

# SmartPlant/SmartPlant Foundation Introduction and Administration I

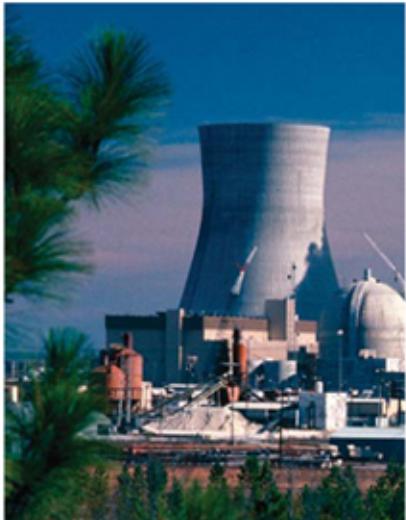
## *Course Guide*

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Process, Power & Marine



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# SmartPlant/SmartPlant Foundation Introduction and Administration I

## *Course Guide*

April 2007

Version 3.8

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

# **SmartPlant®** SPE/SPF Introduction and *Foundation* Administration I (SPFA1)

## **Course Outline**

### **Day 1**

#### **1. SmartPlant Architecture Overview**

- SmartPlant Client
- Common User Interface
- SmartPlant Server
- Publish and Retrieve Overview
- Registering a Plant
- Publishing Documents and Data

# **SmartPlant®** *Foundation* **SPE/SPF Introduction and Administration I (SPFA1)**

- Retrieving Documents
- SmartPlant Schema Overview
- Schema Mapping Overview
- SmartPlant Foundation Structure
- SmartPlant Foundation Databases

## **2. Using the SmartPlant Foundation Desktop Client**

- SmartPlant versus SPF Standalone Mode
- Starting The Desktop Client
- Exploring the Desktop Client User Interface

# **SmartPlant® Foundation** SPE/SPF Introduction and Administration I (SPFA1)

- Setting User Options
- Using the List View Window
- Open in a New Window
-  Activity – Using the SPF Desktop Client

## 3. Finding and Manipulating Objects

- Searching for Objects
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- Extracting/Exporting to Excel
- Creating New Objects

# **SmartPlant® Foundation** SPE/SPF Introduction and Administration I (SPFA1)

- **Object Manipulations**
  - Copying an Object
  - Updating Objects
  - Deleting Objects
  - Object Termination
  - Object Details
  - Object History
  - Change Owning Group
- **Relationships**
  - Showing Relationships
  - Creating Relationships
  - Editing Relationships

# **SmartPlant® Foundation SPE/SPF Introduction and Administration I (SPFA1)**

- **Integrated Windows User Authentication**
  - Changing the Integrated Windows Authentication
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## **Day 2**

### **4. SmartPlant Foundation Workflows**

- **Using Workflows**
  - Attaching a Workflow
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# **SmartPlant® Foundation SPE/SPF Introduction and Administration I (SPFA1)**

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- Completed/Unable to Complete
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- Reject/Approve
- Reassigning a Workflow Participant
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# **SmartPlant® Foundation** SPE/SPF Introduction and Administration I (SPFA1)

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  - Content Search

- **Search String Specification**
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- **Creating a Report**
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- **Working with Reference Files**
  - Reference Files Dialog
  - File Type Matrix for Reference Files
  - Update Maintain Relations Attribute on Reference Files
  - Show Nested Reference Files
  - Update Reference Relationships Dialog Box

# **SmartPlant® Foundation** SPE/SPF Introduction and Administration I (SPFA1)

## Day 3

-  **Activity – Working with Reference Files**
  - **Subscribing to Change Notifications**
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    - Query Subscription List
    - Subscription List for Object
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  - Undo Check Out
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- **Document Sign-off**
  - Sign Off a Document
  - Sign Off a Document with Comments
- **Revisions and Versions**
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# **SmartPlant® Foundation** SPE/SPF Introduction and Administration I (SPFA1)

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# **SmartPlant® Foundation** SPE/SPF Introduction and Administration I (SPFA1)

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# **SmartPlant® Foundation** SPE/SPF Introduction and Administration I (SPFA1)

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- █ Activity 1 – Using the SmartPlant Foundation Loader

# **SmartPlant® Foundation SPE/SPF Introduction and Administration I (SPFA1)**

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# **SmartPlant® Foundation** SPE/SPF Introduction and Administration I (SPFA1)

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  - Activate the License Files
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# **SmartPlant® Foundation SPE/SPF Introduction and Administration I (SPFA1)**

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# SPE/SPF Introduction and Administration I (SPFA1)

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# **SmartPlant®** *Foundation* **SPE/SPF Introduction and Administration I (SPFA1)**

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**Day 5**

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# **SPE/SPF Introduction and Administration I (SPFA1)**

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# SPE/SPF Introduction and Administration I (SPFA1)

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C H A P T E R

# 1

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# 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.

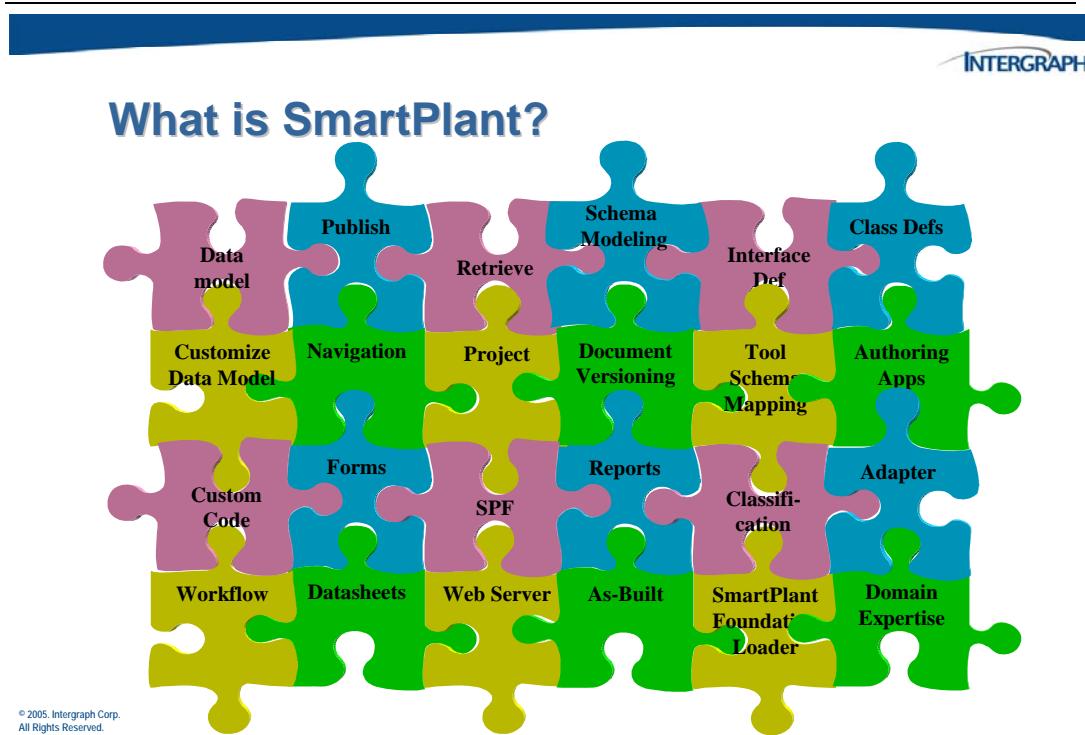
At the center of SmartPlant Enterprise is SmartPlant Foundation, which provides the repository for data published by the authoring tools. SmartPlant components make the exchange of data from the authoring tools to SmartPlant Foundation and back possible.



## 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.**

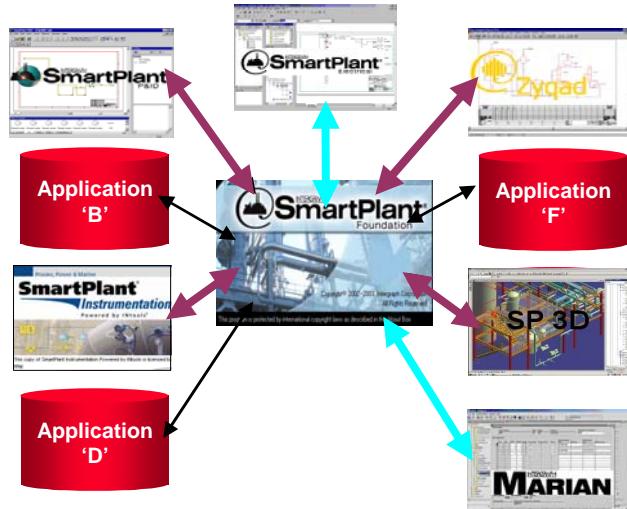


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**Note:**

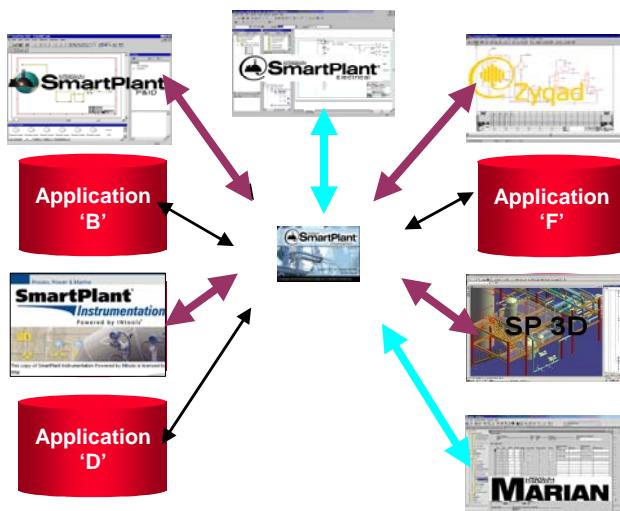
- Integrated project/as-built mode has some known issues and should be used only on pilot implementations until proven against customers' specific business processes. This functionality will be enhanced in a future release.

## SmartPlant as the Data Repository



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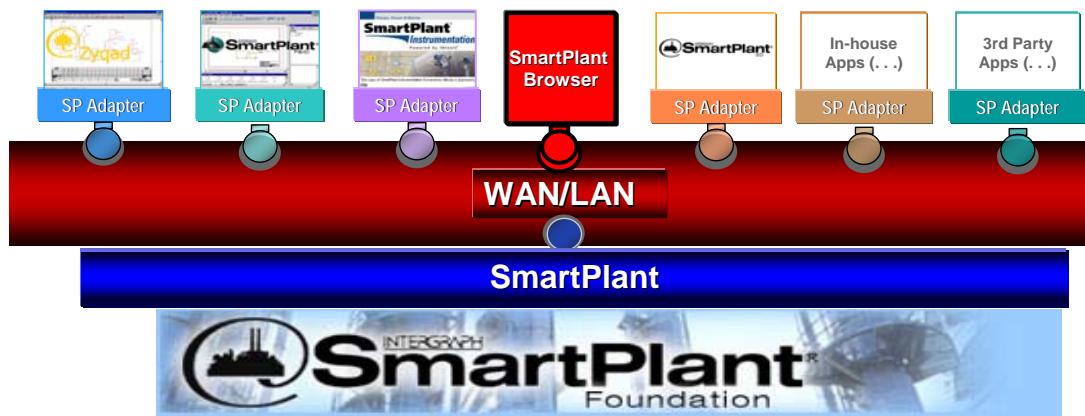
## SmartPlant as the Integration Point



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## SmartPlant as the Communication Hub

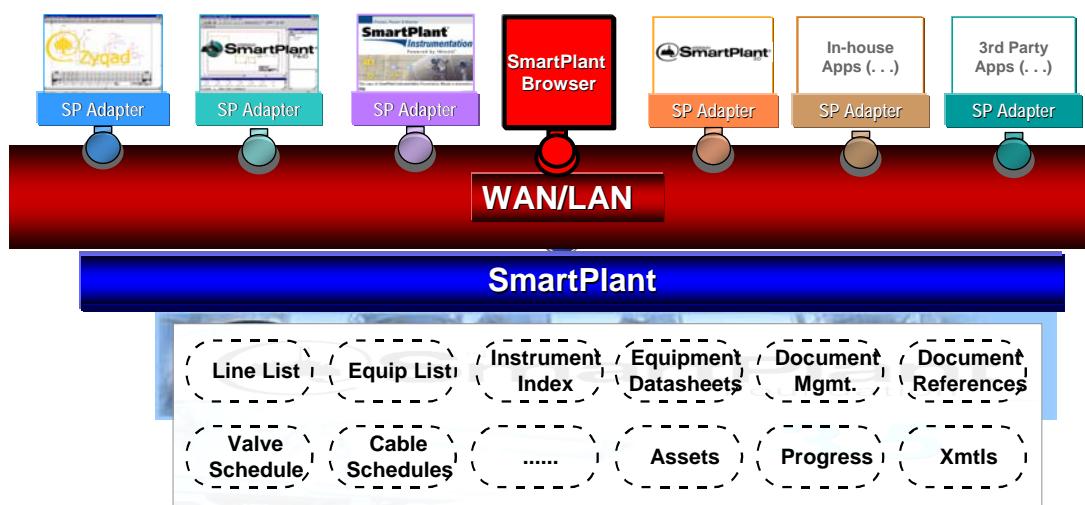


*Integration, Data and Document Information Storage,  
Change Management, and Workflow*

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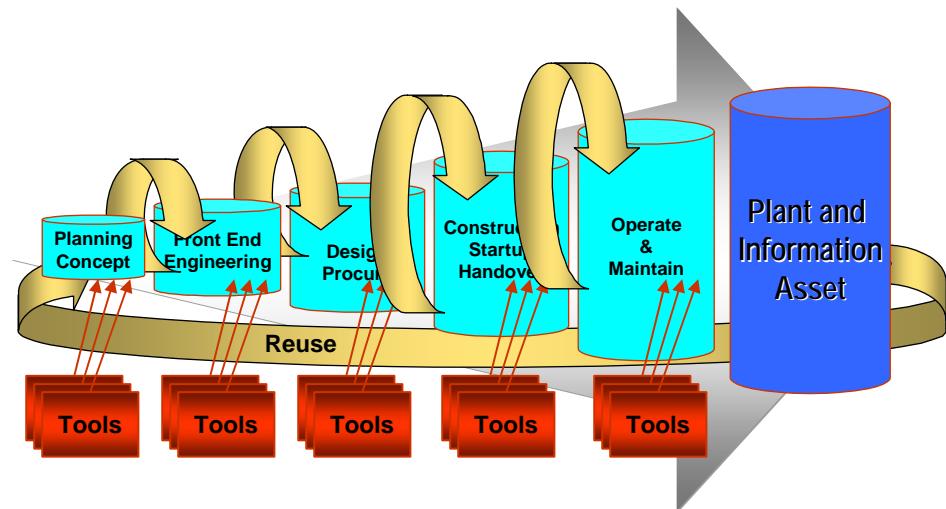


## SmartPlant as the Reporting Engine

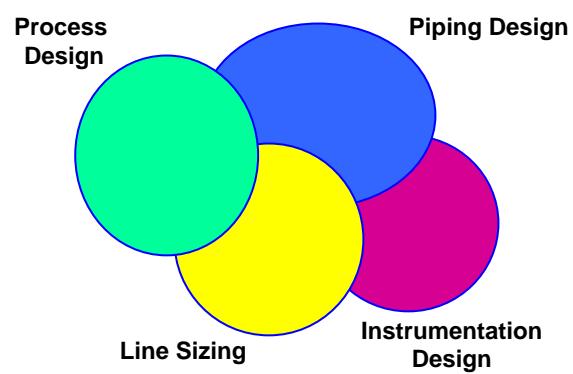


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## The Flow of Information



## 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

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## 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)

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## 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.

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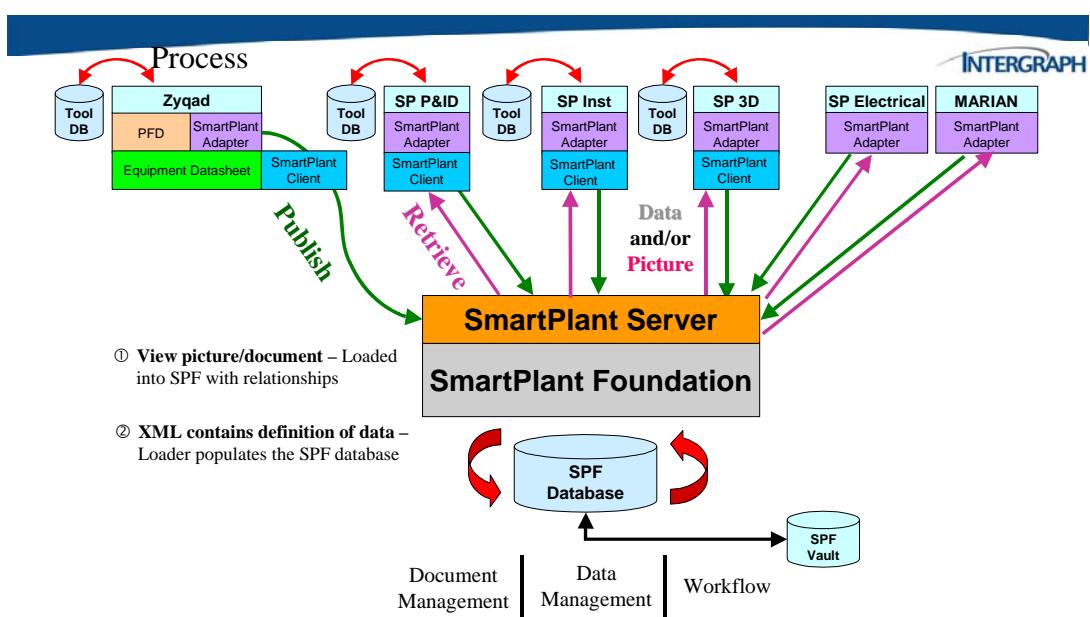
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The following graphic shows the architecture for SmartPlant. At the heart of the system is SmartPlant Foundation (SPF) and the SmartPlant Server.

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 MARIAN™ – 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.



## SmartPlant Architecture

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## 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.
- ❑ **SmartPlant Loader** – Loads data published by the authoring tools into SmartPlant Foundation.
- ❑ **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 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 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.

