** form allows you to create the new external organization. Be sure to check the **External organization** check box.



© 2008 Intergraph Corp.  
All Rights Reserved.

Internal organizations typically represent some group within your company.



## Internal Organizations

- Internal organizations include specific departments or offices within your company.
- Internal organizations to which you want to send information with internal transmittals, must be defined in the database as and office or department.

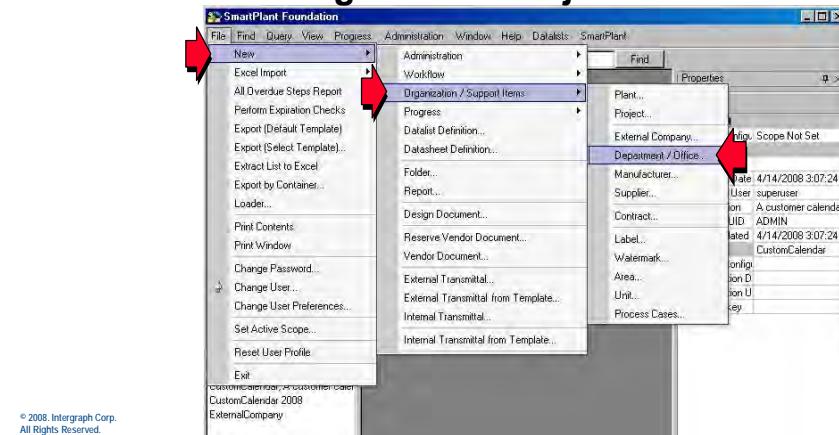
© 2008, Intergraph Corp.  
All Rights Reserved.

The command for creating a new internal organization is illustrated below:



## Internal Organizations

- Use the **File > New > Organization / Support Items > Department / Office** command to create a new internal organization object in the database.



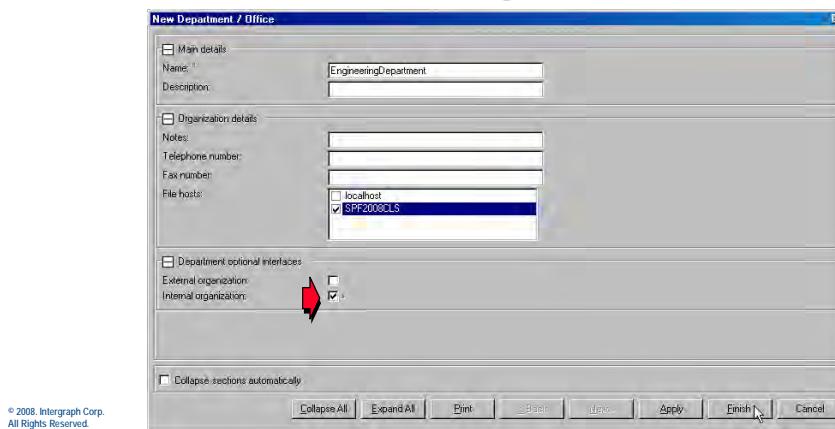
From the *New Department / Office* form you can provide information about the new group within your company.

**Note:**

- Hosts may be associated with only one organization at a time.

## Internal Organizations

- The *New Department / Office* form allows you to create the new internal organization. Be sure to check the *Internal organization* check box.



## 9.8 Printing and Printer Configuration

Access to printers is now controlled through a combination of relationships between users and organizations, organizations and hosts, organizations and printer groups, and printer groups and printers.

---

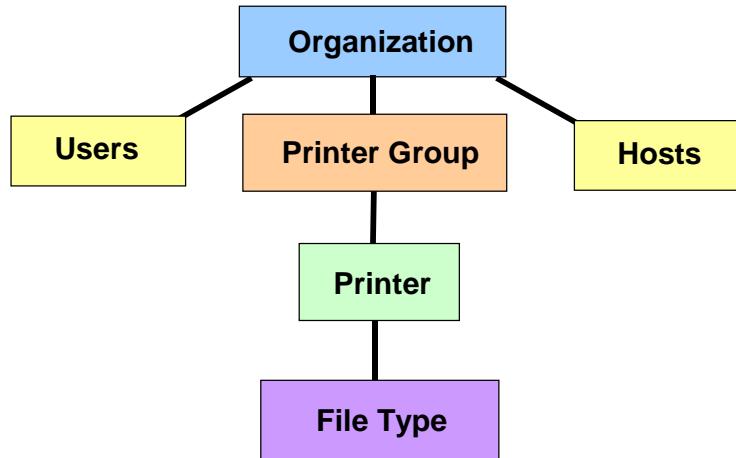


### Printers

- Organizations (that represents groups such as sites or departments) are related to a host and printer server, allowing administrators to manage physical locations for file storage in vaults and the printers that are available to the user.**
- Printer are grouped together in Printer Groups for access.**
- Printer groups are then related to organizations to determine what printer are available to users of that organization.**
- Additionally, printers can be set up to print only certain file types, in which case the user will not see that printer unless printing one of those types.**

The following image illustrates how relationships between these items controls access to printers.

## Printers



© 2008, Intergraph Corp.  
All Rights Reserved.

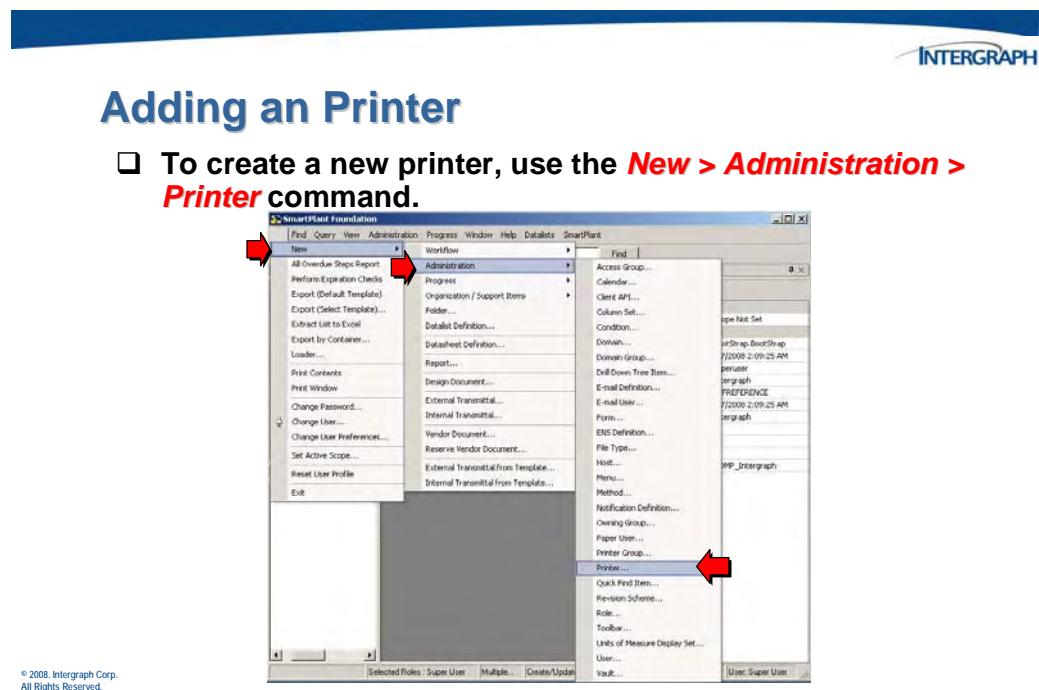
These relationships can be created through drag and drop actions.

## Adding a New Printer

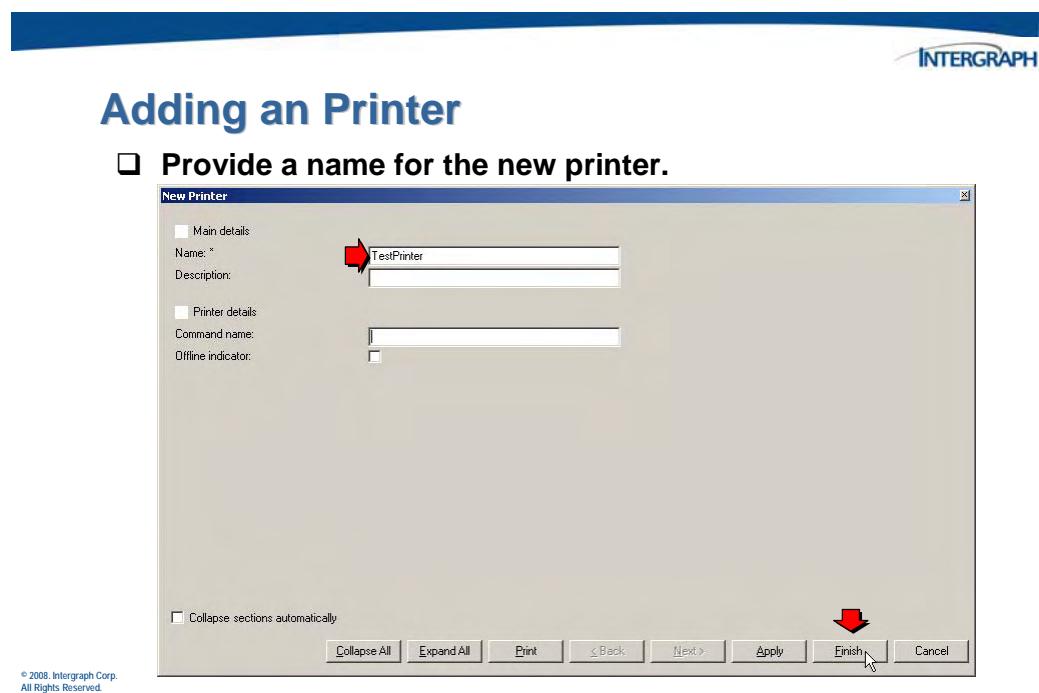
- Users can belong to only one organization at a time.**
- This relationship is created from the user form when the user is created or updated. You can also create the relationship through a drag and drop action, if the user is not associated with an organization already.**
- Hosts and organizations can be associated by using a drag and drop action. The relationship can be created in either direction.**
- The relationship between organizations and printer groups is created by dragging an organization and dropping it onto the required printer group.**
- The relationship between printers and printer groups are created by dragging a printer group and dropping it onto the required printer.**
- Once these relationships are in place, users will have access to printers.**

© 2008, Intergraph Corp.  
All Rights Reserved.

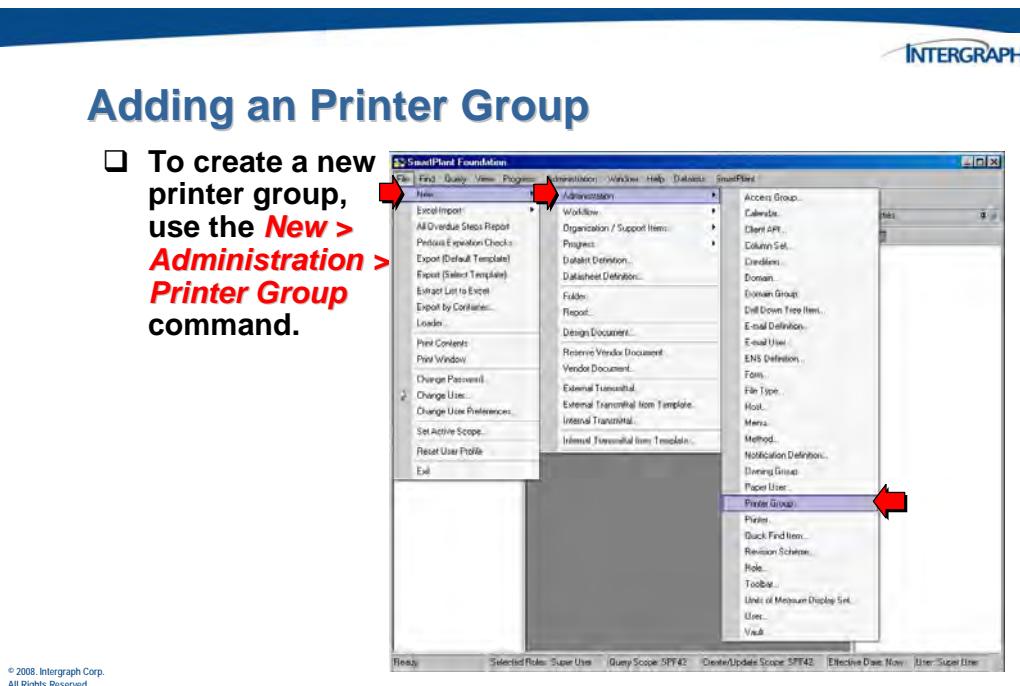
The command for creating a new printer is illustrated below:



On the **New Printer** form, you can provide a name and description of the printer. If you wish, you can provide a command string to be used to run the printer, or you can disable the printer using the **Offline indicator** check box.



The command to create a new printer group is illustrated below:

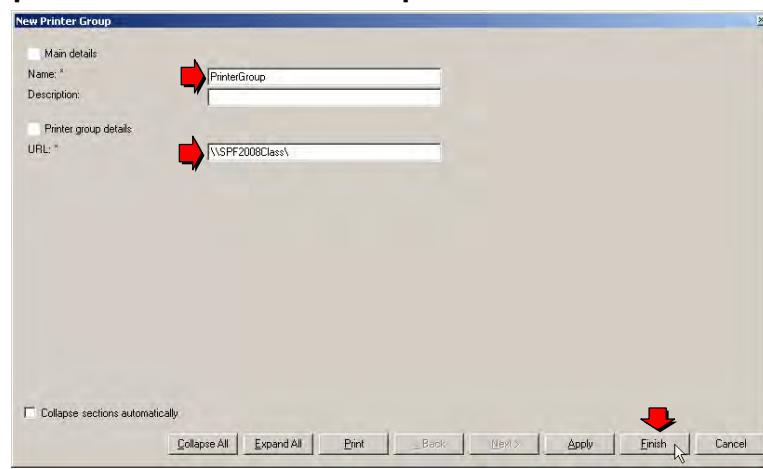


© 2008, Intergraph Corp.  
All Rights Reserved.

For the printer group, you can provide a name and description, as well as the location of the print server.

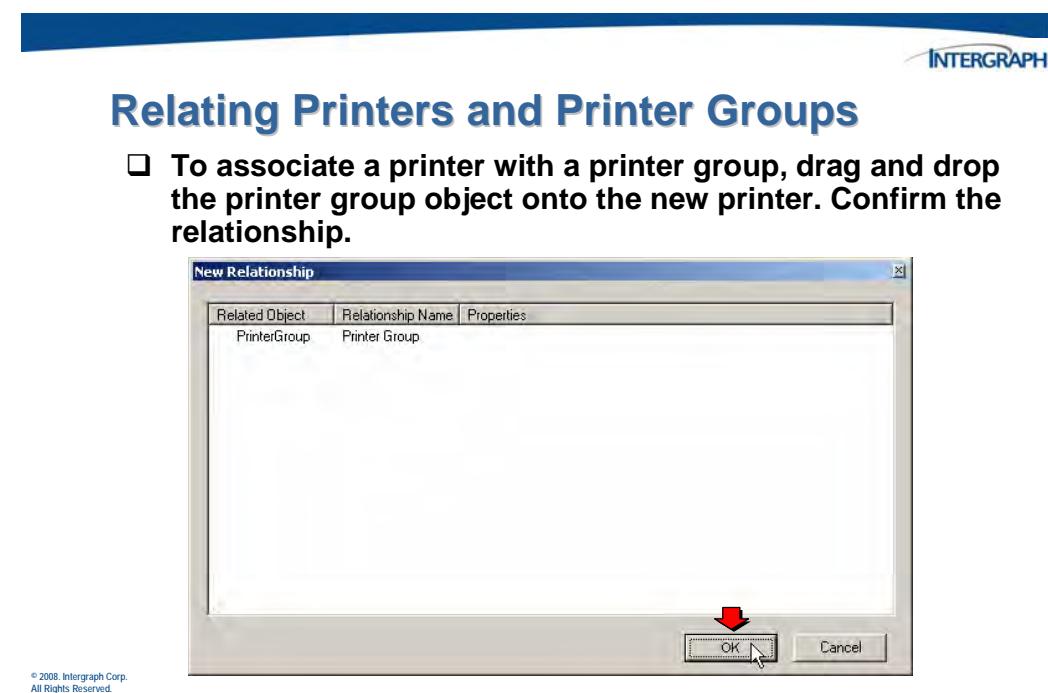
## Adding an Printer Group

- Provide a name for the print group. In the **URL** field, provide the address of the print server.

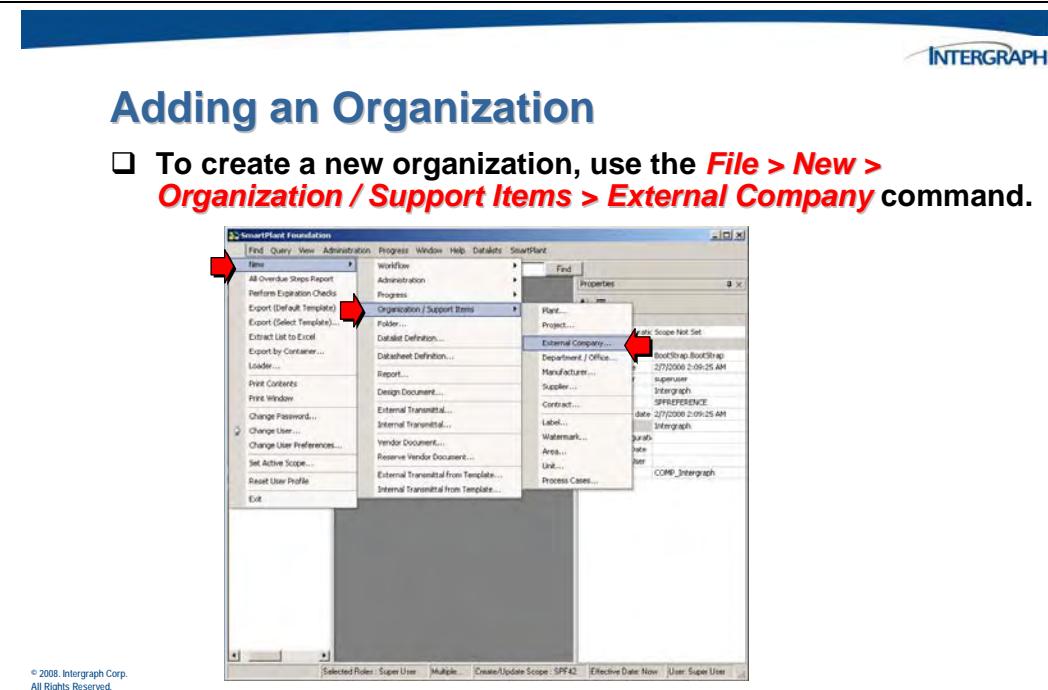


© 2008, Intergraph Corp.  
All Rights Reserved.

To put a printer in a printer group, drag and drop the printer group onto the printer. Confirm that you want to create the relationship by clicking **OK** on the *New Relationship* dialog box.