## 1.1.2 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.**

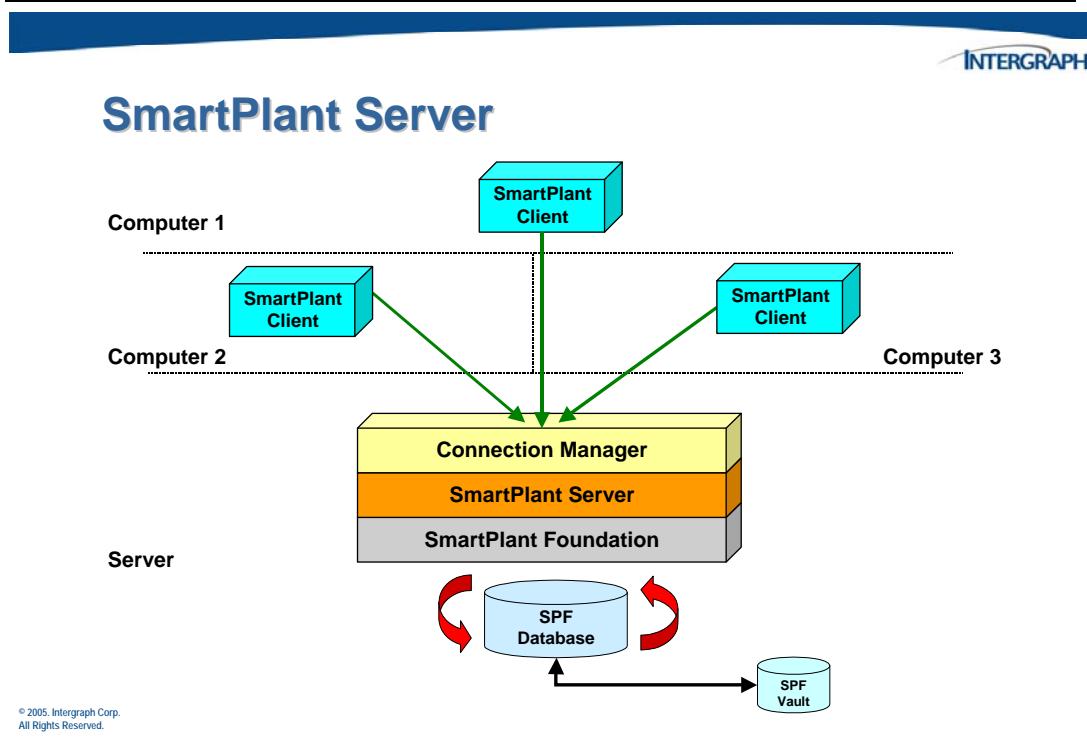
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The SmartPlant common UI is part of the SmartPlant Client. It provides user interface components that may optionally be used by applications to ensure a consistent look and feel to SmartPlant operations across tools. The application calls methods on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

### 1.1.3 SmartPlant 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.



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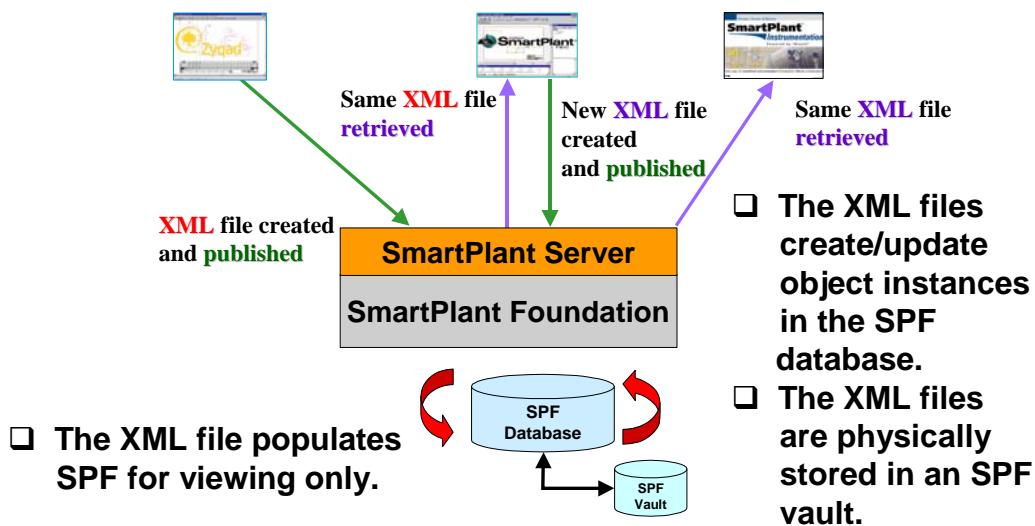
The SmartPlant Server resides on a server computer, processing requests from various SmartPlant Clients and returning the results of those requests to the SmartPlant Clients. The SmartPlant Server issues database requests to retrieve and update the information within the SmartPlant Foundation database.

## 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.

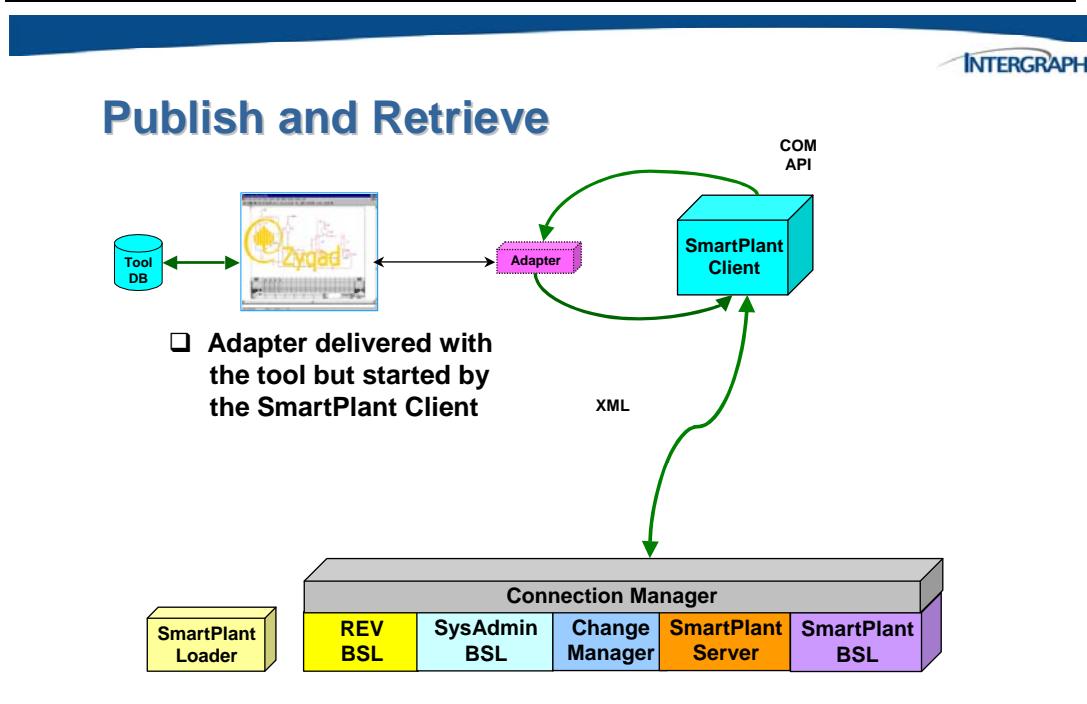
The following graphic shows the typical publish and retrieve process. A document, such as a PFD, is published from Zygad and is then retrieved into SmartPlant P&ID. It is important to understand that by default the XML document published by Zygad is retrieved into SmartPlant P&ID, not the data that was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

### Publish and Retrieve



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.



## 1.2.1 Registering a Plant

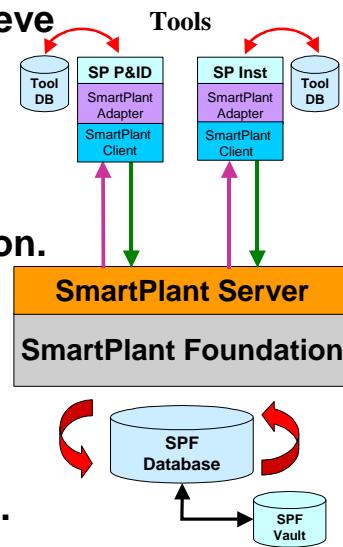
The first step in being able to publish and retrieve documents is to associate, or **register**, a plant in the tool with a SmartPlant Foundation database.

### 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.**



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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.**

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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.

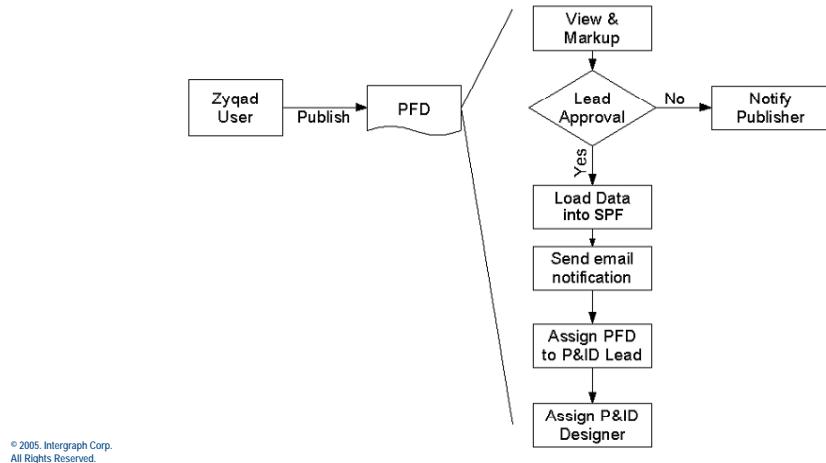
- ❑ Publishes a visual representation of the document that you can view without the authoring tool. For many applications, this is an Intergraph proprietary file, called a RAD file. The viewable file can also be an Excel spreadsheet or another viewable file type, such as .pdf or .doc. Users can review 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.**

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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:**

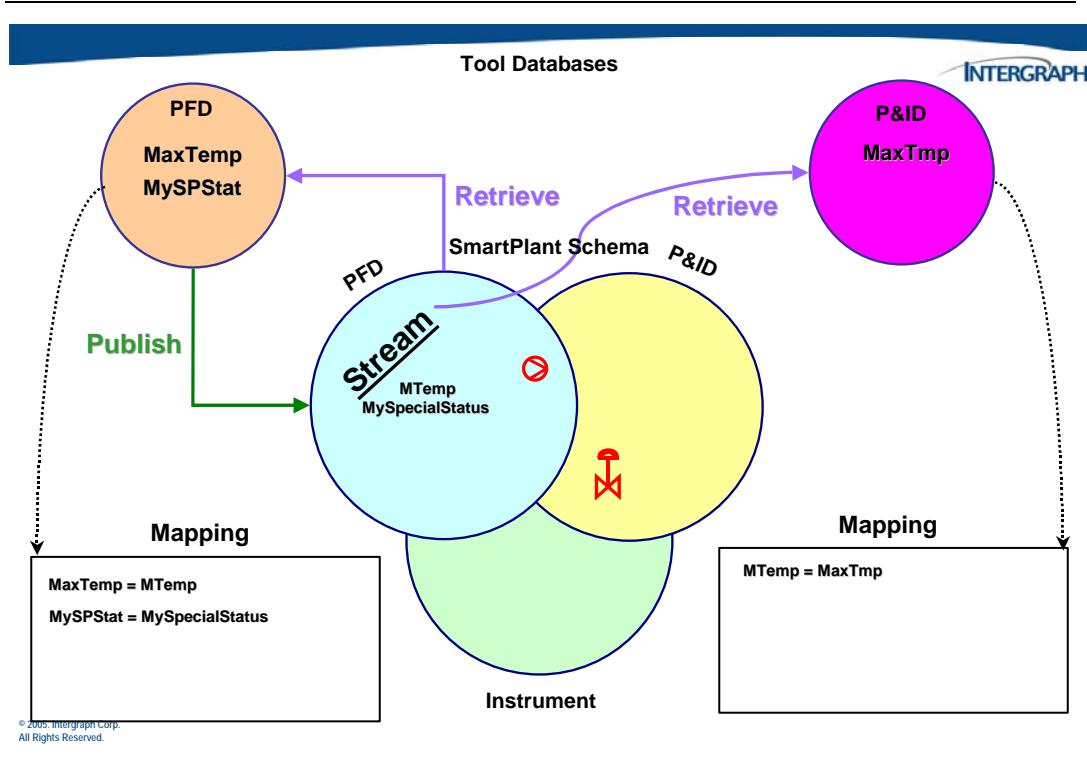
- All schema data is defined as part of the SmartPlant schema.**
- The SmartPlant schema describes everything that goes on in SmartPlant.**
- A copy of the SmartPlant schema (XML file) resides on the server and every client.**
- Component schemas are selective extracts from the SmartPlant schema.**
-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

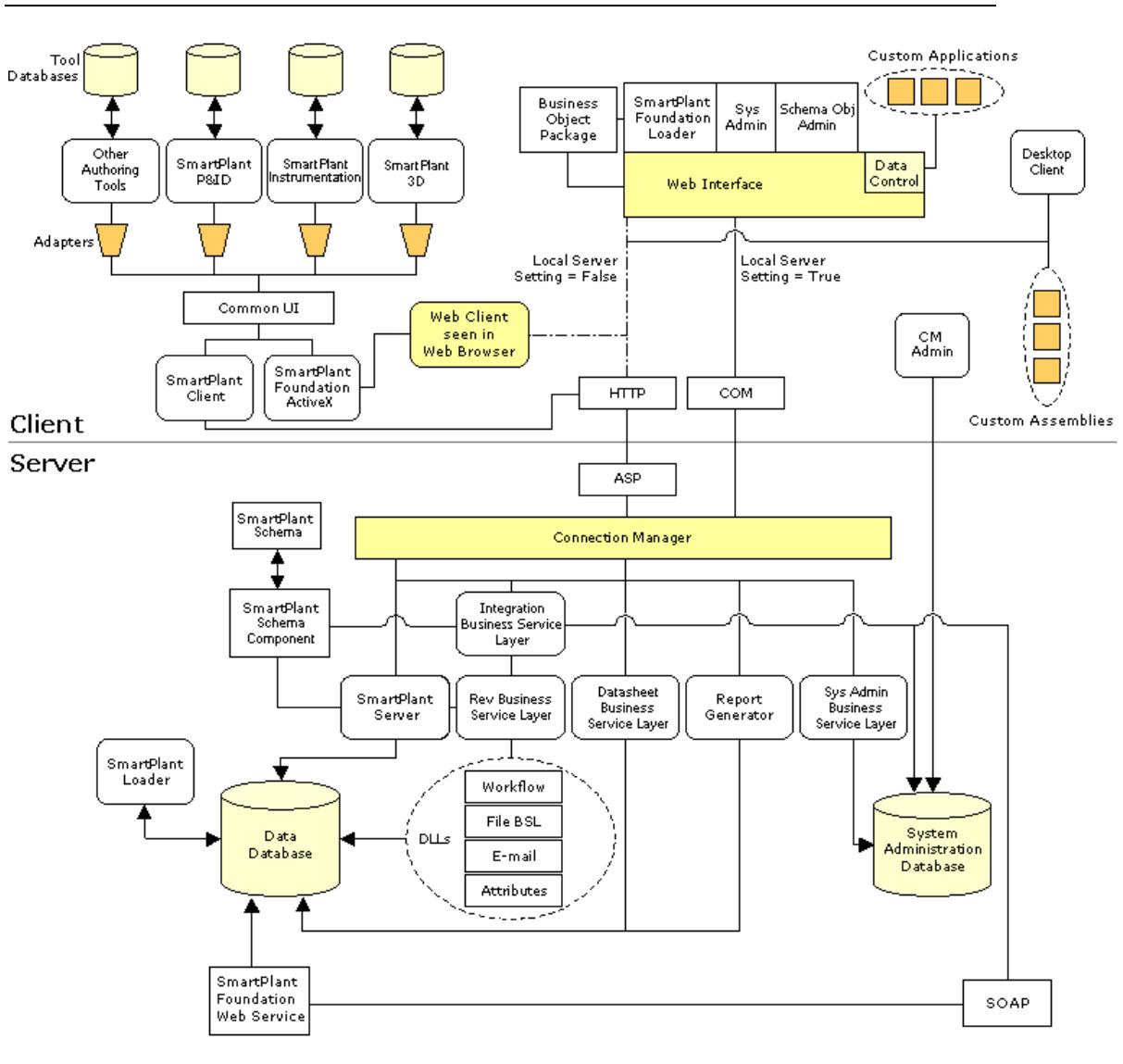
While tools will typically span the different components associated with a particular discipline (for example an instrumentation tool will span the various instrument and wiring document types), no rules exist that require this. As long as a tool can publish documents of the document type for at least 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 uses two Oracle users that are defaulted to different tablespaces with the database to store necessary information.



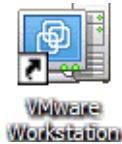
### SPF Database

#### SPF uses two Oracle database users:

- The SPF Data user is where the actual data is stored.
  - Can be populated interactively, by using the SmartPlant Foundation Loader or through application interfaces.
- SPF Administration user is for system configuration.
  - Is maintained by using System Administration, Form Builder, or SmartPlant Foundation Loader.
- Each user should be defaulted to their own separate tablespaces.

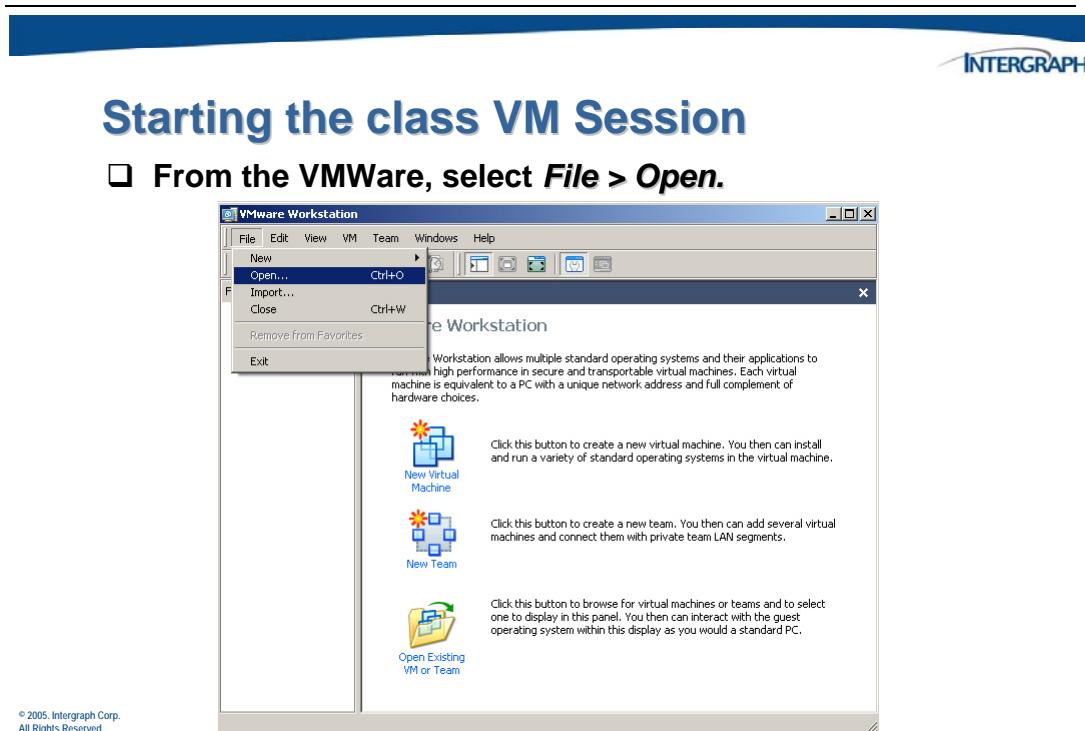
## 1.8 Using the Class VM Session

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 Workstation*.