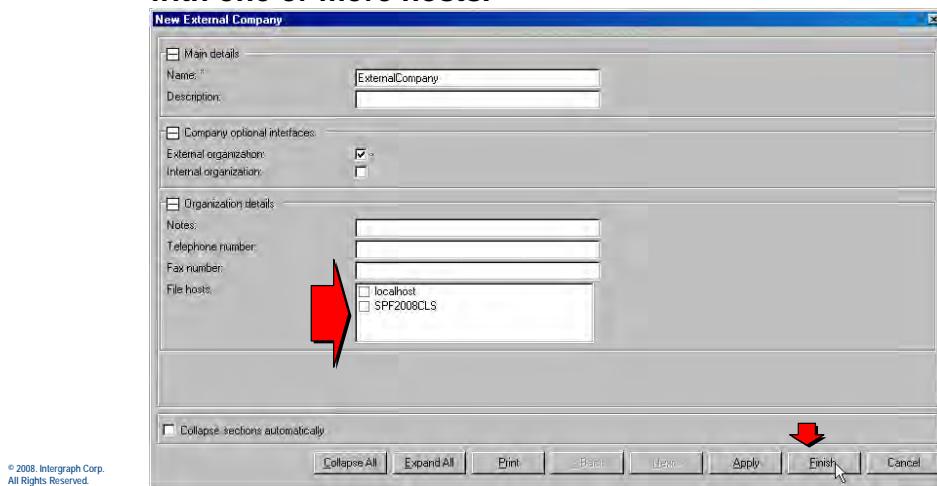
The command for creating a new organization is illustrated again below:



Provide necessary about the organization on the form. You do not have to choose a host at this point, but you can if you wish.

## Adding an Organization

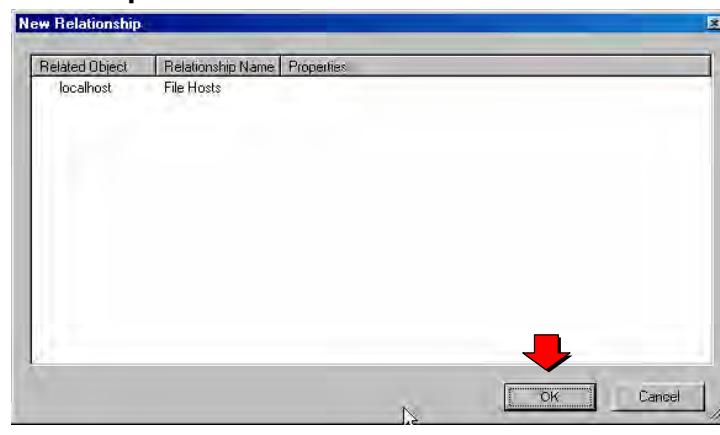
- When you create an organization, you can associate it with one or more hosts.



If you did not associate the organization with a host when you created it, you can do that later using a drag and drop action.

## Relating Printer Groups and Organizations

- If you did not associate the organization with a host when it was created, you can create the relationship with a drag and drop.



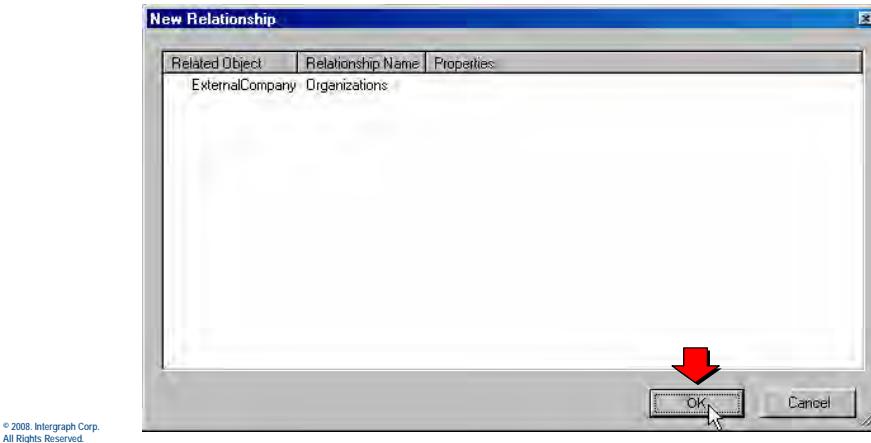
You are then ready to create a relationship between the new printer group and the new organization.

---



## Relating Printer Groups and Organizations

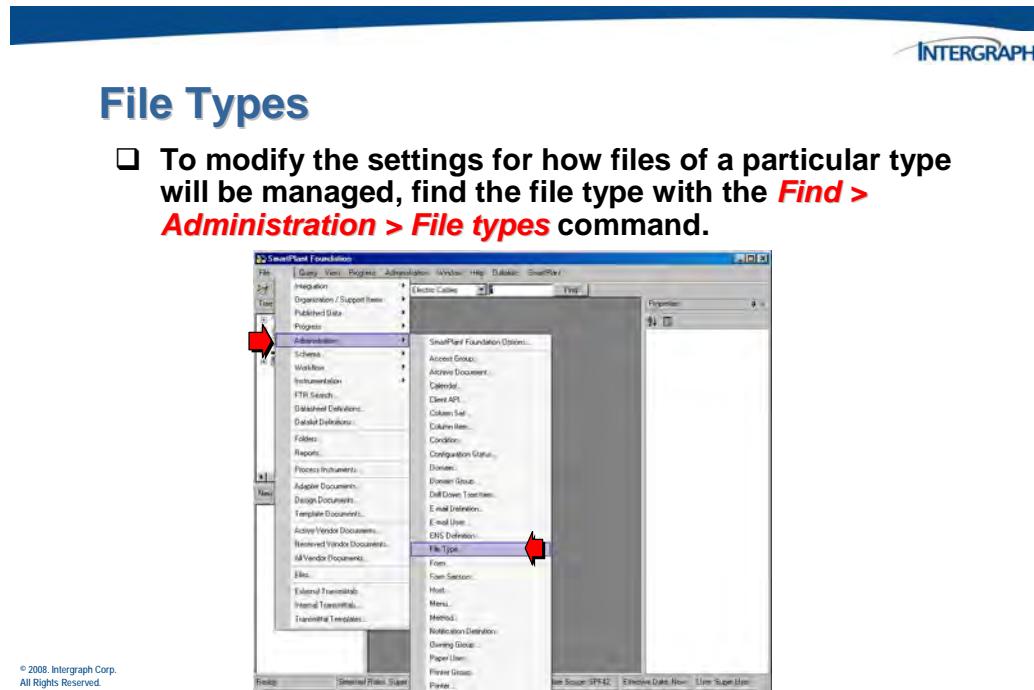
- To associate a printer group with an organization, drag and drop the organization object onto the printer group. Confirm the relationship.



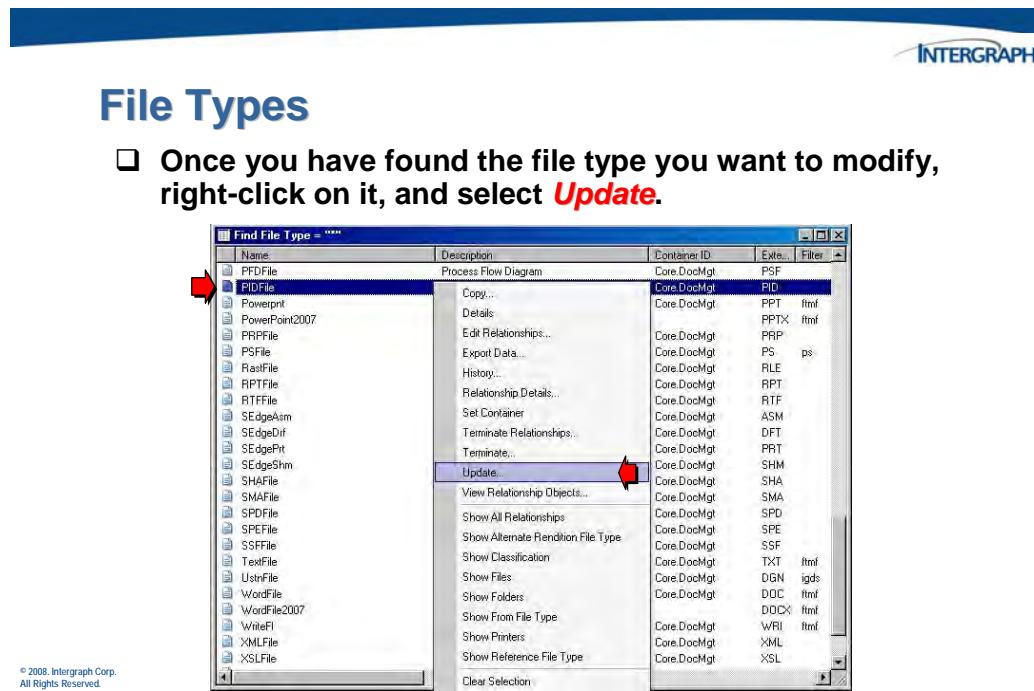
## File Types

- To use the default application to print a file type, type Default when you define the printing application for the file type or relationship.
- For this to work, the file type must have an application associated with the **printto** action in Windows.
- Alternatively, if the native application is not installed, you can specify another application to print files of a specific type. For example, SmartSketch can be used to print .pid files when SmartPlant P&ID is not available.

The command for displaying existing file types is illustrated below.