Double click on this icon to start the VMWare application.

The *VMWare Workstation* window will display.

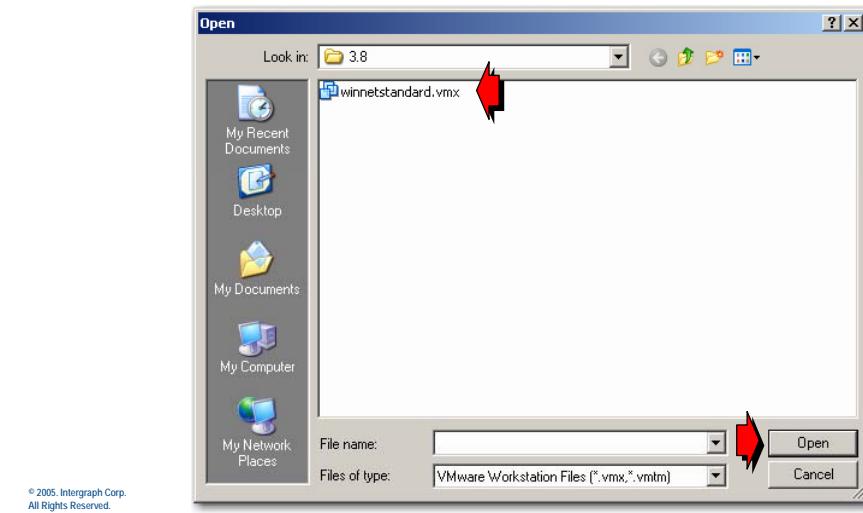


Set your open browser to the folder path specified by your instructor. Write down the path here \_\_\_\_\_.



## Starting the class VM Session

- Choose the class VMWare configuration file as shown.

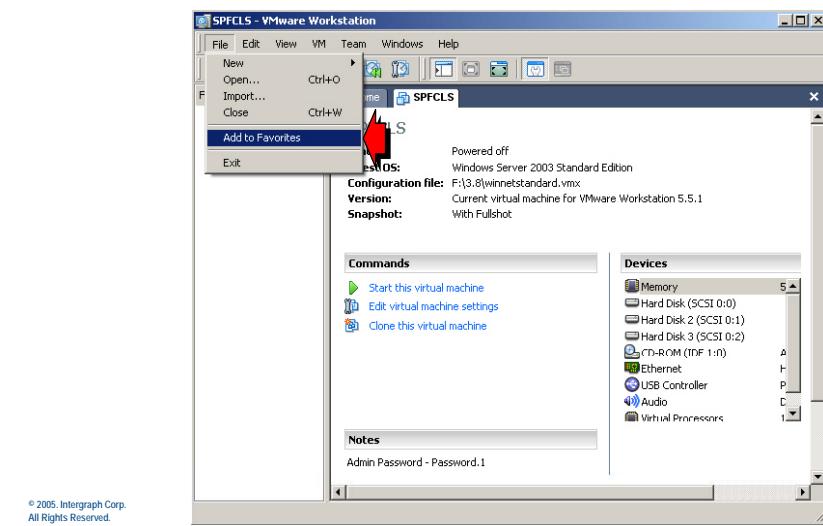


For future convenience, add the VM machine to your favorites.

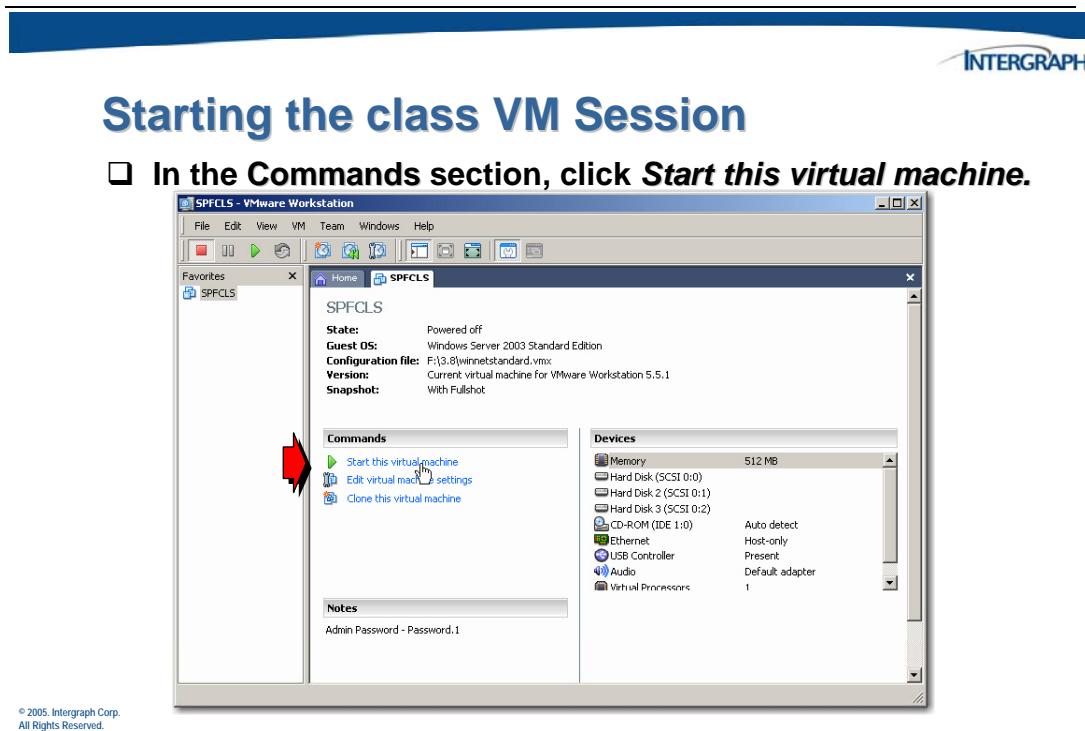


## Starting the class VM Session

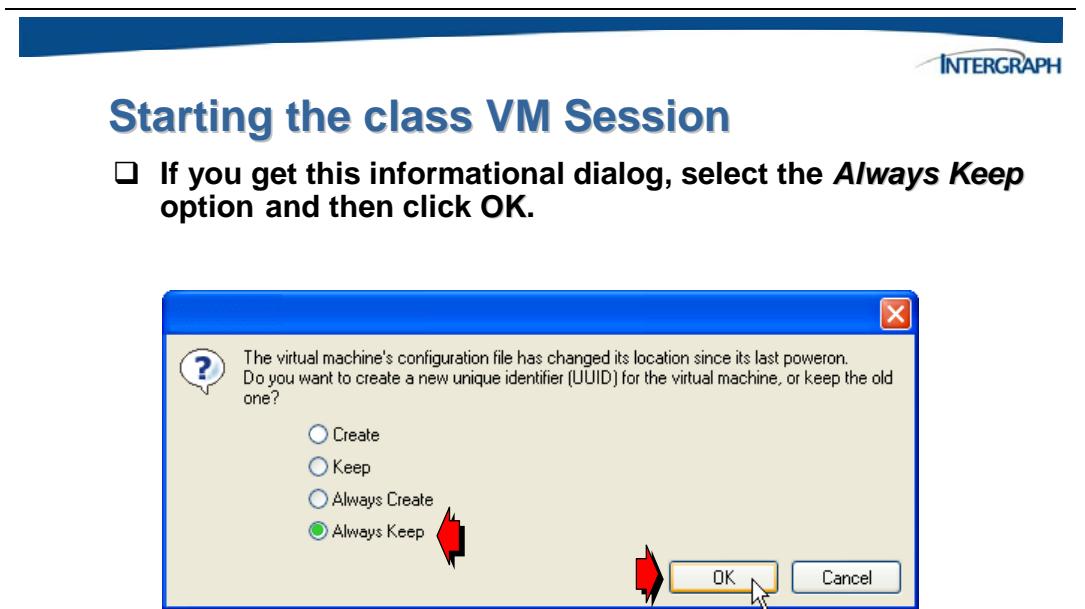
- Select File > Add to Favorites.



Boot up the virtual machine by using the *Start* command.

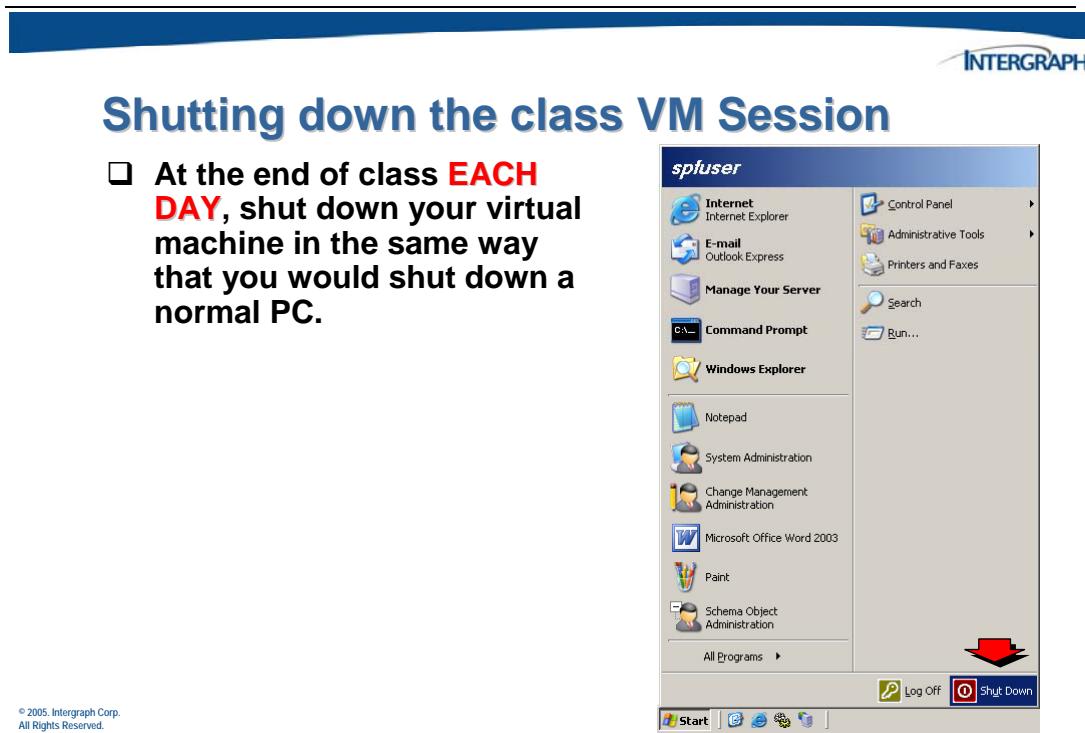


You may or may not see the following dialog box.



Once you are in your VM Session, be sure to use **CNTL + ALT +INS**, rather than CNTL + ALT +DEL. The control latter command control 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.

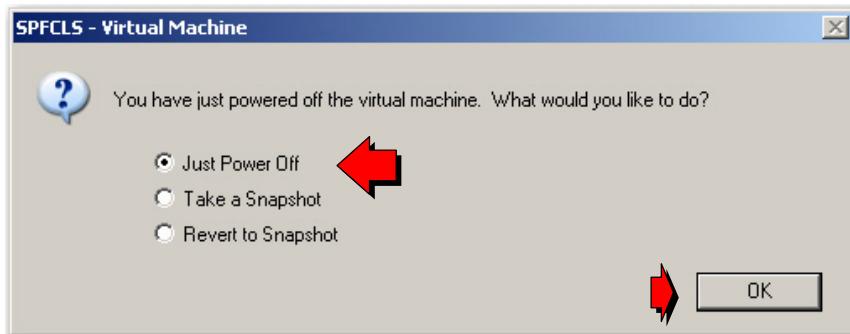


You will be prompted for an option when powering off the virtual machine.



## Shutting down the class VM Session

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



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

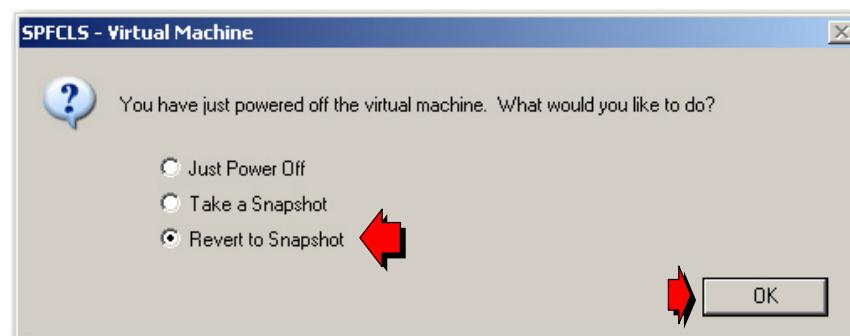
You will revert to the snapshot only on the last day of class when you shut down for the last time. Using the revert option will cause you to lose all of your work from the week.

---



## Shutting down the class VM Session

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



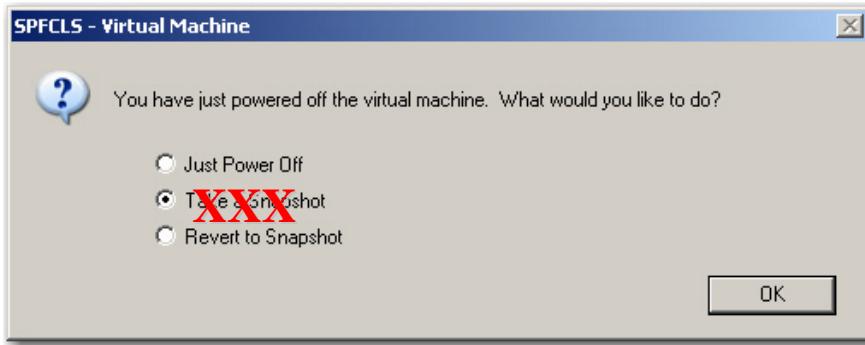
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**Do not** use the *Take Snapshot* option. This will prevent us from using this VM session for future classes.



## Shutting down the class VM Session

- ❑ **DO NOT** use the *Take Snapshot* option at all during the SPF/SmartPlant training classes.





C H A P T E R

# 2

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## 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.

---



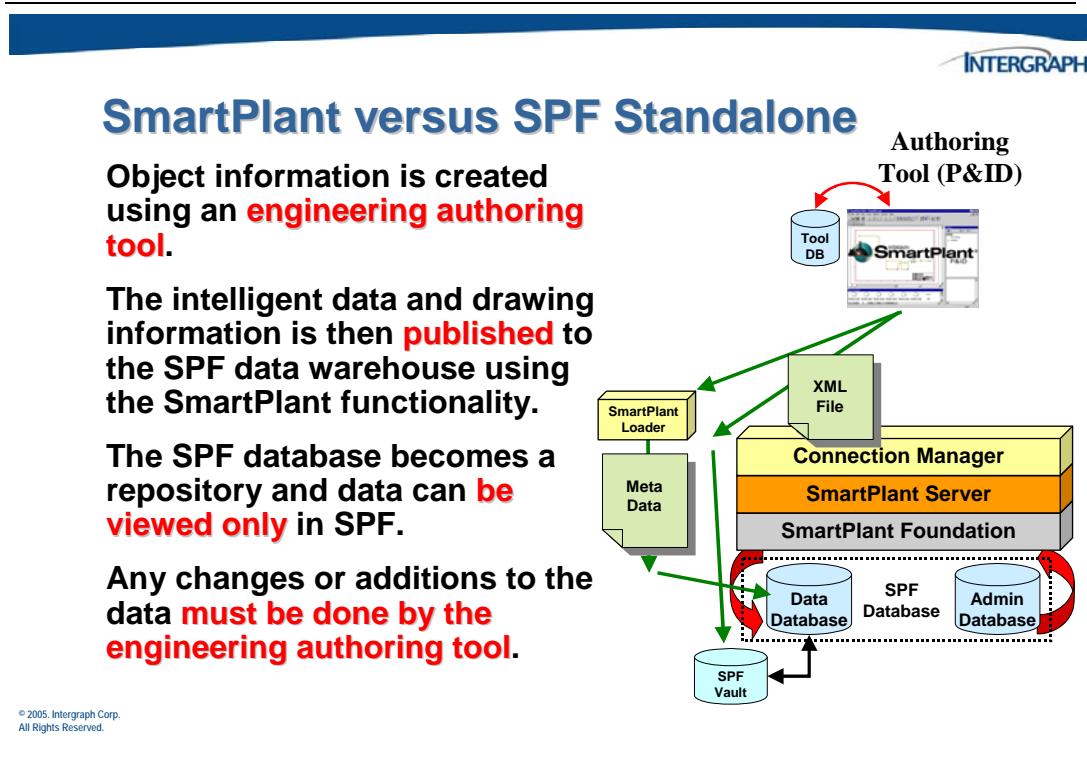
### Desktop Client User Interface:

**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.



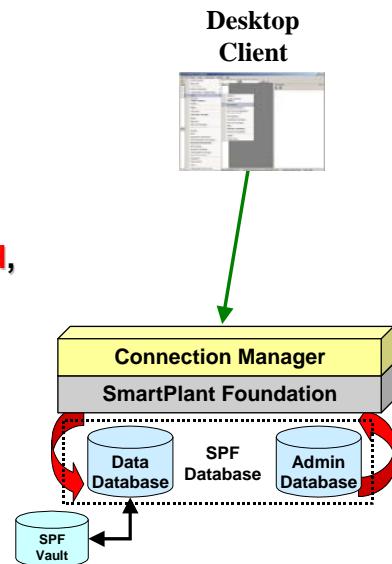
## SmartPlant versus SPF Standalone

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.

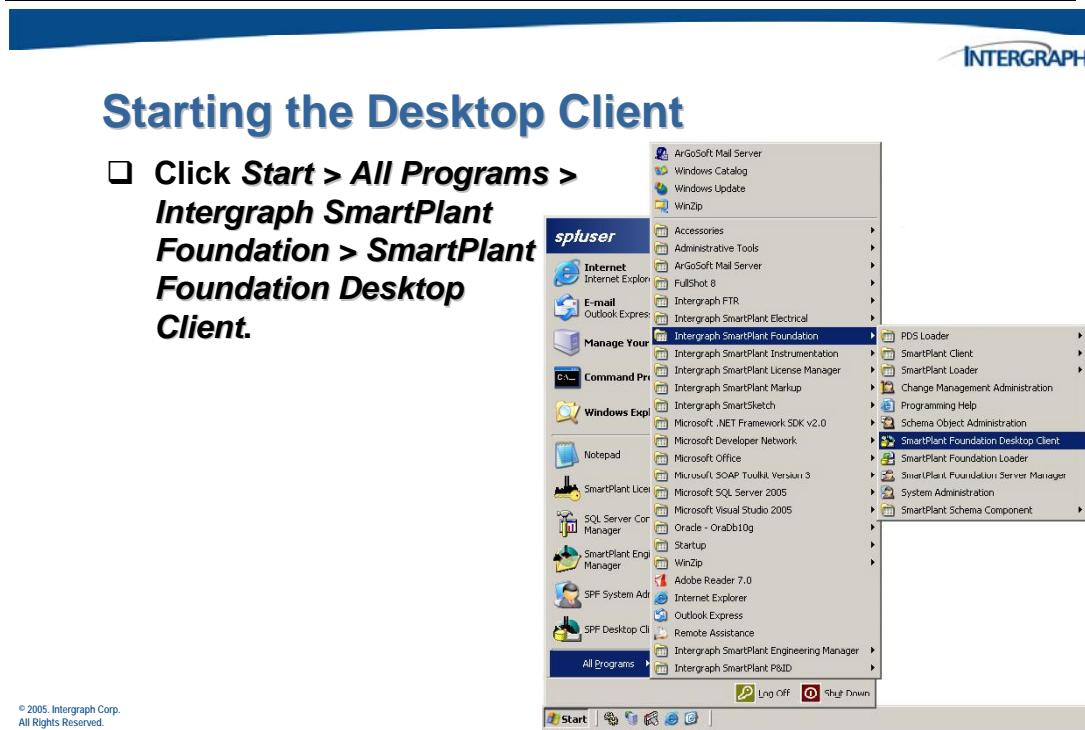
Data can then be **reviewed, changed, and new information added interactively** using the Desktop Client.

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, edit, or create a new SPF server.



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The *Logon Information* dialog contains the following fields:

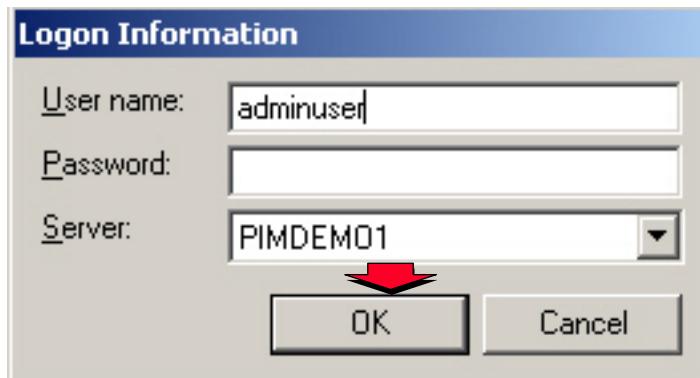
- User name** - Enter your user account name.
- Password** - Enter your password for your user account.
- Server** - Select the name of the server from which to access the software. You can also add a new server or edit an existing one.

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 NT user name is valid for the SmartPlant Foundation server configuration. Windows Authentication is addressed later in this course.



## Logon Dialog Box

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



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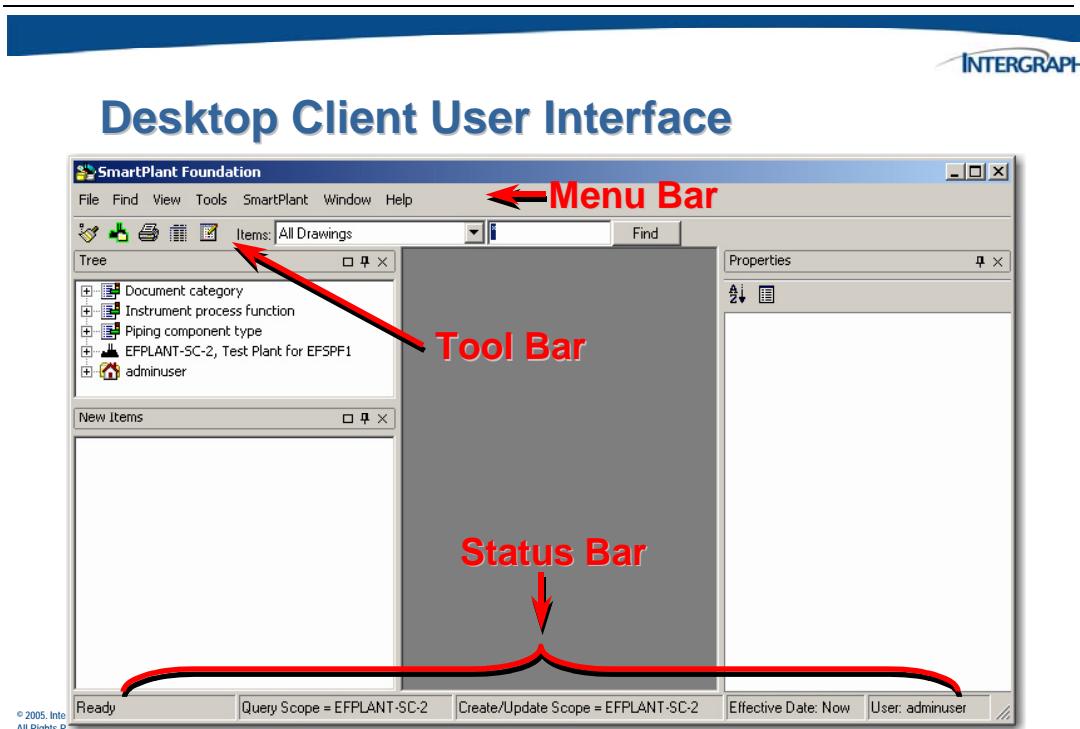
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**Note:** If Windows authentication is enabled on your server and your Windows NT user name is valid in the server configuration, your user name and password will be grayed out on the *Logon Information* dialog box. Click **OK** to log in using your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

---

## 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.



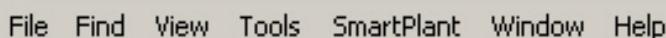
When you exit the Desktop Client, the Desktop Client saves a user profile that contains information about the windows, configuration, and other user interface settings. The user profile saves positional information for the tree view, the new items window, and the properties grid, as well as the display 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.



## Menu Bar

The SPF Desktop Client menus are configurable in System Administration and depend on the user/user group access.

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



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## 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.



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## Status Bar

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

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



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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.



## Desktop Client Windows

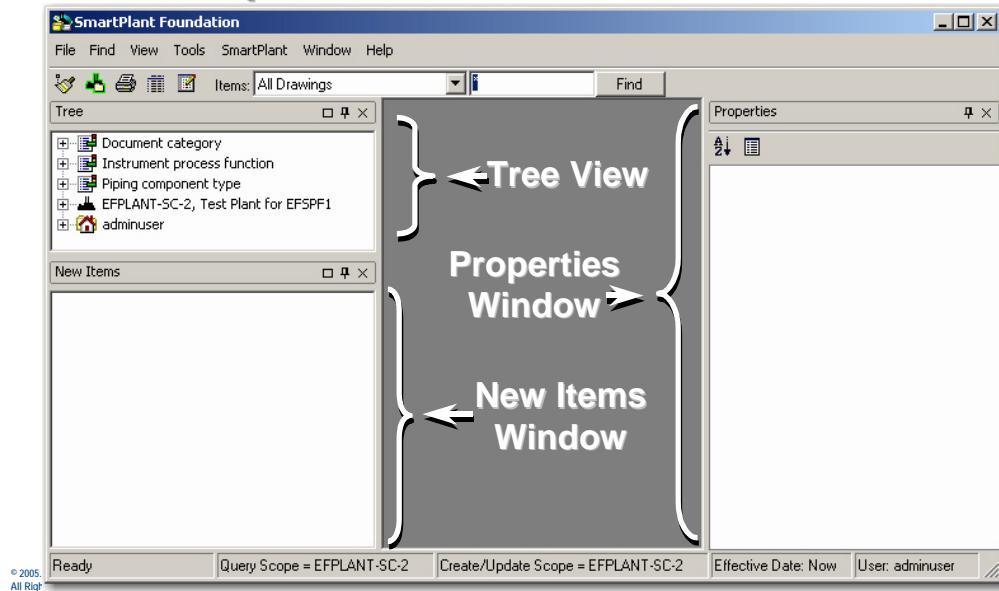
The SPF Desktop Client contains several key windows that you will use to view and modify data, including the following:

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

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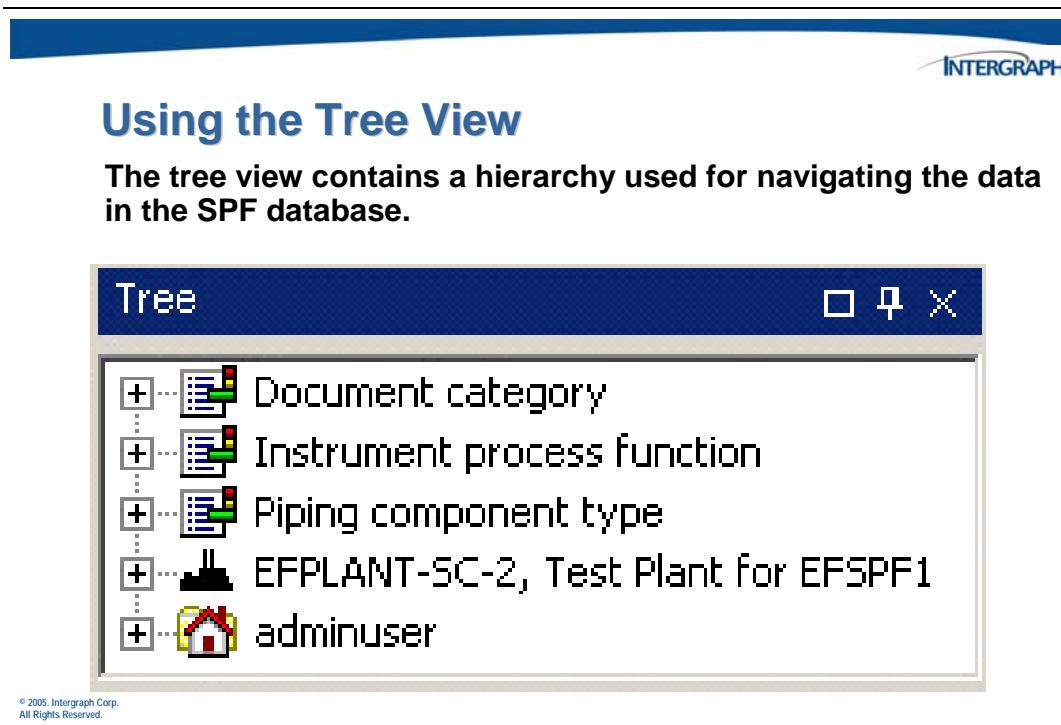


## Desktop Client User Interface



### 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.

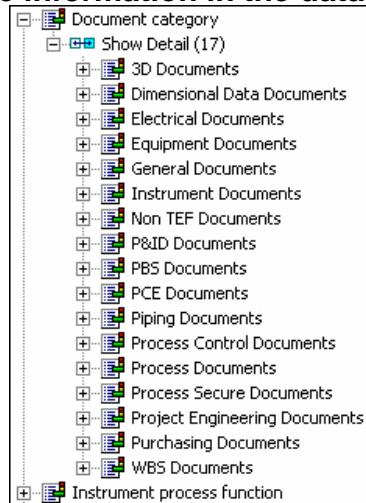
After the Desktop Client is activated, verify that the create scope and query scope are set. If the query scope is not set, you will not be able to expand branches in the tree view.

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.



## Using the Tree View

- Click + and - to expand and close nodes in the tree view to show and hide information in the database.

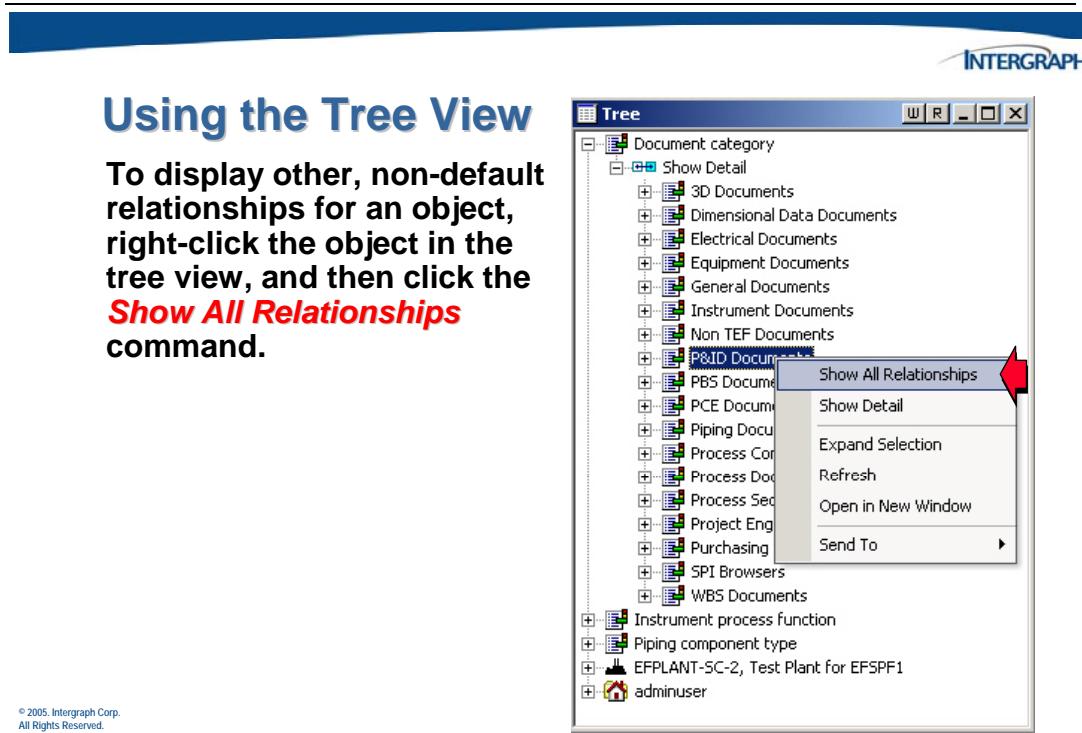


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If you have **Look ahead** turned on, you can also see the number of objects involved in the relationship beside the expansion heading in the tree view. In the previous example, there are seventeen document types defined in SmartPlant Foundation, designated by the number 17 in brackets beside the Show Detail node. Expansion headings tell you what relationship you are viewing in the tree view. For example, if you are viewing details, the expansion heading is Show Detail.

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. With *Look ahead* turned on, you can also see the number of objects involved in each relationship beside the menu command.



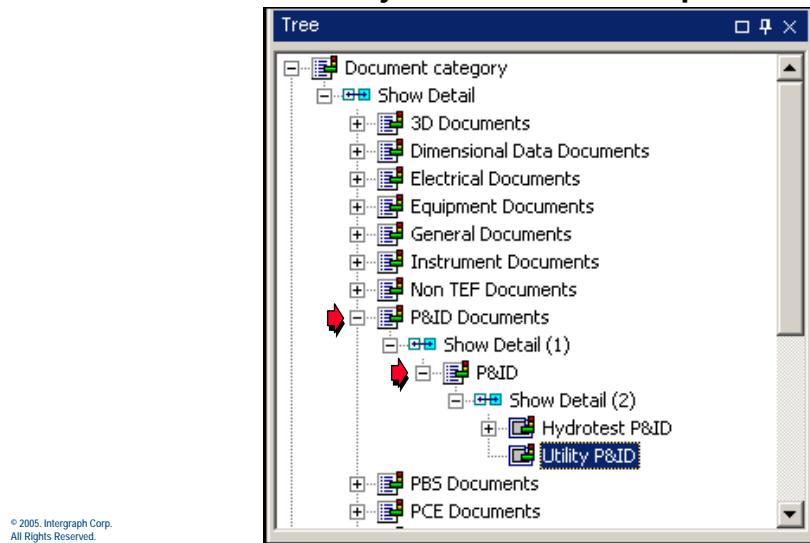
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Before you expand objects or relationships in the tree view, all objects and expansion headings have a beside them, regardless of whether data is available for the expansion. If you expand an object that has no data, the disappears. For example, if there are no utility P&ID's defined in the database, the disappears from beside the **Utility P&ID** node in the tree view when you click the node to expand it.

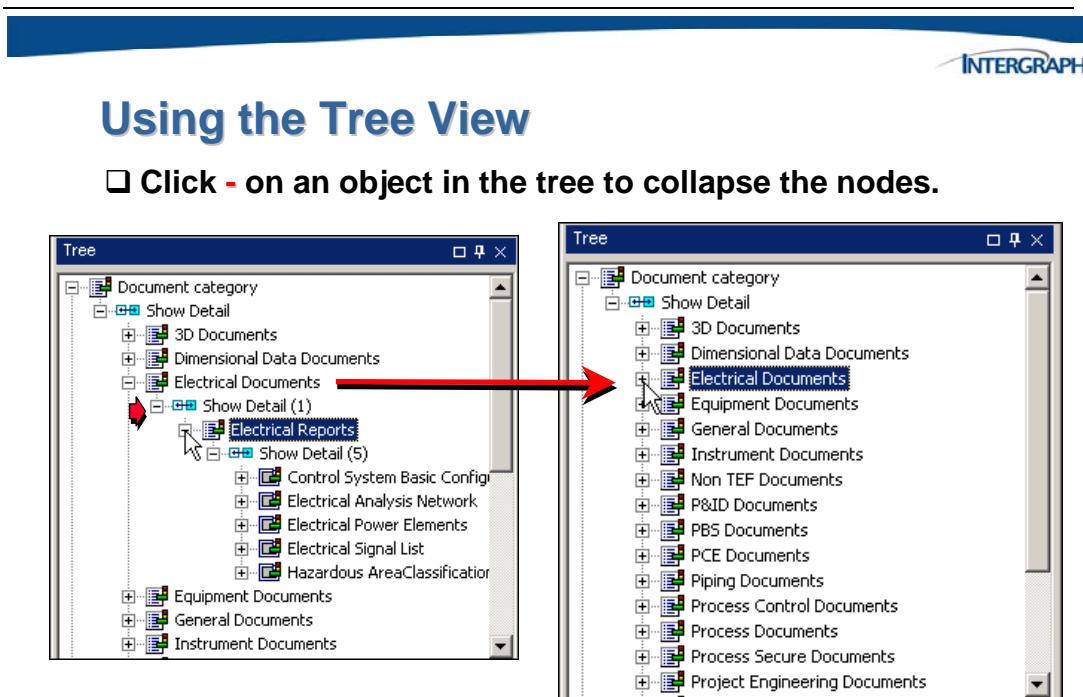


## Using the Tree View

- Click on an object in the tree to expand the nodes.