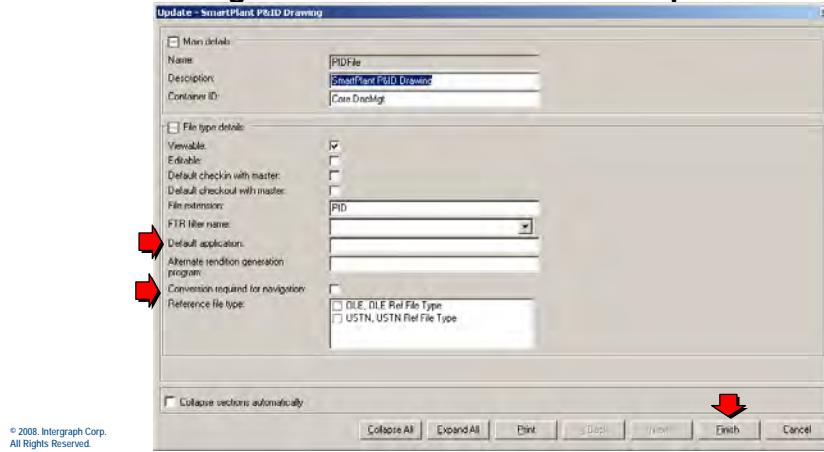
Find the file type you are interested in, right-click on it, and use the ***Update*** command,



The form will display the set values for properties for file types.

## File Types

- The new **Conversion required for navigation** check box indicates that files of this type should be processed through the SmartConverter when opened for viewing.



A new property is available for file types.

The new **Conversion required for navigation** allows you to indicate that you want files of this type to be processed by the Smart Converter when it is opened for viewing in SmartPlant Foundation Desktop Client.

If you wish to use a specific default application for printing, other than the native application for the file type, one of the following conditions must be met:

- The path to the application executable must be included in the system path environment variable.
- The full path to the executable must be included when you define the default application for a file type or relationship.
- The executable for the application must exist in the main SmartPlant Foundation directory.

A printer should have a default application property to be used in the absence of an explicit printer-file type relationship.

When the system is determining which printer to use for a file sent for printing, the best fit is determined first by the printer that has an explicit printer-filetype relation, if none is found, then the first printer is used.

If no explicit printers are found, the system remembers the last printer used and sets it as the printer to which to associate all files that don't have an explicit printer-filetype relation. The settings.xml file stores this default value

## 9.9 Activity 2 – Organizations and Printing

Complete the **Chapter 9 – Activity 2** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.



## 9.10 SmartPlant Foundation Options

Users with administrative roles have the ability to set certain options for how the system will behave. In some cases, these settings will override settings made by users from their own *Change User Preferences* dialog box.

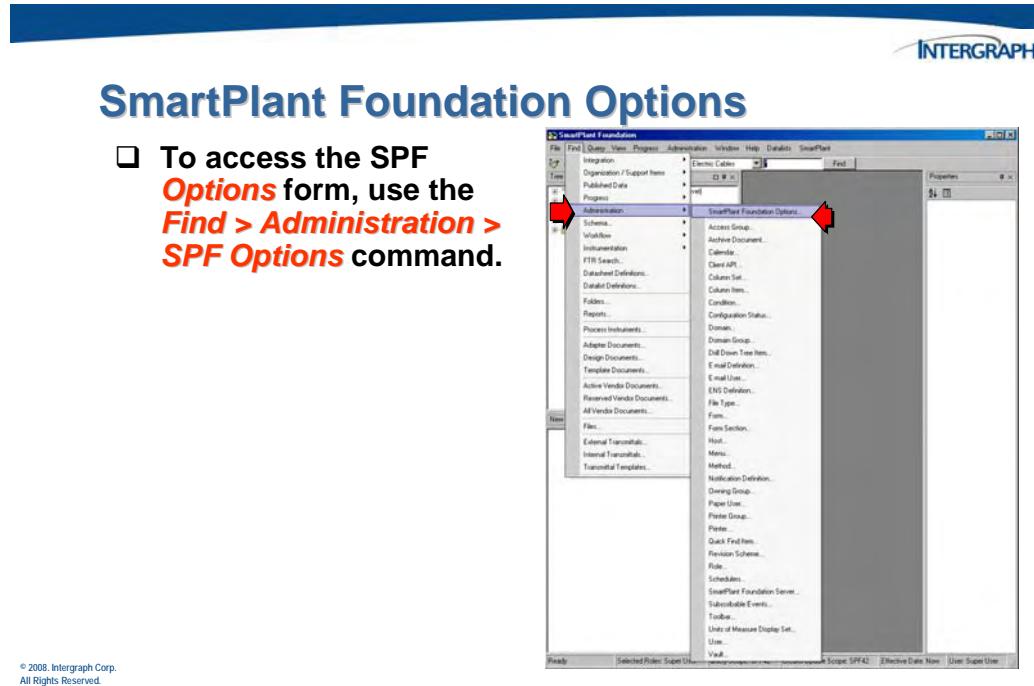
---



### SmartPlant Foundation Options

- ❑ In previous versions of the SmartPlant Foundation software, administrators used the **Options** form in the System Administration utility to set certain options that would apply to then entire SPF system.
- ❑ This functionality is now part of the Desktop Client for users with the appropriate administrative role, and the options that can be set is slightly different.

To access form with these settings, you must first find the *SystemOptions* object. Use the *Find > Administration > SPF Options* command.



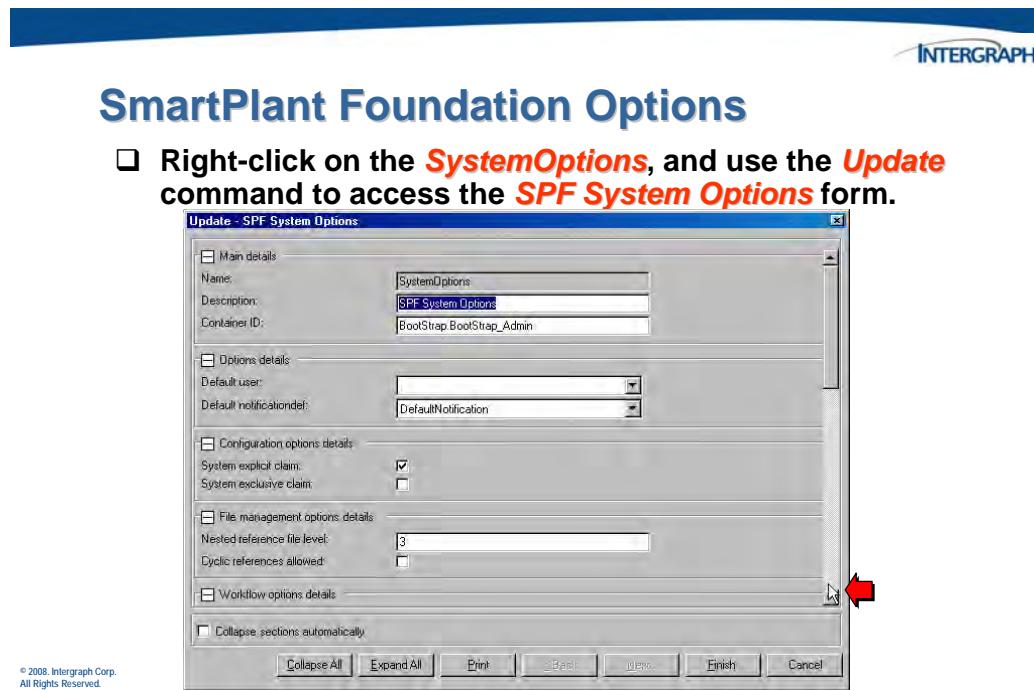
On the quick find dialog box that appears, click ***OK***.

## SmartPlant Foundation Options

- On the resulting Quick Find dialog box, click ***OK*** to search for all results.
- The system will return the *SystemOptions* item you see here:

Name	Description	Container ID	Creation Date	Created By	Last Updated
SystemOptions	SPF System Options	Boostrap.Boostra...	3/6/2008 3:37...	superuser	3/6/2008 3:37...

If you right-click on the *SystemOptions* object and click the *Update* command on the shortcut menu, you will open the form from which you may modify the system settings.



You can modify the following settings:

**Description** – Provides a description of the setting stored in this *SystemOptions* object.

**Container ID** – Indicates the container in which this information is stored.

**Default user** – When windows authentication is in place, and user trying to access the system is not defined in the database, the software will create a new user. The new user's roles and configuration will be created with the username selected here as a template.

**Default notificationdef** – Indicate what defined notification the system should use for the default user.

**System explicit claim** – Indicates whether objects are claimed automatically when users access a command for updating an object (not-checked), or whether to claim the object they must first use the *Concurrent Engineering > Claim* command (checked).

**System exclusive claim** – Indicates whether objects in the system can be claimed into more than one project at a time.

**Nested reference file level** – Specifies how many level of nested reference file relationships can be supported by the system. Files with more levels of reference files cannot be attached to document objects.

**Cyclic references allowed** – Specifies whether files with cyclic reference file relationships can be attached to document objects.



## SmartPlant Foundation Options

- Scroll down to see more options available on the form.**

The screenshot shows the 'Update SPF System Options' dialog box. Under the 'Workflow option details' section, there are several configuration fields:

- Display workflow information steps: A checkbox with a checked status.
- Allowable number of days to wait between e-mail: A numeric input field set to 1.
- Allowable number of days overdue before expiration: A numeric input field set to 1.
- Allowable number of days overdue before reassignment: A numeric input field set to 2.
- Suppress all e-mail: A checkbox with an unchecked status.
- Reject e-mail definition: A dropdown menu set to 'RejectEmail'.
- Action e-mail definition: A dropdown menu set to 'StartEmail'.
- Shared e-mail definition: A dropdown menu set to 'StartEmail'.
- Forward to e-mail definition: A dropdown menu set to 'PendingEmail'.
- Threshold from e-mail definition: An empty input field.
- First assignment e-mail definition: A dropdown menu set to 'FirstEmail'.
- Completion e-mail definition: A dropdown menu set to 'CompletionEmail'.
- Logoff e-mail definition: An empty input field.
- Workflow kill e-mail definition: An empty input field.
- Divide e-mail definition: A dropdown menu set to 'OverdueEmail'.
- Workflow in valid e-mail definition: An empty input field.
- Information e-mail definition: A dropdown menu set to 'InfoEmail'.
- Step cleared e-mail definition: An empty input field.
- Future action e-mail definition: A dropdown menu set to 'FutureEmail'.
- Initial workflow status: A dropdown menu set to 'WF-C'.
- Completion workflow status: A dropdown menu set to 'Workflow'.
- Information step definition: A dropdown menu set to 'Workflow'.
- Workflow calendar: A dropdown menu set to 'SystemCalendar'.