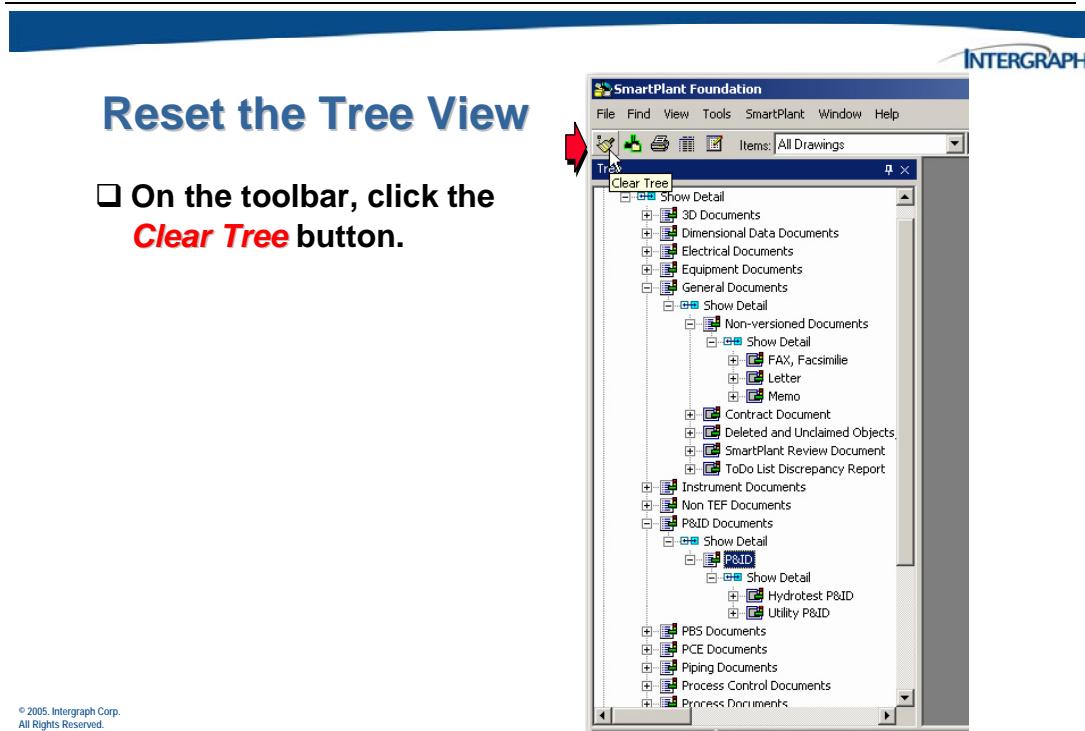
To remove an expansion from the tree view, you can double-click the expansion heading, or you can right-click the expansion heading, and click *Collapse Selection*.



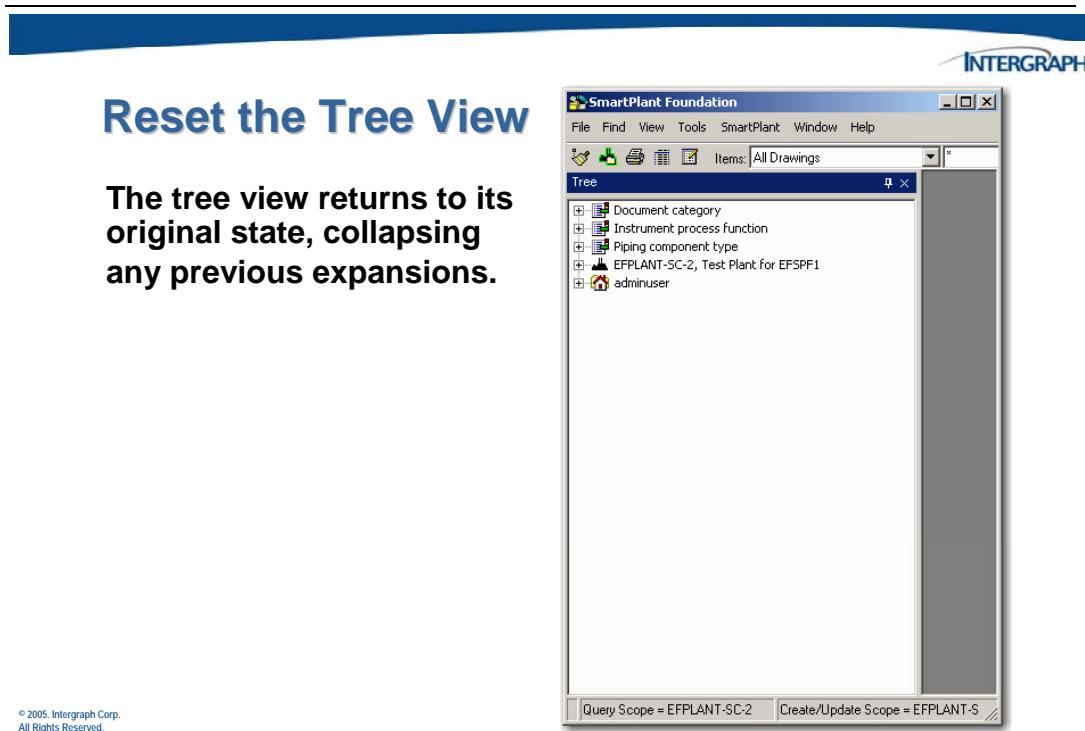
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### 2.3.2 Reset the Tree View

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

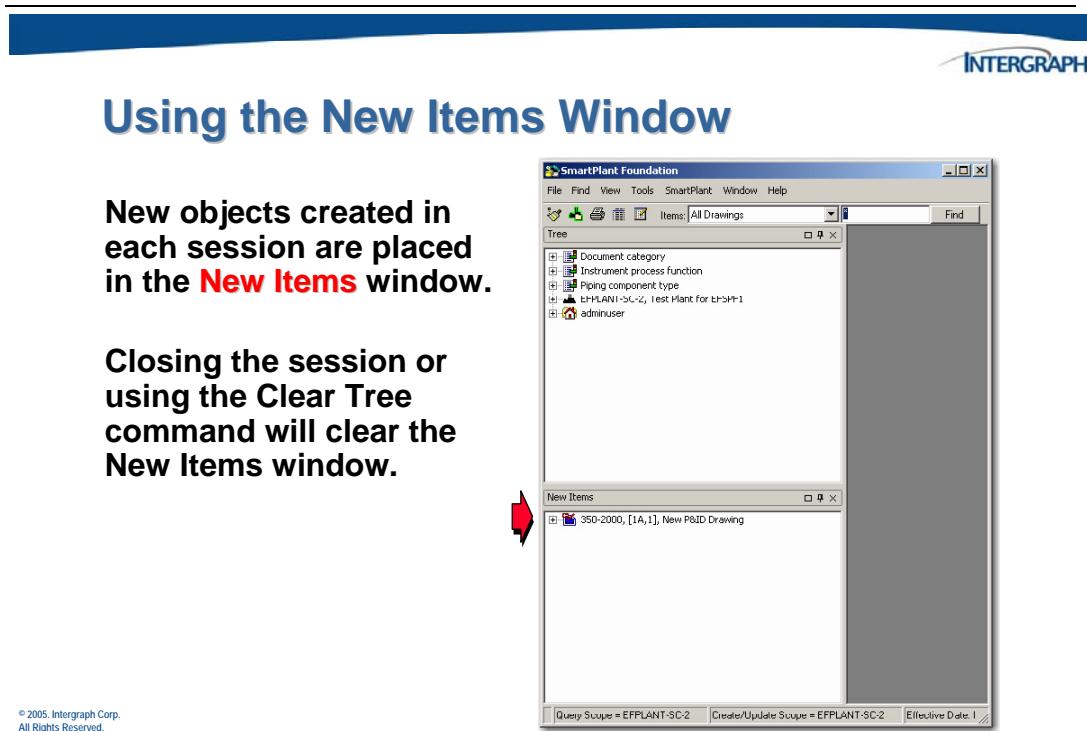


Clearing the tree view resets the tree view to its original state by clearing any expansions that are displayed. This command also clears any items from the *New Items* window.



### 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.

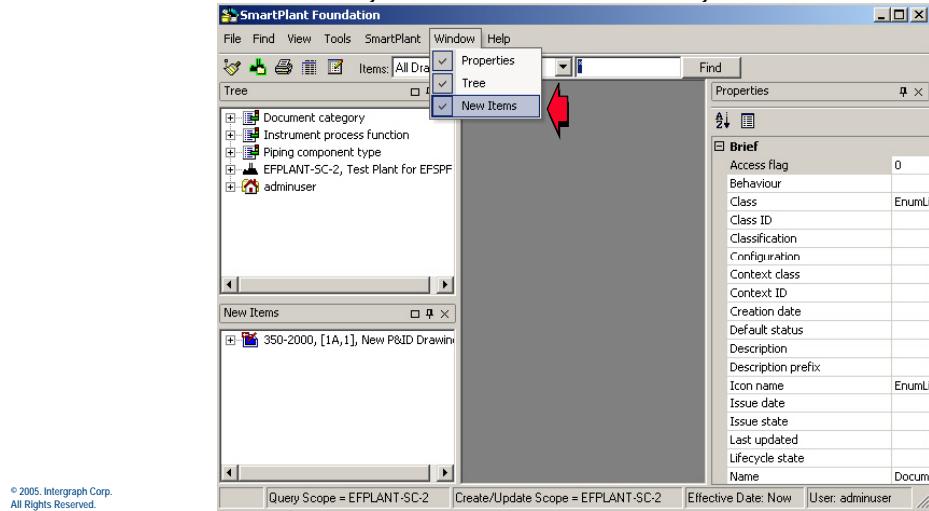
As with other windows in the user interface, you can move or resize the *New Items* window and have your user profile store the window location when you exit SmartPlant Foundation.

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.

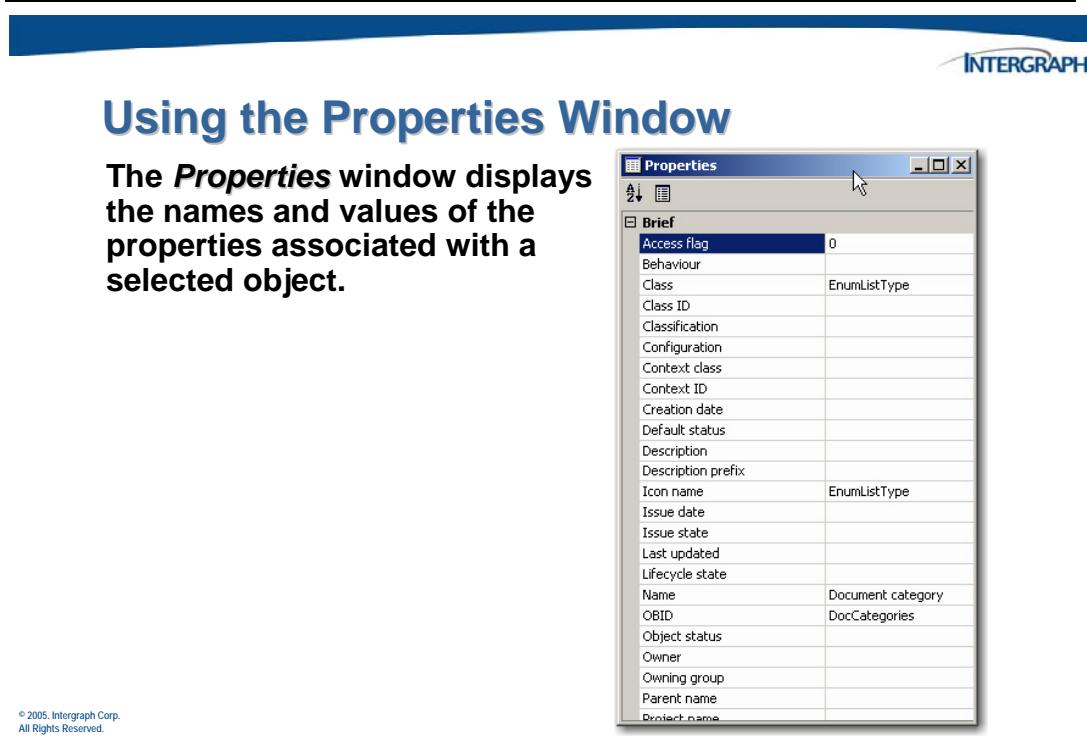
## Using the New Items Window

- The **Window > New Items** menu command toggles the *New Items* window, and the other menus, on and off.



## 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 Alphabetic display. Click the Categorize button in the top Left corner to switch to the Categorized display.

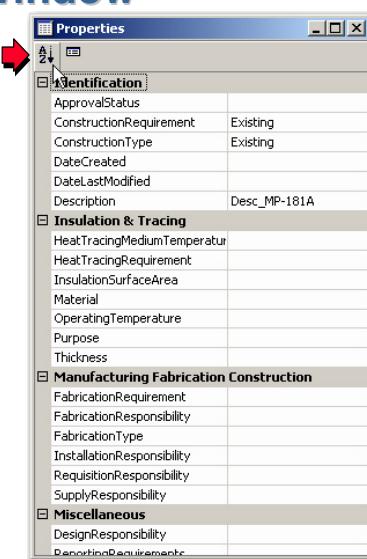


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## Using the Properties Window

**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.



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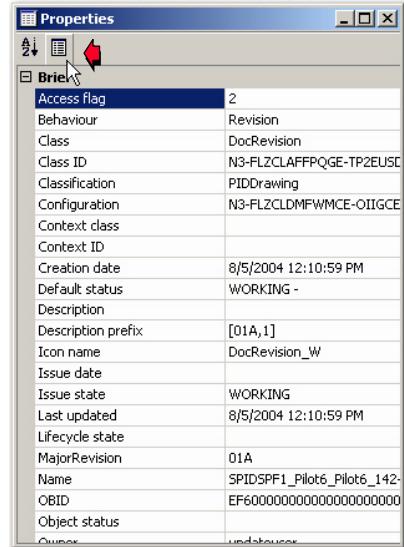
You can also toggle between a brief listing of the properties and an extended view of the properties by clicking or . By default, the brief view of data appears in the Properties window.



## Using the Properties Window

**Extended** - displays an extended view of the properties for the selected object.

Click the Brief button at the top of the window to view a shorter list of properties for the object.



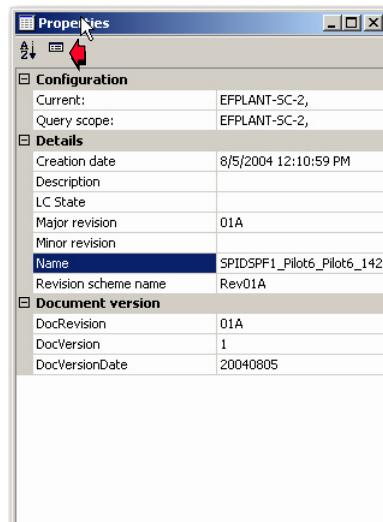
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## Using the Properties Window

**Brief** - displays a brief listing of the properties for the selected object.

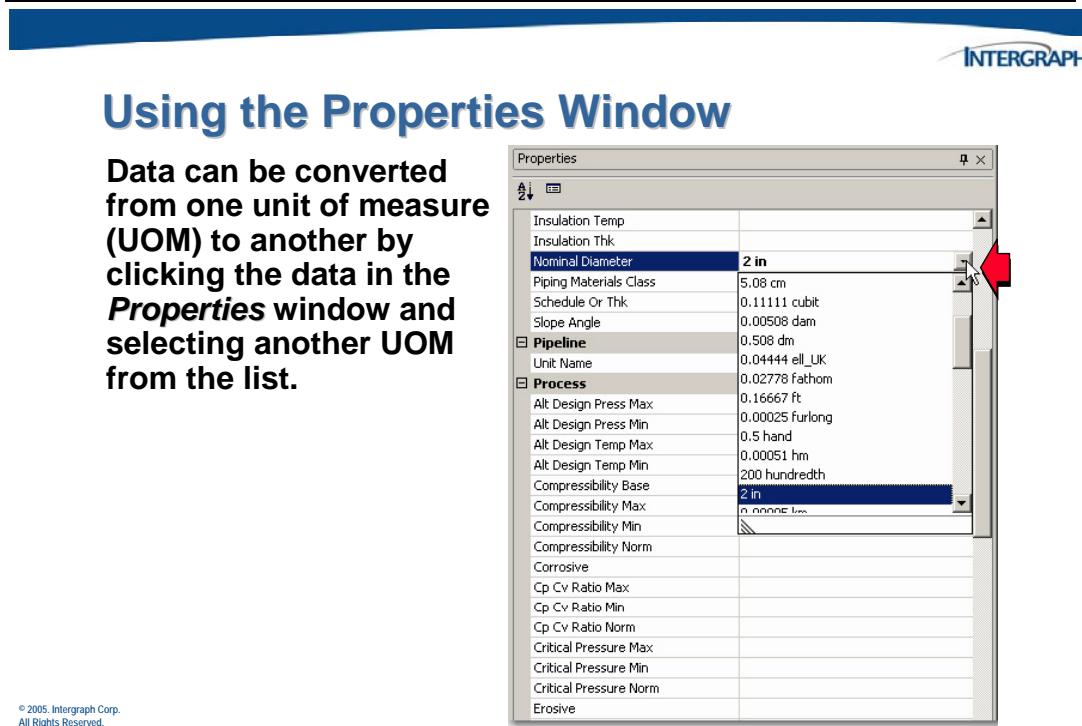
Click the Extended button at the top of the window to view a more extensive list of properties for the object.



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By default, the Properties window displays data in the UOM defined by the user preference in the **Default UOM** field on the *General* tab of the *Change User Preferences* dialog box. This setting allows you to select a display set, typically Imperial or Metric. If a default setting is not selected, the value is displayed as it was stored in the database.

You can convert data from one unit of measure (**UOM**) to another by clicking the data in the Properties window and selecting another UOM from the list.



The Properties window contains read-only data. To edit the data, you must use the update dialog box for the object, or if you are viewing information that was published from an authoring tool, the data must be updated in the authoring tool and republished.

## 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:



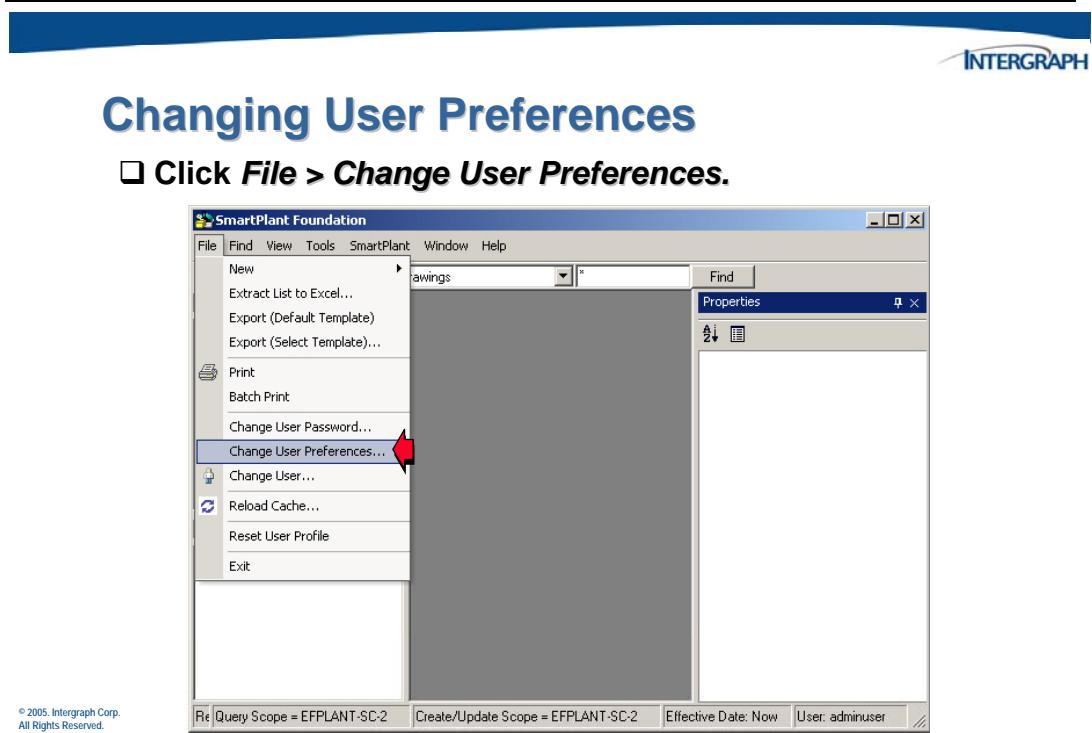
### Setting User Options

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

- Set your **preferences for list view** 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**.
- Change the **configuration of columns** in a list view.
- 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

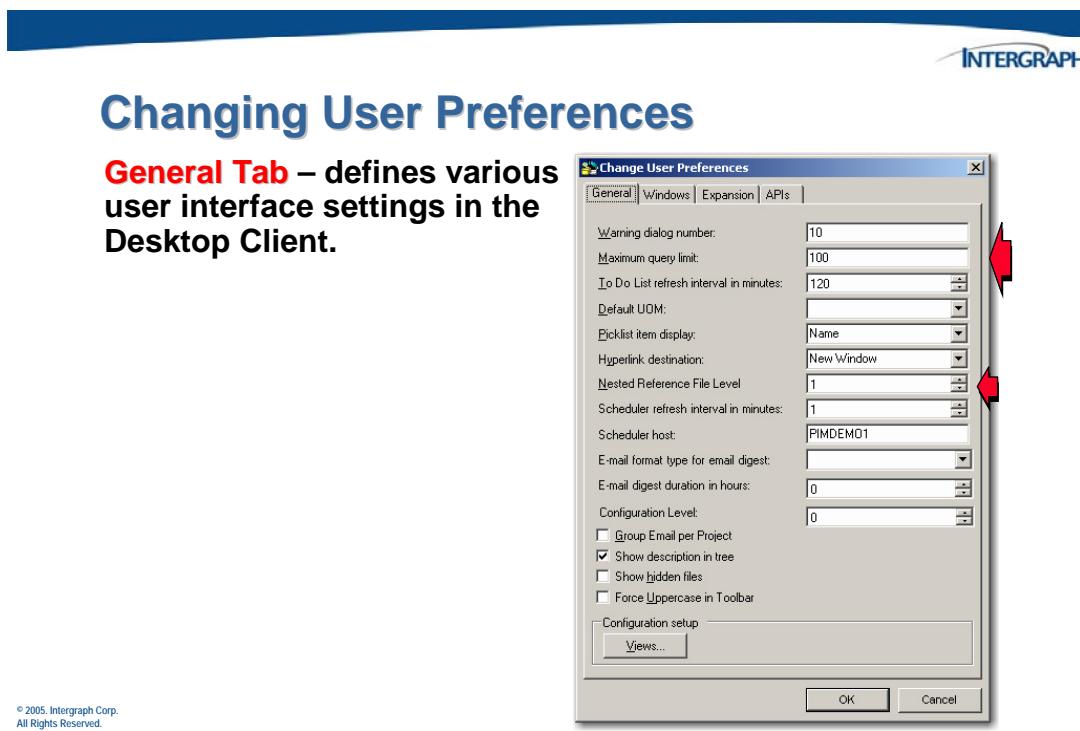
The Change User Preferences command allows you to set various preferences for the Desktop Client, including expansion and menu options, window management options, and configuration setup options.



The *Change User Preferences* dialog 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 settings you can configure from the **General** tab of the *Change User Preferences* dialog box are covered here:



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

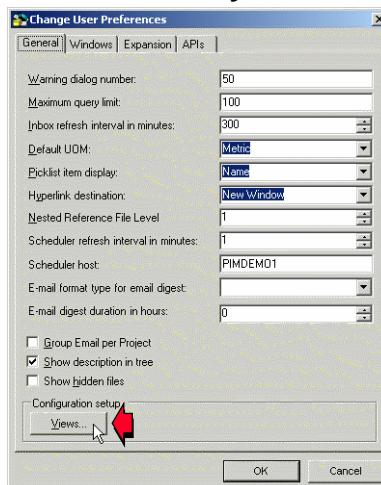
- Warning dialog number** - Sets the number of results to find in a query before it displays a warning. Example, if this value is set at 20. You will receive a warning message if 20 or more items will be returned by a query.
- Maximum query limit** - Sets the upper limit for the number of items found 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.
- Scheduler refresh interval in minutes** - Specifies how often the scheduler will refresh its queue.
- Scheduler host** - Specifies which computer is designated as this client's scheduler host.
- Email 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.
- Configuration Level** – Specify the number of levels of the configuration hierarchy that you want to be able to see in the tree view.
- 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.



## Changing User Preferences

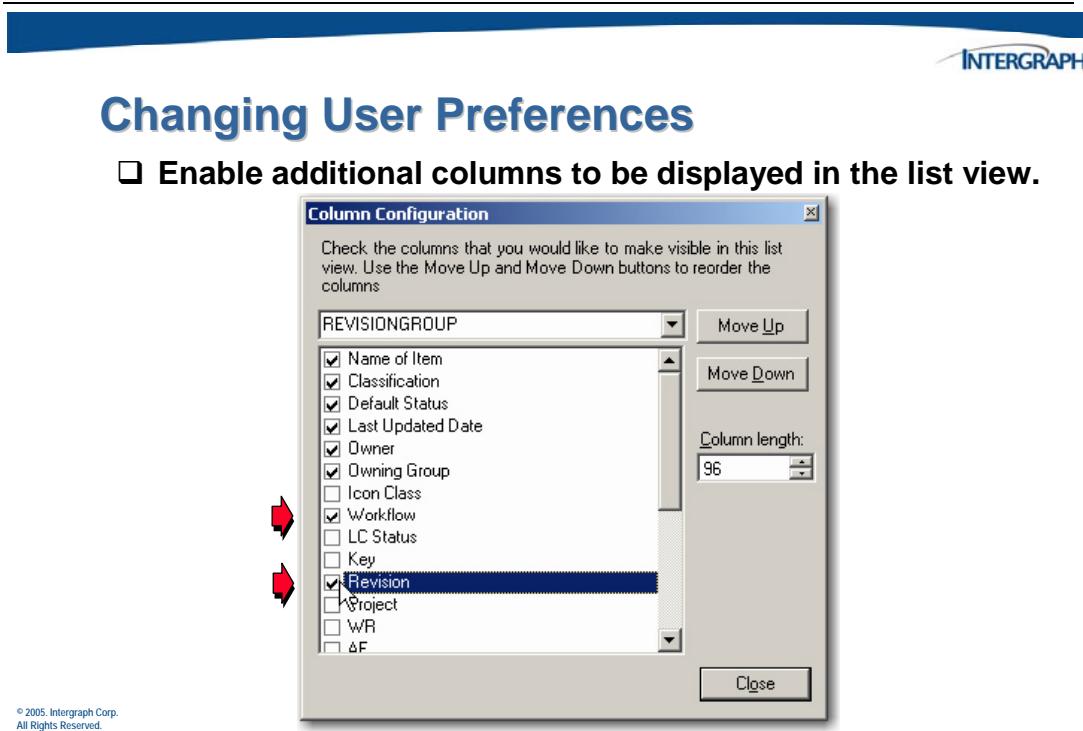
Views - displays the **Column Configuration** dialog box so that you can define which columns you want to display in the view.



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Clicking the **Views** button opens the **Column Configuration** dialog box, where you can define which columns appear in the List View and in what order.

Select a view type from the list at the top of the dialog box, and then turn on or off the columns for that view type. The columns will appear in the order in which they are displayed in this dialog box, from top to bottom.



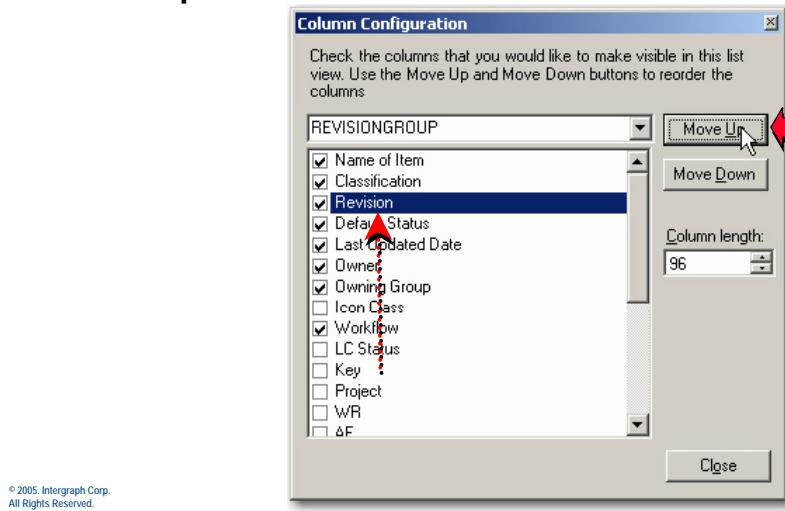
Options available on the *Column Configuration* dialog include:

- Move Up** - Moves the selected item higher in the list.
- Move Down** - Moves the selected item lower in the list.
- Column length** - Selects the width of the columns.



## Changing User Preferences

- ❑ Highlight a column, and click the **Move Up** button to reposition the column name.

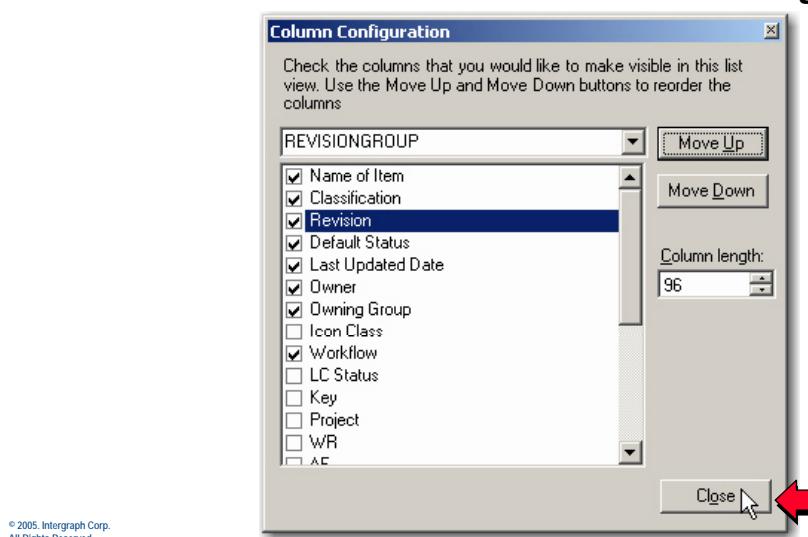


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## Changing User Preferences

- ❑ Click **Close** to finish the new column configuration.

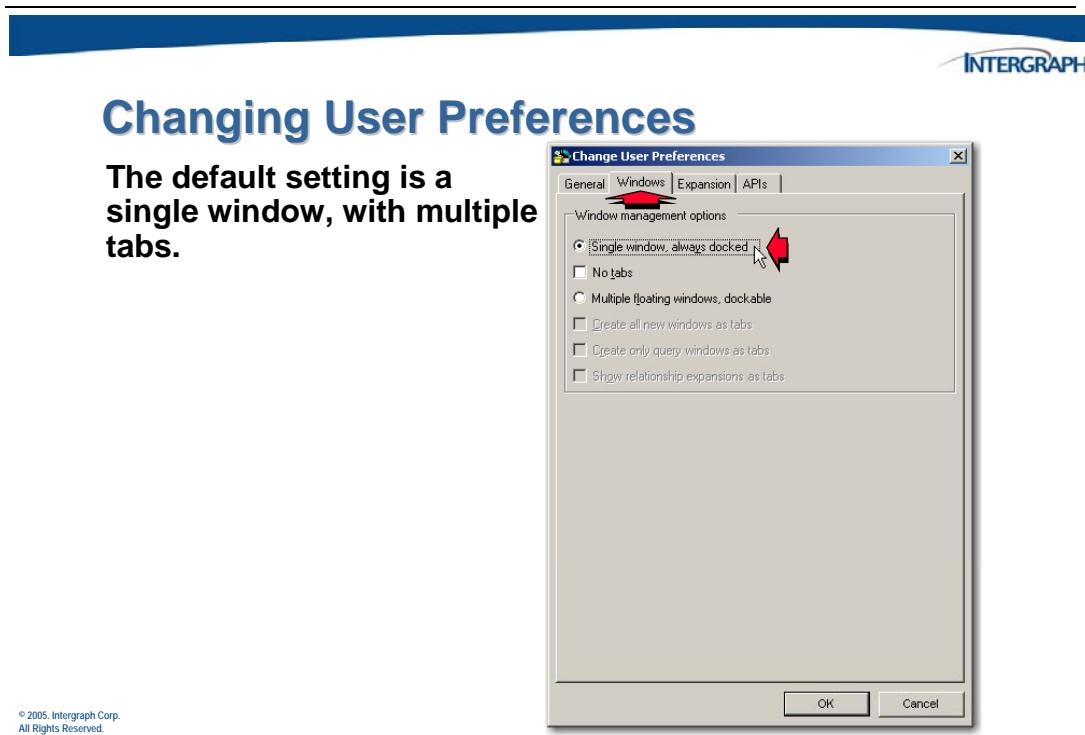


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## Windows Tab

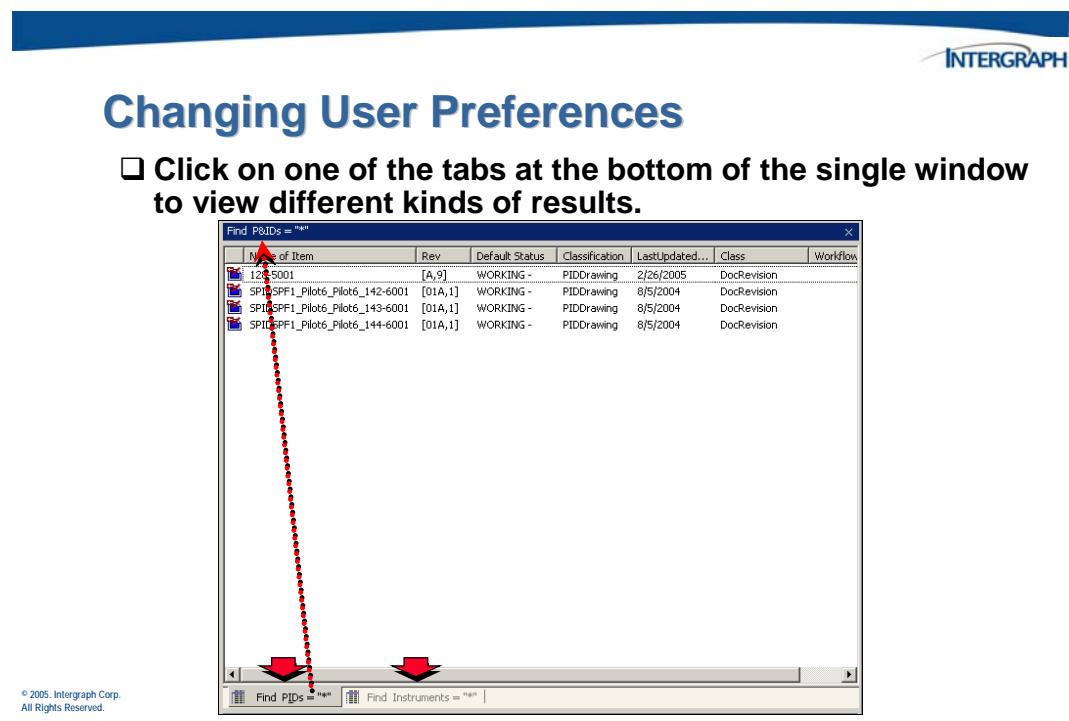
You can manage windows by using the Change User Preferences command. The available windows management options are described here:

- ❑ **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.

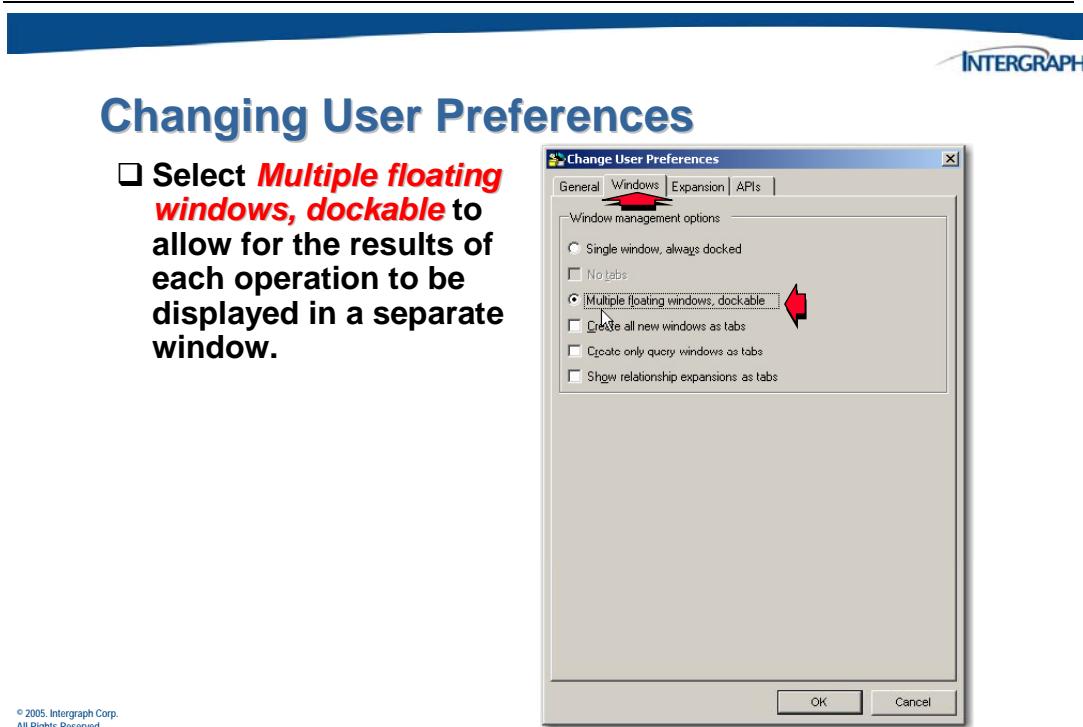


If you wish, you can choose to view only one single, non-tabbed window. When operating in this mode, any new selection will overwrite the current display in the list view. This option is available by checking the **No tabs** check box.

The following graphic shows the Desktop Client windows as they appear as a single window in the List View pane. The tabs located at the bottom allow you to activate the query that you want to view. For example, you can click the **Find P&IDs** tab to view the query results for P&IDs.