At the bottom of the dialog box, there is a 'Collapse sections automatically' checkbox, followed by standard Windows-style buttons: 'Collapse All', 'Expand All', 'Print', 'Finish', and 'Cancel'.

© 2008, Intergraph Corp.  
All Rights Reserved.

**Display workflow information steps** – Indicates whether workflow information steps will appear in the To Do List.

**Allowable number of days to wait between e-mail** – Indicate how often you want e-mail notifications to be sent when steps are overdue.

**Allowable number of days overdue before expiration** – After how many days an overdue step changes status from overdue to expired so that further action can be taken.

**Allowable number of days overdue before reassignment** – After how many days an overdue step is reassigned to another user.

**Suppress all e-mail** – Indicates that e-mails should not be sent as part of the workflow process.

**Email definitions** – Indicates which predefined e-mail is used for each event.

**Initial workflow status** – Indicates the workflow status given to an object at the time it is initially placed into a workflow.

**Completions workflow status** – Indicates the workflow status given to an object once it has completed a workflow.

**Workflow Calendar** – Specifies which calendar configured within the system is used by the workflow features to distinguish between working and non-working days.

## 9.11 Plant Objects

A **Plant** is a specific class of business object that represents the top level of the data hierarchy in the system. A user is granted access to a plant after being assigned to a user group. This process provides the link between the user, the user group, and the plant.

---



### Plant Objects

**SPF has concept of active Plant, where a user can work in only one plant at a time.**

**Setting the Scope for the User sets the Plant/Project that User will be working in.**

**The Plant object has these characteristics:**

- Plant name**
- Plant description**
- Status**

© 2008, Intergraph Corp.  
All Rights Reserved.

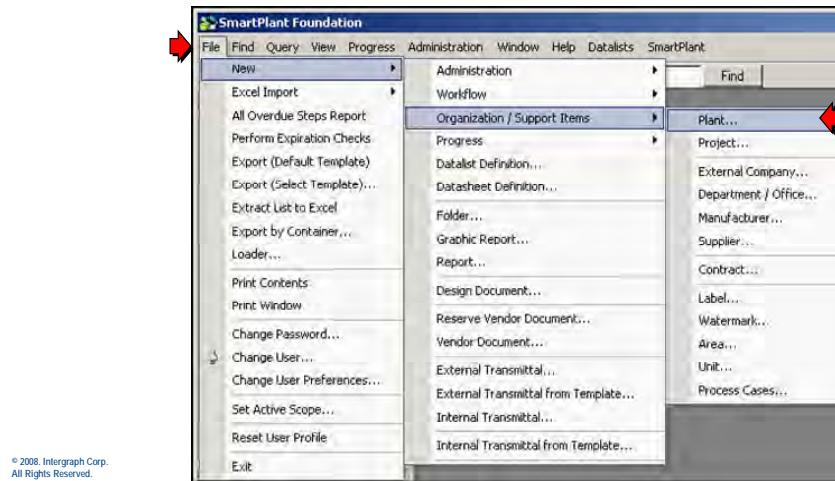
---

Users can be related to the same user group for other plants. For example, a user can be a member of the *Viewer* user group for all plants and the *UpdateUser* user group for only one or two plants. Each user is assigned a default plant that is set as their active plant for the session in which they log on to SmartPlant Foundation. The active plant can be changed during a session as long as they have access privileges to more than one plant.

New *Plants* can be added to the system using the SmartPlant Foundation Desktop Client.

## Creating a Plant

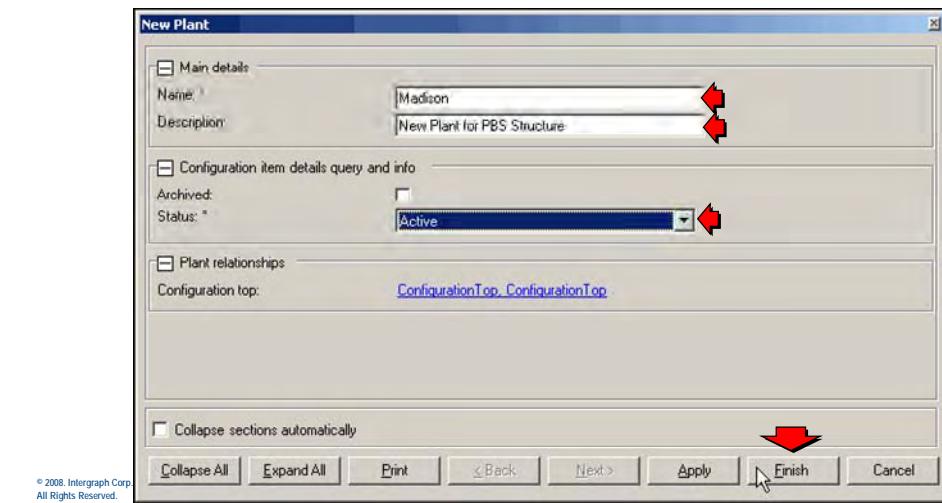
- From the menu, click **File > New > Organization / Support Items > Plant**.



Define properties for the new plant, and then click **OK** to create it.

## Creating a Plant

- Enter the necessary new *Plant* values, and click **Finish**.



The new Plant appears in the New Items window.

---

## Creating a Plant

The new plant will be displayed in the **New Items** window.



## 9.12 Projects

**Projects** in SmartPlant Foundation are set up to group related users and their activities on a project level. The default configuration for a given user can be assigned when the user account is created. The Project Level access control allows access to information on a project-by-project basis.

---



### Projects

A **Project** is very similar to plant, but the project name is stored only as a property, not as part of the unique key.

You can see Plant-level objects from the Projects, but from the Plant you will not be able to see Projects.

The **Project** object has these characteristics:

- Project name
- Project description
- Status

© 2008, Intergraph Corp.  
All Rights Reserved.

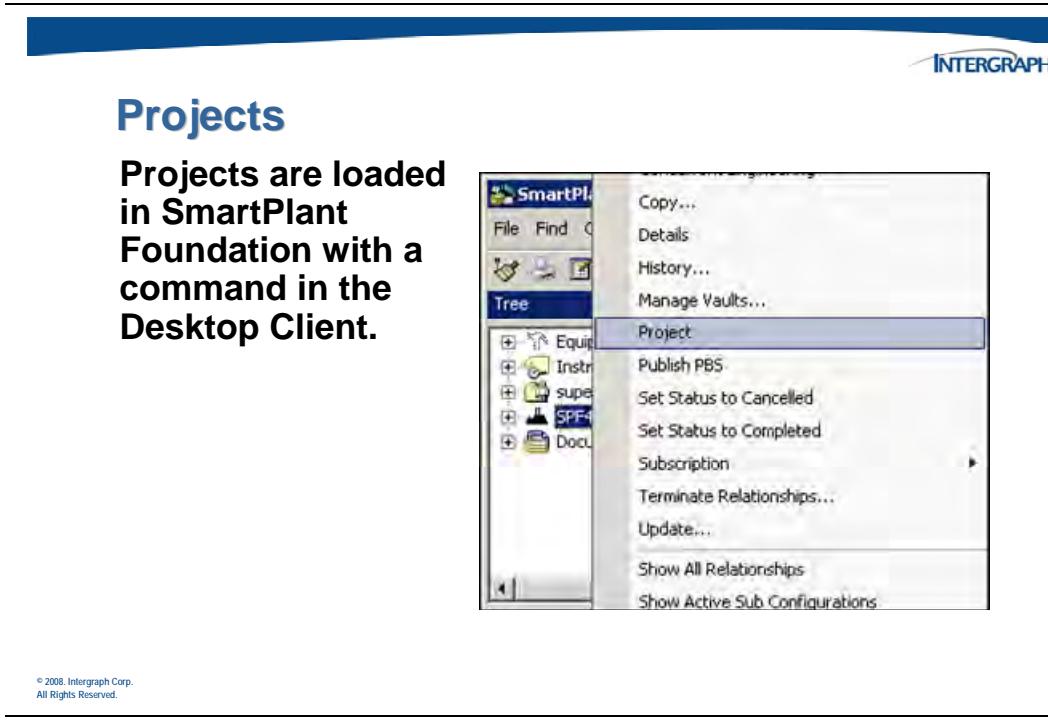
---

Project is used to make changes to an *as-built* Plant. You can use Concurrent Engineering to move the changes to the Plant level, or discard changes.

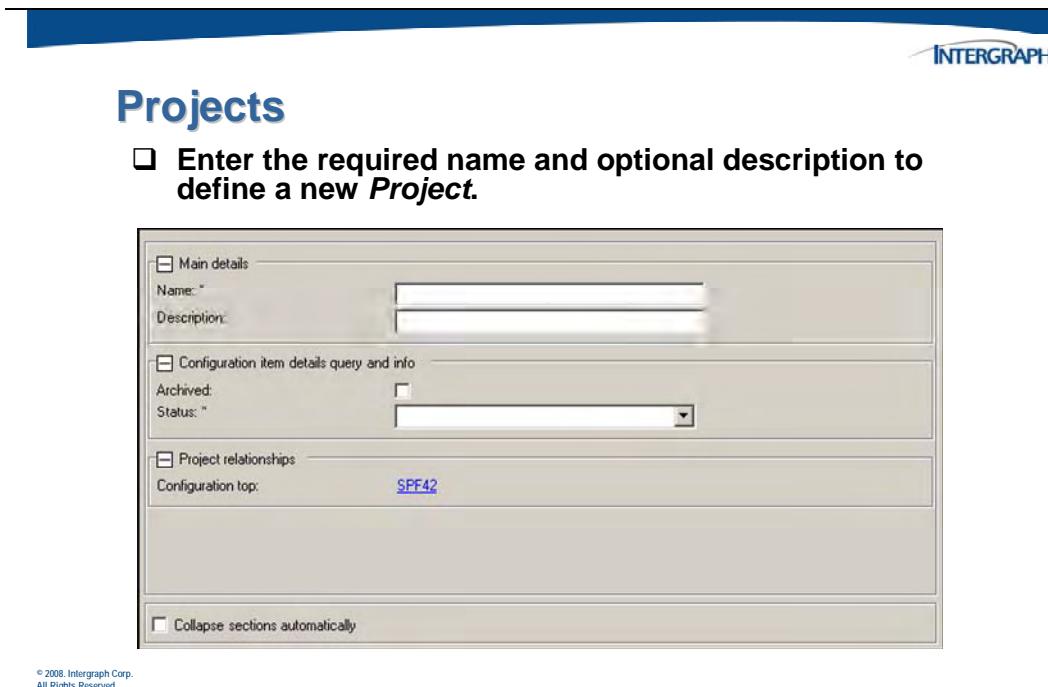
The hierarchy is:

```
Plant
  Project1
  Project2
  ...
  ...
```

To create a Project within a model you must use the SmartPlant Foundation Desktop Client. The ProjectCreate method is not activated for any user groups by default, but can be turned on to allow user to see a New Project command that allows them to create new projects. The *SmartPlant Foundation Configuration and Administration II* course covers adding methods to a user group.



© 2008 Intergraph Corp.  
All Rights Reserved.

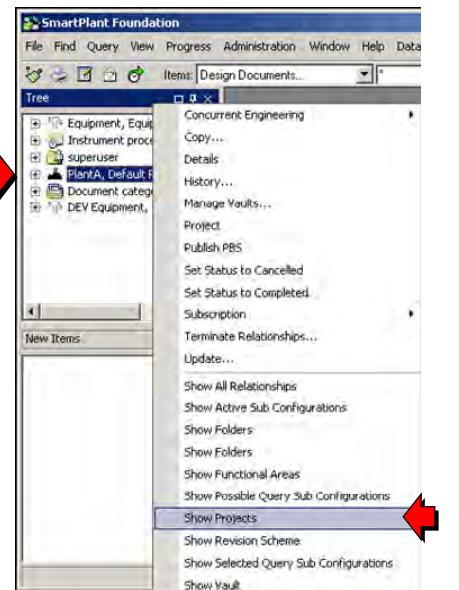


© 2008 Intergraph Corp.  
All Rights Reserved.

To review a list of Projects in a plant, use the *Show Projects* command.

## Searching for Projects

- Select the project, right-click and select **Show Projects** from the pop-up menu

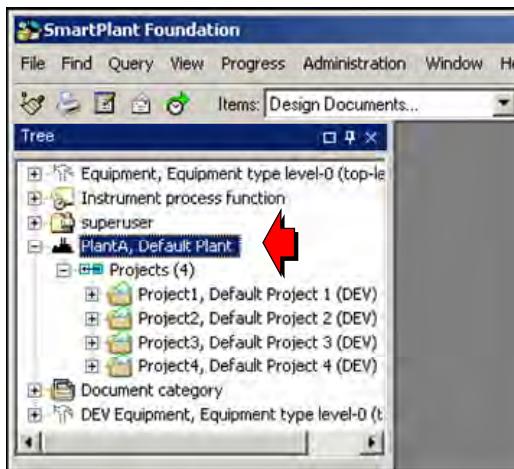


© 2008, Intergraph Corp.  
All Rights Reserved.

The existing *Projects* are displayed in the tree view.

## Searching for Projects

The existing *Projects* are displayed in the **Tree View**.

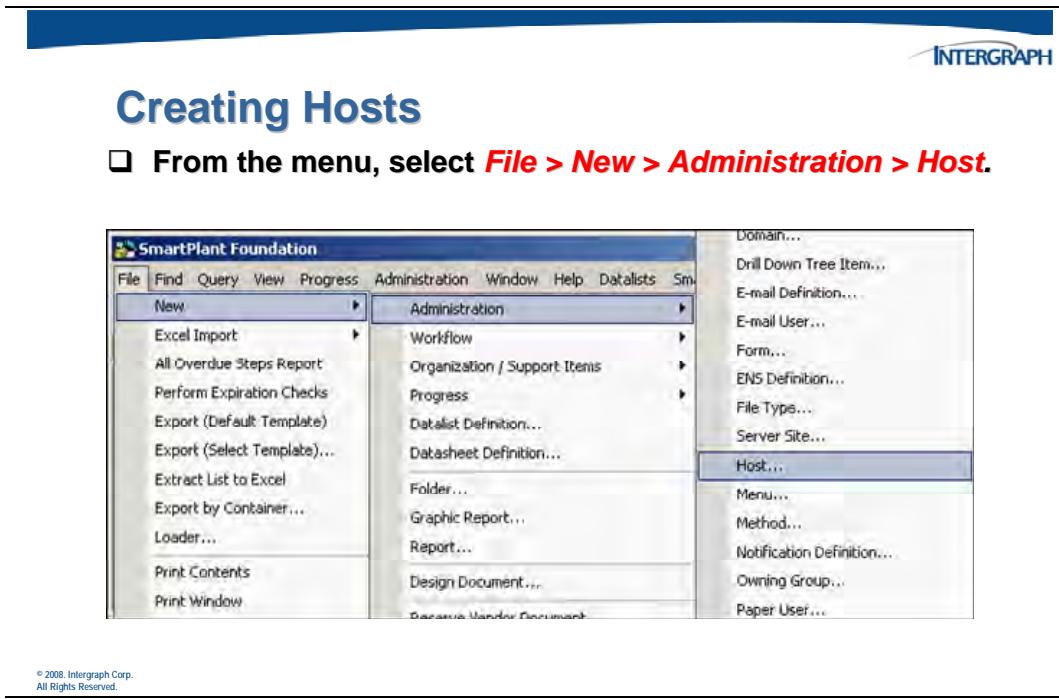


© 2008, Intergraph Corp.  
All Rights Reserved.

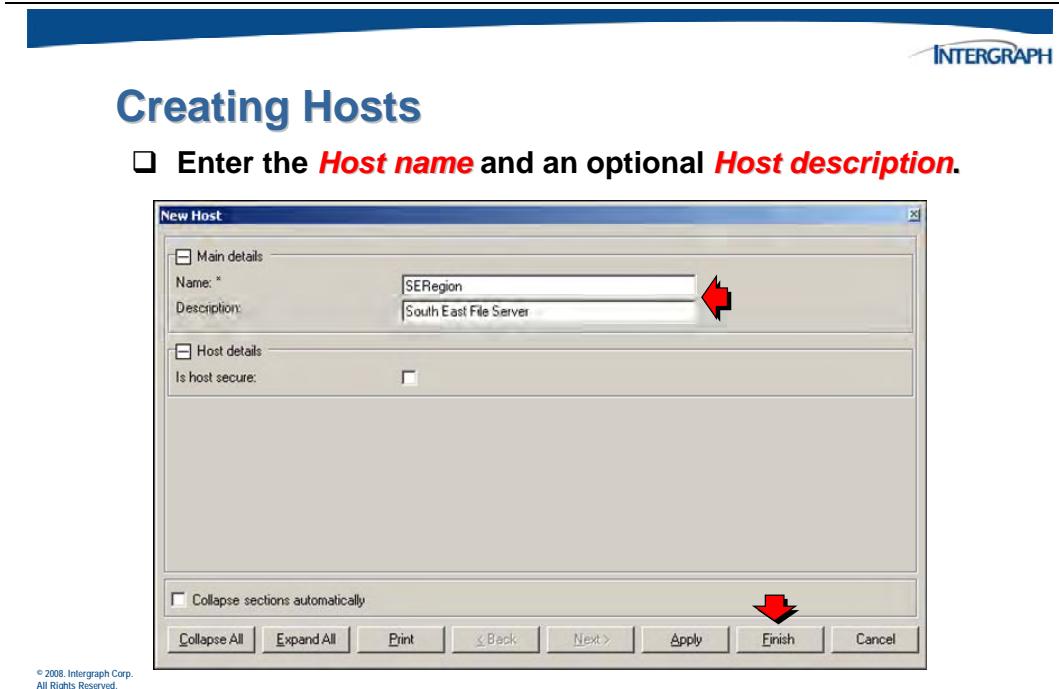
## 9.13 Creating Hosts

Host objects in SmartPlant Foundation are used up to define servers for storing files in vaults or machines where some sort of processing may occur.

Use the following procedure to create a new host.



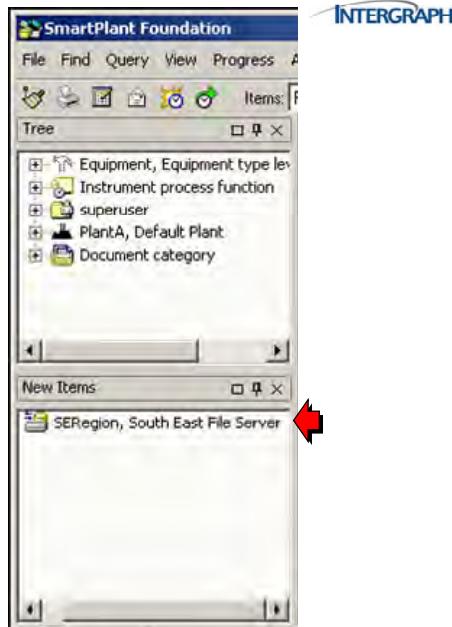
The *New host* form will appear.