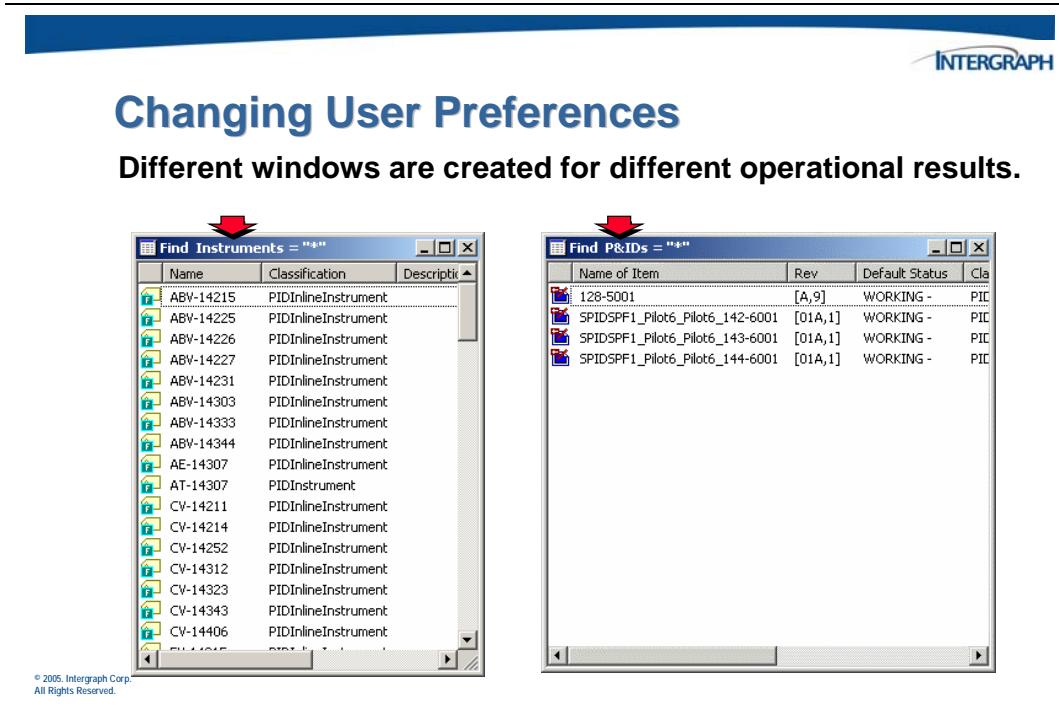


- ❑ **Multiple floating windows, dockable** - Document windows are floating and can be hidden and docked.



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The following example shows the Desktop Client windows as they appear as multiple, floating windows in the List View Pane. Each query appears in a separate window. This mode is recommended if you will be dragging and dropping to create relationships between objects.

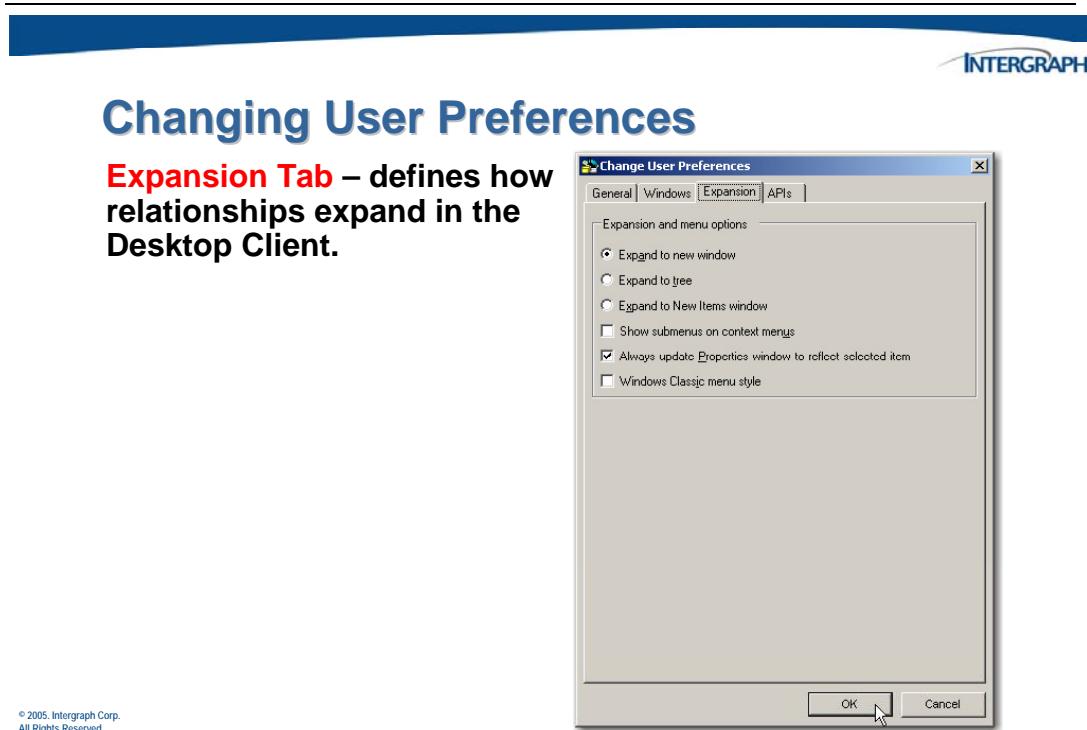


Other options available under the *Windows* tab:

- Single window, always docked** - Sets new windows to display as a docked window.
- 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.

## Expansion Tab

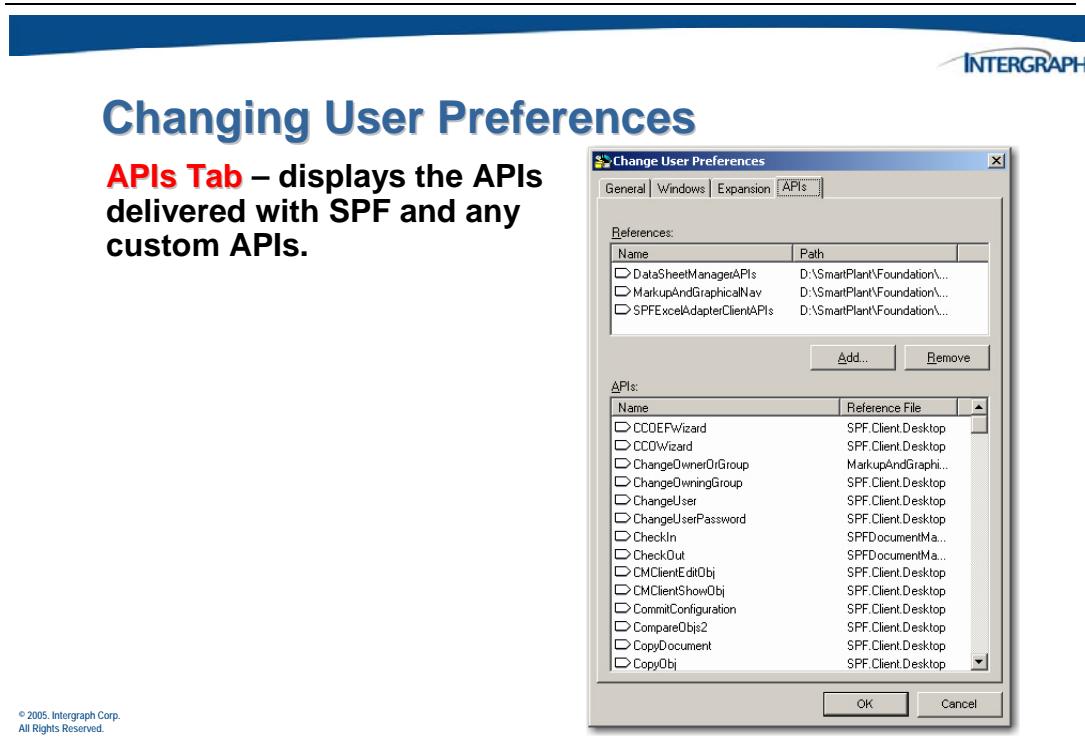
The following fields can be configured on the *Expansion* tab:



- 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.

## 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.



### Setting the Active Scope

**In SmartPlant Foundation, each user works in the context of two active configurations or scopes:**

- A query scope – used for all data queries and relationship expansions.**
- A create scope – used for data creation, modification, and termination.**

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**.

The image shows a screenshot of the SmartPlant Foundation application interface. The title bar reads "SmartPlant Foundation". The menu bar includes "File", "Find", "View", "Tools", "SmartPlant", "Window", and "Help". A toolbar with various icons is visible above the tree view. The main area is a "Tree" view showing a hierarchical structure of objects:

- Document category
- Instrument process function
- Piping component type
- EFPLANT-SC-2, Test Plant for EFSPF1 (selected, indicated by a red arrow pointing to it)
- Functional Areas(1)
- Projects(4)
  - PRJ-1001, Project-1001
  - PRJ-1002, Project-1002
  - PRJ-2001, Project-2001
  - PRJ-2002, Project-2002
- adminuser

A large red arrow points from the text "Click + on a plant object in the tree to expand the nodes and see the configurations available." towards the selected plant object in the tree view.

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**Setting the Active Scope**

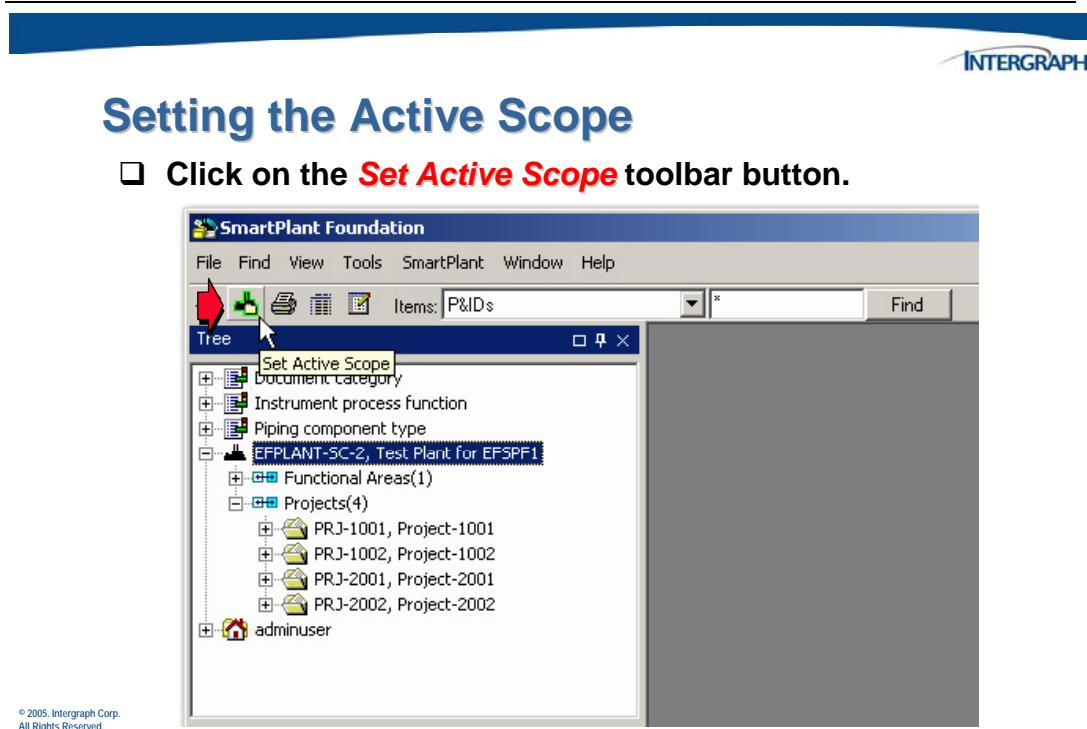
Click + on a plant object in the tree to expand the nodes and see the configurations available.

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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.

In order to perform queries or create new objects, the active scope must be set.



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.



## Setting the Active Scope

Select a project from the displayed list, and then click Set to configure the **Query scope** or **Create/update scope**.

The screenshot shows the "Set Active Scope" dialog box. It has two text input fields at the top: "Create/update scope:" containing "EFPLANT-SC-2" and "Query scope:" also containing "EFPLANT-SC-2". Below these are two "Set" buttons. The main area is a tree view showing the hierarchy of projects and plants. A red arrow points to the "OK" button at the bottom right of the dialog.

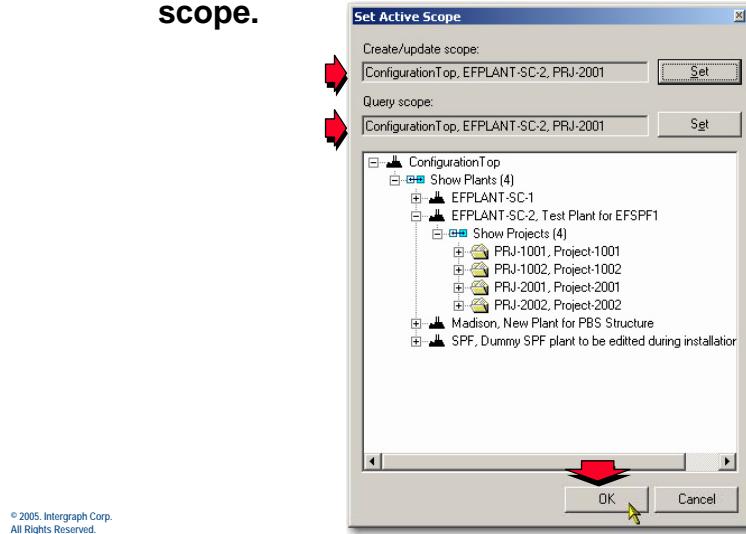
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When you select a scope for creating data, any data that you create becomes a part of that scope. For example, if you select **EFPLANT-SC-2, PRJ-2001** as your create scope, any data that you create is part of Project PRJ-2001 in Plant EFPLANT-SC-2. 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.



## Setting the Active Scope

- Click **OK** to close the dialog, and save the new active work scope.



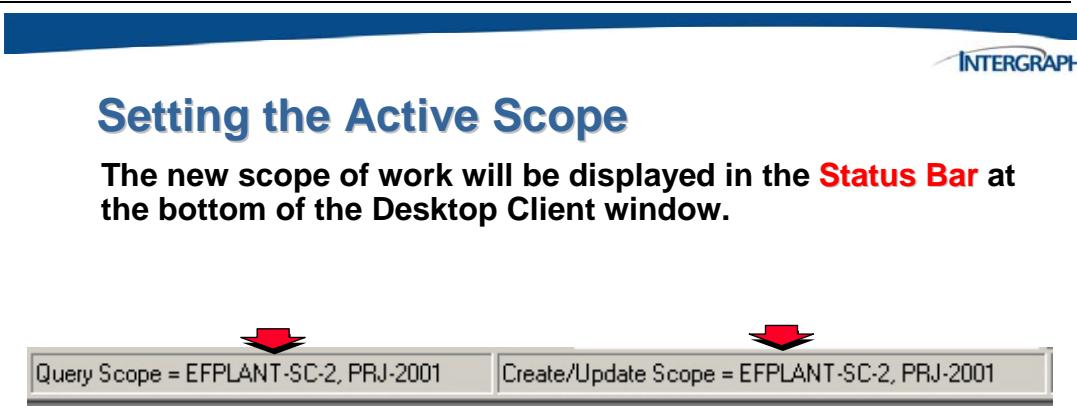
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You can automatically set the query and create scopes to the same plant and project and close the *Set Active Scope* dialog box by double-clicking a plant or project in the configuration tree.

The following fields and buttons are available on the *Set Active Scope* dialog:

- Create/update scope** - Defines the plant and projects in which you can create and update objects.
- Set** - Sets the create and update object configuration to the selected plant and project.
- Query scope** - Defines the plant and project in which you want to search for data.
- Set** - Sets the query object configuration to the selected plant and project.
- Configuration tree** - Displays the plant and project configurations to which you have access.

You can also make changes to the create and query scopes by clicking the text beside **Query Scope** or **Create/Update Scope** in the SmartPlant Foundation *Status Bar*.



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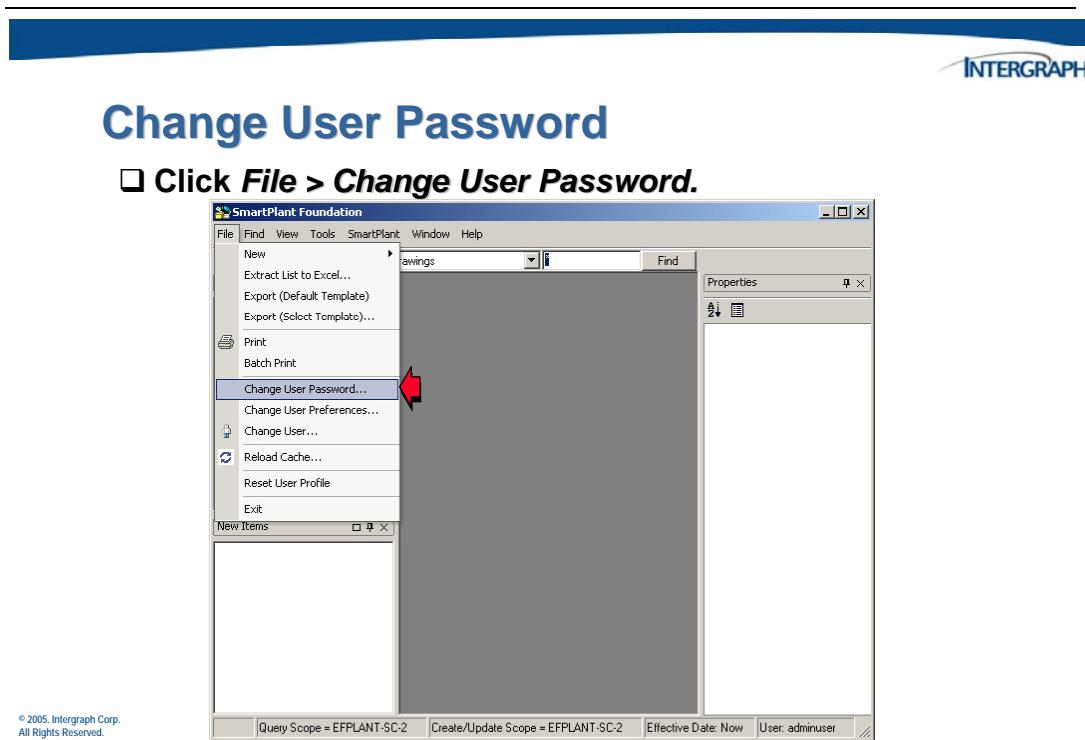
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You can change your create or query scope at any time. However, you can select only from plants, projects, and other objects in the configuration tree that you have access to in SmartPlant Foundation.

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.



The *Change Password* dialog appears.



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---

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.