Click **OK** to create the new host.

## Creating Hosts

The new *Host* is displayed in the *Tree View*.



© 2008, Intergraph Corp.  
All Rights Reserved.

## 9.14 Vault Creation and Configuration

A vault is used to store the physical files associated with an object. If a user needs to work on the files associated with the object, they must perform a check out, which will transfer the files to their local drive. The files are returned to the vault upon check in of the object.



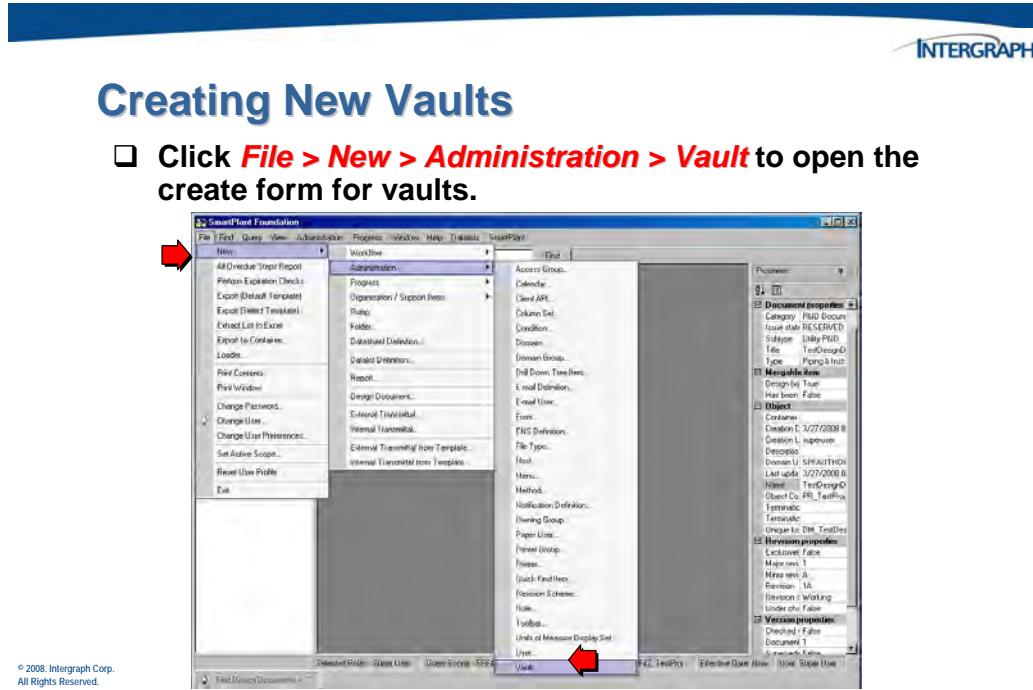
### Creating New Vaults

- Creating the vault in the database does not create a physical folder on the server. The vault folder is created by the system the first time a file is sent to that vault by SmartPlant Foundation.**
- In order for published files to be sorted into subfolders in the vault as in previous versions, you will need to configure the subdirectories accordingly.**

## 9.14.1 Creating a New Vault

The Desktop Client application is used to create the vault. Click **File > New > Administration > Vault** command.

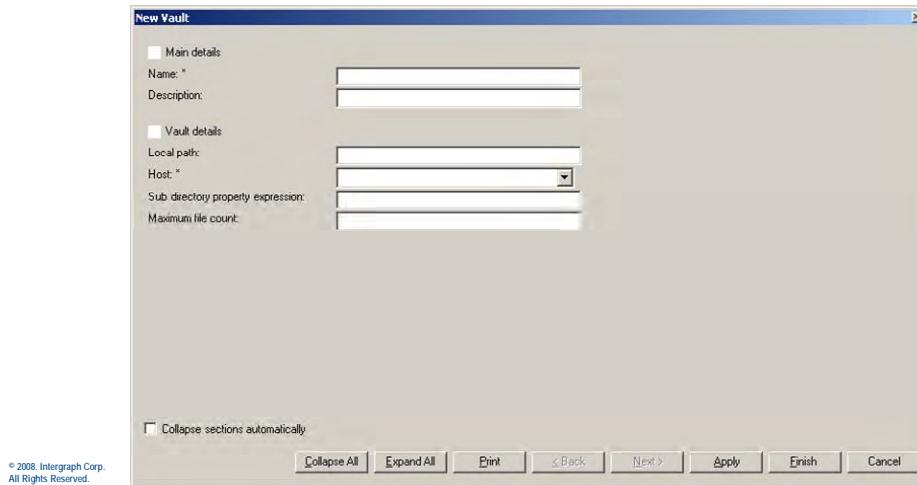
---



Use the **New Vault** form to define the vault.

## Creating New Vaults

- Populate the required details for the new vault.**



Use the following fields to configure the vault:

- Local path** – Indicates where the physical folder will be placed on the server.
- Host** – Select the web server where the vault is located.
- Sub directory property expression** – Designates subfolders to create within the vault folder. Provide the name of the property of the file or object that will be used to name subdirectories when those files are placed in the vault.
- Maximum file count** – Allows you to specify the maximum number of files that can be stored in the main vault directory. Once this limit is met, a subfolder is created and files are placed in that folder.

## 9.14.2 Configuring a Vault

Vaults can be configured to store files separately based on a variety of conditions. You can configure vault usage by configurations and sub-configurations, by user groups, or by interfaces instantiated by the document. These relationships are created either on the vault creation form or by dragging and dropping the vault onto other SPF objects.

You can also place conditions on these relationships to further configure how files will be vaulted by the system.

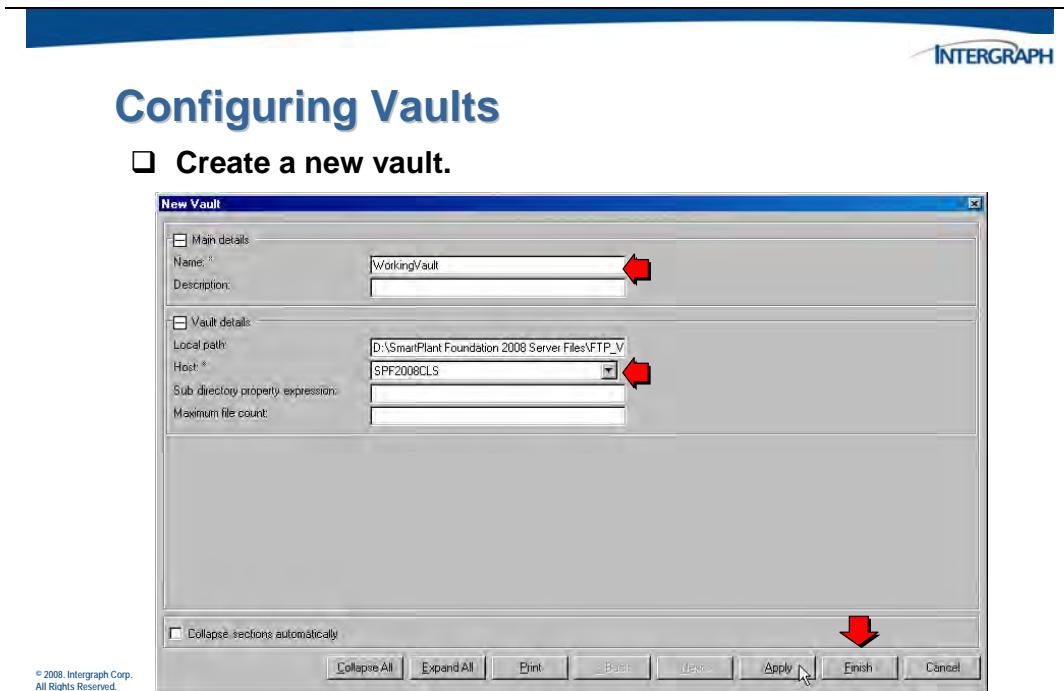


### Configuring Vaults

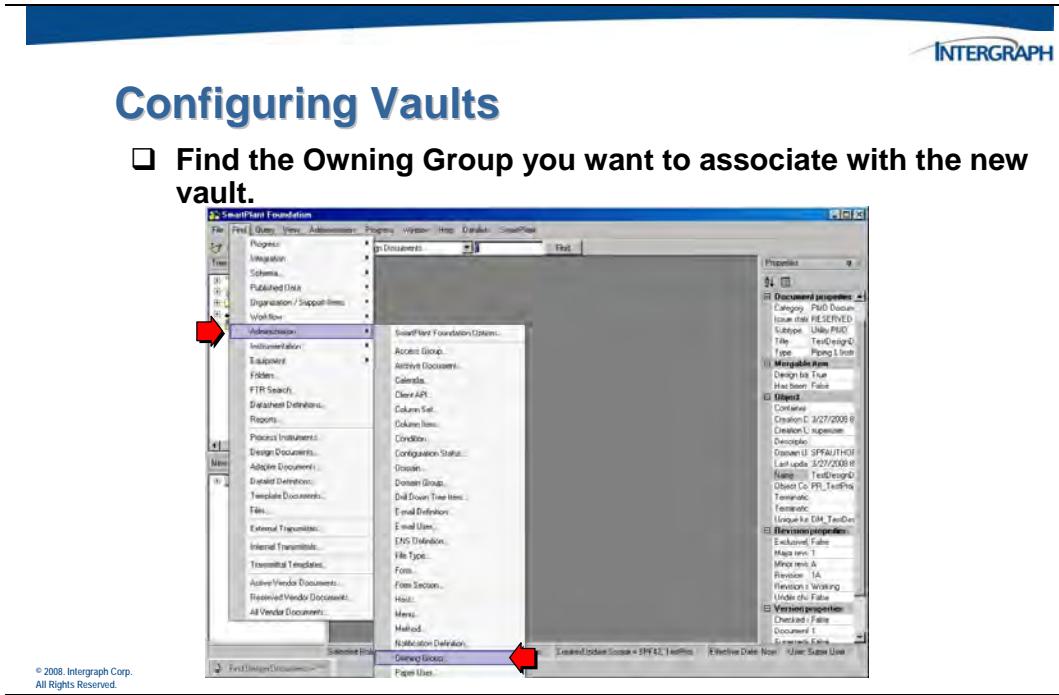
- Once you have defined the vault in the SPF database, you can relate it to the following objects in SPF using a drag and drop operation:
  - configuration / subconfigurations
  - owning groups
  - types of objects (through interfaces)
- For example, you may create a general document vault, but have a separate vault for contract documents.
- Conditions can be used to further specialize the use of a vault.

The following example shows how to create a vault that is associated with an owning group, based on a condition. We want to create a vault that will store WORKING documents that belong to the ENGINEER owning group.

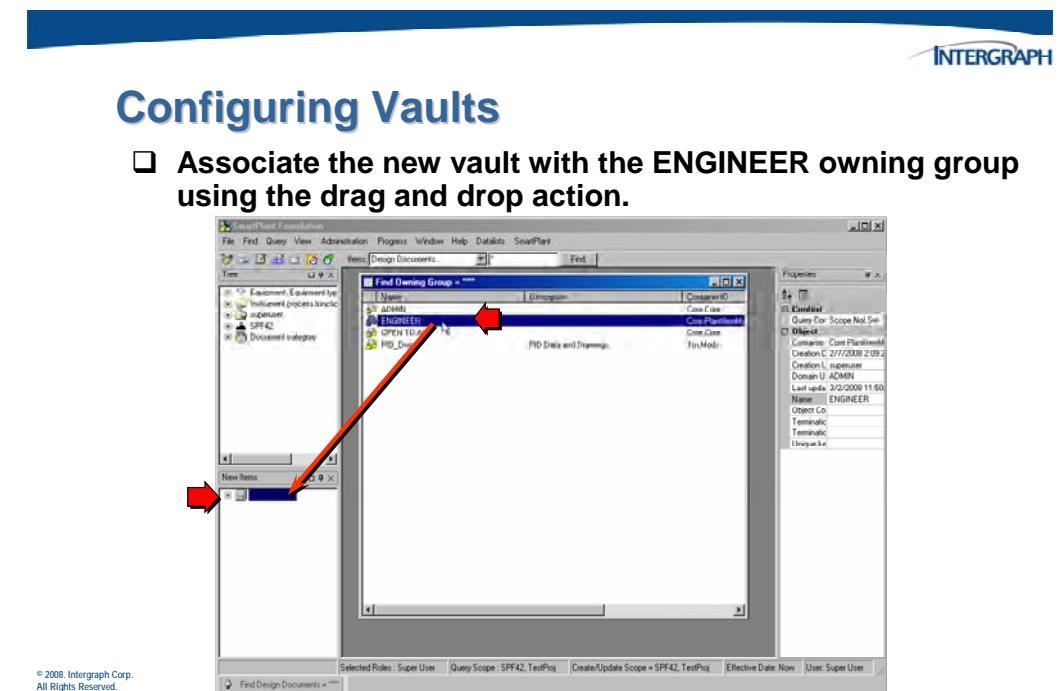
Use the **File > New > Administration > Vault** command to access the **New Vault** form. Provide the applicable information about the new vault, and then click the **Finish** button.



Use the **Find > Administration > Owning Group** command to find the owning groups defined in the system. Search for all.



Once you have found the owning group you want to associate with the vault, drag and drop the name of the owning group onto the name of the vault.

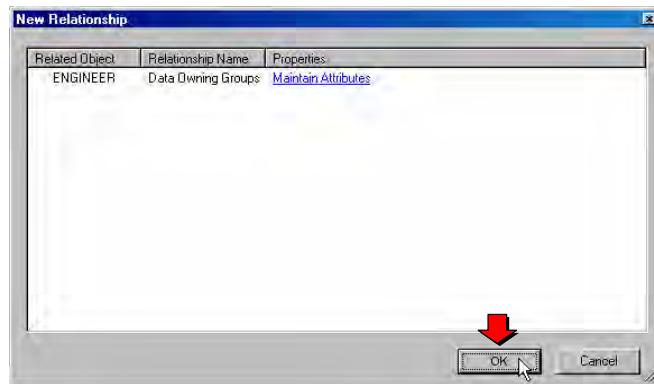


Click **OK** to create the relationship.



## Configuring Vaults

- On the confirmation screen, click **OK** to create the relationship.



© 2008, Intergraph Corp.  
All Rights Reserved.

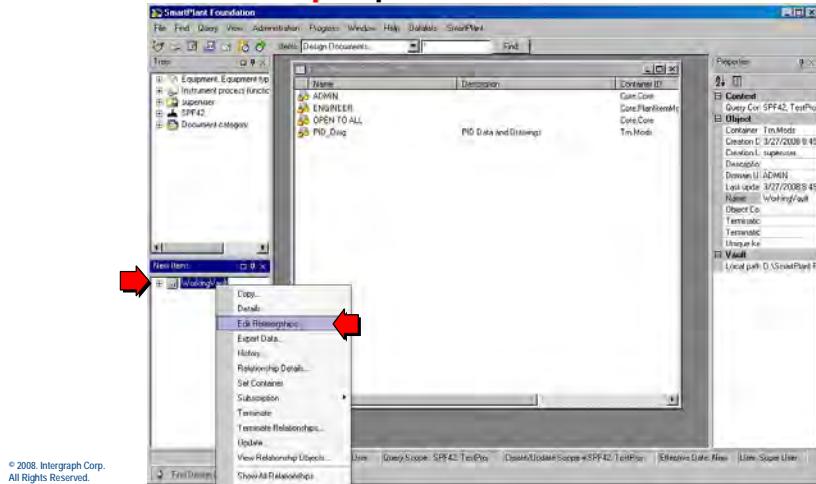
The condition cannot be set by clicking the **Maintain Attributes** link when creating the relationship. You must first create the relationship, and then access it again to edit it.

Right-click on the vault, and use the **Edit Relationships** option on the shortcut menu.



## Configuring Vaults

- Find the vault, and right-click on it. Click the **Edit Relationships** option on the shortcut menu.



© 2008, Intergraph Corp.  
All Rights Reserved.

Find the relationship between the vault and the owning group, and then click the **Maintain Attributes** link to edit the relationship.

**Configuring Vaults**

- Find the relationship you just created with the ENGINEER owning group, and click the **Maintain Attributes** option beside that relationship.

© 2008, Intergraph Corp.  
All Rights Reserved.

Choose the condition you want to apply to this relationship.

**Configuring Vaults**

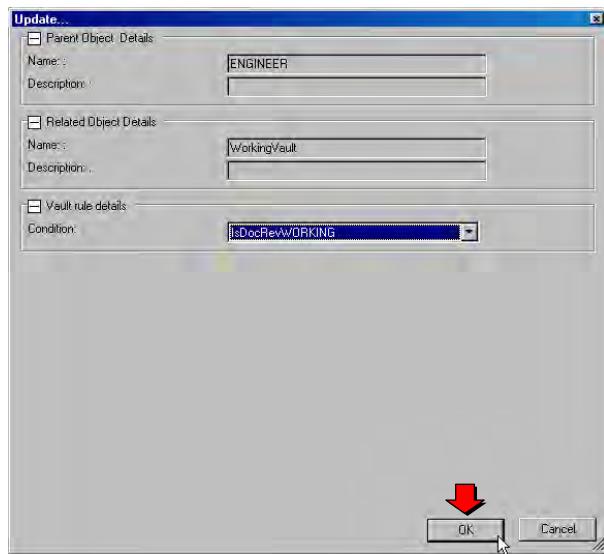
- From the **Update** form, you can choose a condition to apply to this relationship. Only when that condition is met will this vault be used.

© 2008, Intergraph Corp.  
All Rights Reserved.

Click **OK** to save and apply your changes.

## Configuring Vaults

- Once you have chosen the applicable condition, click **OK**.



### 9.14.3 Creating Subfolders for Published Documents

The ***Sub directory property expression*** property on the vault form allows you to configure the system to create subfolders within the vault directory for different types of documents.

In version 2007 of SPF, published documents stored in the vault were sorted into different subfolders for each type of published document. This segregation of files, based on the tool from which it was published, was helpful to the administrator when troubleshooting the integrated environment. To recreate that environment, you will need to use this field on the vault for using the instructions below:



#### Configuring Vaults

- In previous versions, the vaults for integration were configured to separate published documents into subfolders by type.
- In order to implement this method of organization, you must specify in the vault definition that subdirectories should be created for different types of documents.
- Use the following syntax when creating subfolders by property type:  
`+/-RelDef.Property  
EdgeDef.Property`
- To create a vault where published documents are sorted in subfolder as in previous version, use the following value for the ***Sub directory property expression*** field:  
`FileVersionMaster.SPFDocType`

© 2008, Intergraph Corp.  
All Rights Reserved.

---

#### Notes:

- The concepts of RelDefs and EdgeDefs will be covered in the Modeling and Mapping course.

## 9.15 Activity 3 – Vaults

Complete the **Chapter 9 – Activity 3** in the SmartPlant Foundation 2008 (4.2) Introduction and Administration I activity workbook.





**DSPF-TP-100012A**

**SmartPlant Foundation 2008 (4.2) Introduction and Administration I**

***Course Guide Volume 1***