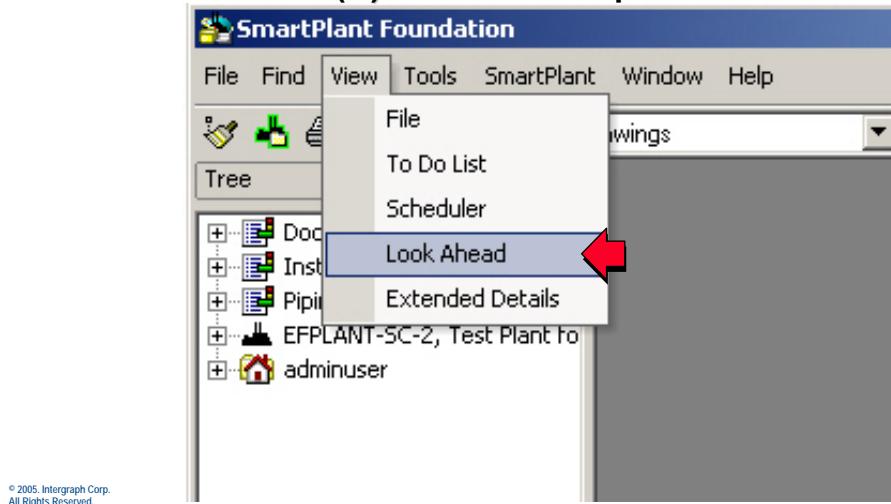
## 2.4.4 Enabling Look Ahead

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 for an object in the SPF Desktop Client. The menu items include:

- Details
- Files
- Generate PDF Copies
- History
- Show Nested References
- Subscription
- Transmittal History
- Workflow
- Show All Relationships
- Show All Versions (1)** (highlighted with a red arrow)
- Show Document Master
- Show Equipment (5)
- Show Files (1) (highlighted with a red arrow)
- Show Instruments (64) (highlighted with a red arrow)
- Show Interfaces (2)
- Show Latest Revision (1)
- Show Lines (28) (highlighted with a red arrow)
- Clear Selection
- Select All
- Refresh
- Open in New Window

At the bottom left of the menu, there is a note: "© 2005, Intergraph Corp. All Rights Reserved."

## 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.



### Effective Date Command:

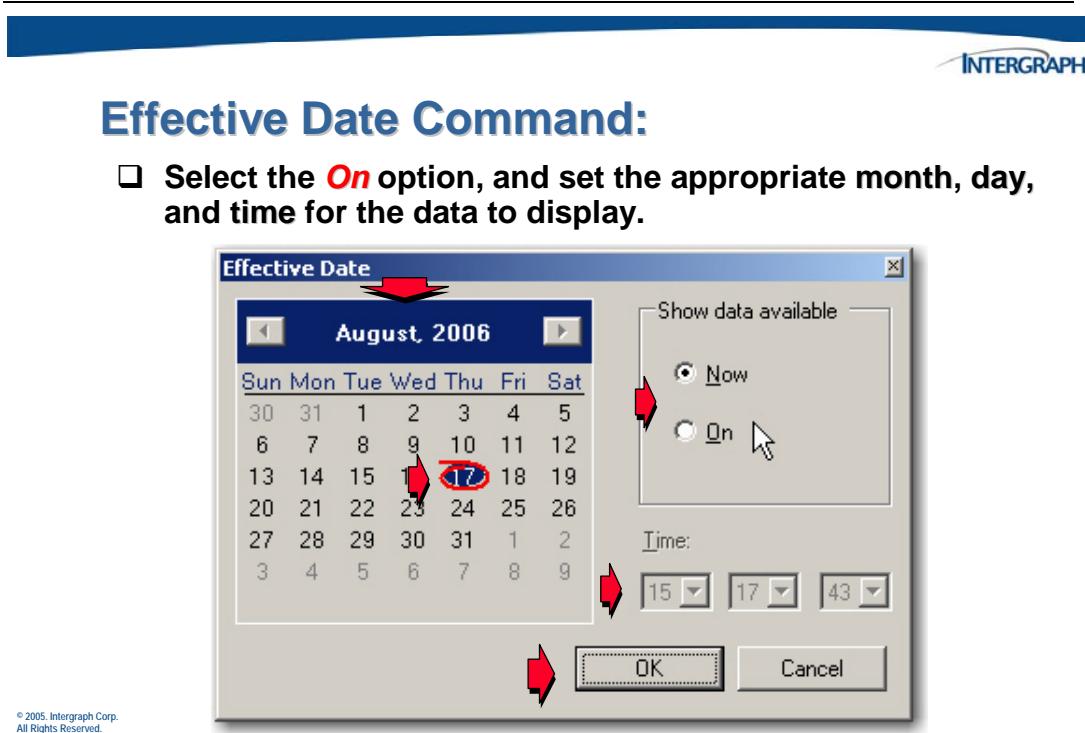
- Double-click on the **Effective Date** field in the Status Bar.



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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:

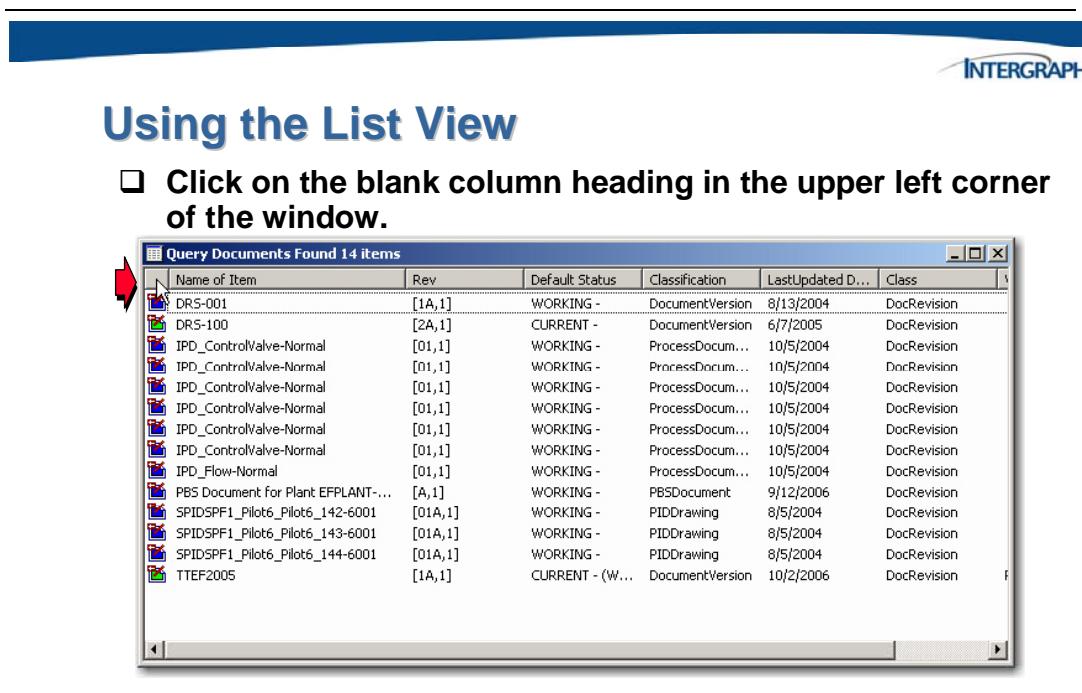
- **Show data available** – Allows you to activate the feature. If the **Now** radio button is selected, the interface displays the current data in the database. If you select the **On** radio button, you can use the other fields on this dialog box to select a point in history at which to view the data.
- **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**.

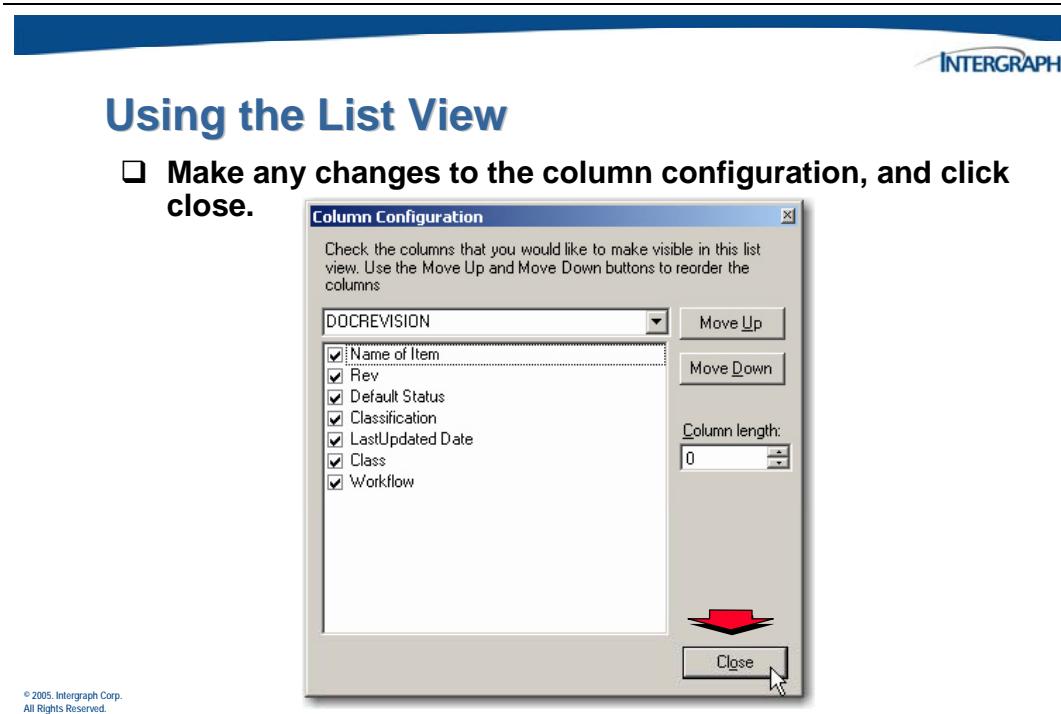
## 2.5 Using the List View Window

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.



The *Column Configuration* dialog will appear.



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.

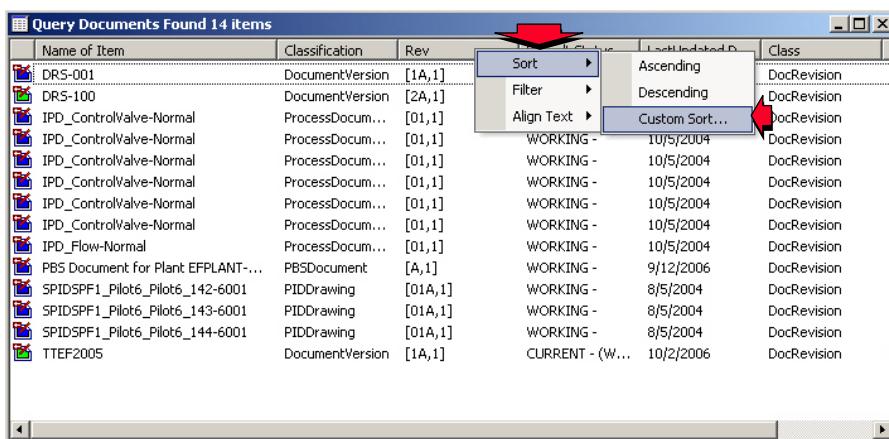
Query Documents Found 14 items:						
	Name of Item	Class	Revn	Default Status	Classification	LastUpdated D...
1	DRS-001	[1A,1]		WORKING -	DocumentVersion	8/13/2004
2	DRS-100	[2A,1]		CURRENT -	DocumentVersion	6/7/2005
3	IPD_ControlValve-Normal	[01,1]		WORKING -	ProcessDocum...	10/5/2004
4	IPD_ControlValve-Normal	[01,1]		WORKING -	ProcessDocum...	10/5/2004
5	IPD_ControlValve-Normal	[01,1]		WORKING -	ProcessDocum...	10/5/2004
6	IPD_ControlValve-Normal	[01,1]		WORKING -	ProcessDocum...	10/5/2004
7	IPD_ControlValve-Normal	[01,1]		WORKING -	ProcessDocum...	10/5/2004
8	IPD_ControlValve-Normal	[01,1]		WORKING -	ProcessDocum...	10/5/2004
9	IPD_Flow-Normal	[01,1]		WORKING -	ProcessDocum...	10/5/2004
10	PBS Document For Plant EFPLANT...	[A,1]		WORKING -	PBSDocument	9/12/2006
11	SPIDSPF1_Pilot6_Pilot6_142-6001	[01A,1]		WORKING -	PIDDrawing	8/5/2004
12	SPIDSPF1_Pilot6_Pilot6_143-6001	[01A,1]		WORKING -	PIDDrawing	8/5/2004
13	SPIDSPF1_Pilot6_Pilot6_144-6001	[01A,1]		WORKING -	PIDDrawing	8/5/2004
14	TTEF2005	[1A,1]		CURRENT - (W...	DocumentVersion	10/2/2006

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.

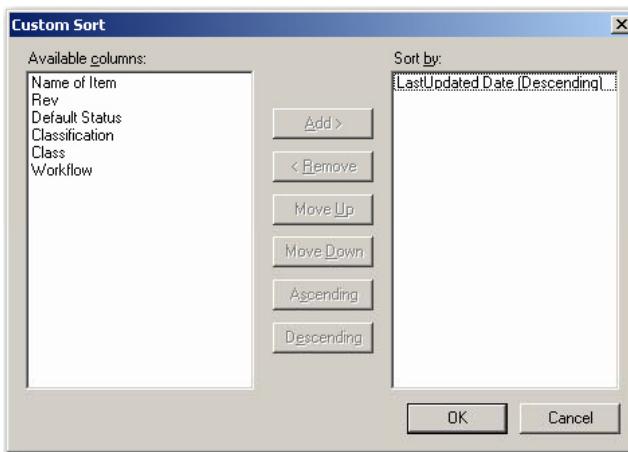


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## Using the List View

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



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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.



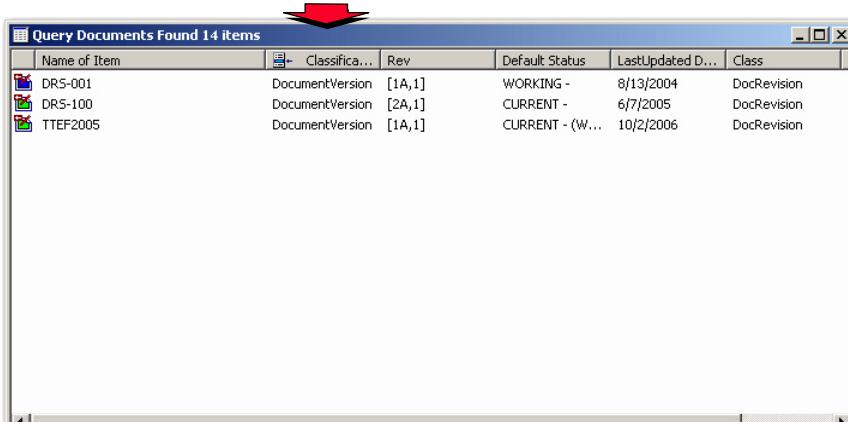
## Using the List View

- Right-click on a column heading, and select **Filter > <object type>** from the pop-up menu.

Name of Item	Classification		Default Status	LastUpdated D...	Class
DR5-001	DocumentVersion	Sort	WORKING -	8/13/2004	DocRevision
DR5-100	DocumentVersion	Filter	All	2005	DocRevision
IPD_ControlValve-Normal	ProcessDocument	Align Text	DocumentVersion	2004	DocRevision
IPD_ControlValve-Normal	ProcessDocument		PBSDocument	2004	DocRevision
IPD_ControlValve-Normal	ProcessDocument		PIDDrawing	2004	DocRevision
IPD_ControlValve-Normal	ProcessDocument		ProcessDocument	2004	DocRevision
IPD_ControlValve-Normal	ProcessDocument		WORKING -	10/5/2004	DocRevision
IPD_Flow-Normal	ProcessDocument		WORKING -	10/5/2004	DocRevision
PBS Document for Plant EFPLANT-...	PBSDocument		WORKING -	9/12/2006	DocRevision
SPIDSPF1_Pilot6_Pilot6_142-6001	PIDDrawing		WORKING -	8/5/2004	DocRevision
SPIDSPF1_Pilot6_Pilot6_143-6001	PIDDrawing		WORKING -	8/5/2004	DocRevision
SPIDSPF1_Pilot6_Pilot6_144-6001	PIDDrawing		WORKING -	8/5/2004	DocRevision
TTEF2005	DocumentVersion		CURRENT - (W...	10/2/2006	DocRevision

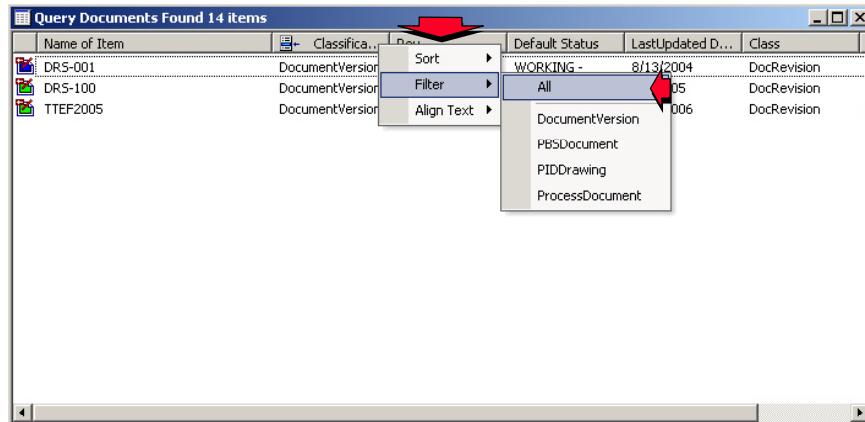
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The table display then hides rows that do not contain the value for which you filtered, and the column heading used to filter the table contains a question mark icon.



The screenshot shows a window titled "Query Documents Found 14 items". Inside, there is a table with columns: Name of Item, Classification, Rev, Default Status, LastUpdated D..., and Class. Three rows are visible: DRS-001, DRS-100, and TTEF2005. A red arrow points from the text above to the "Classification" column header, which now contains a question mark icon. The status bar at the bottom left reads "© 2005, Intergraph Corp. All Rights Reserved."

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



The screenshot shows the same window as before, but now the "Classification" column header has a context menu open. The "Filter" option in the menu is highlighted with a red arrow. A sub-menu is displayed with "All" selected. The status bar at the bottom left reads "© 2005, Intergraph Corp. All Rights Reserved."

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

- Right-click on a column heading, and select **Align Text > Center** from the pop-up menu.

Name of Item	Classification	Rev	Default Status	LastUpdated D...	Class
DRS-001	DocumentVersion	[1A,1]	WORKING -	8/13/2004	DocRevision
DRS-100	DocumentVersion	[2A,1]	CURRENT -	6/7/2005	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_Flow-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
PBS Document for Plant EFPLANT-...	PBSDocument	[A,1]	WORKING -	9/12/2006	DocRevision
SPIDSPF1_Pilot6_Pilot6_142-6001	PIDDrawing	[01A,1]	WORKING -	8/5/2004	DocRevision
SPIDSPF1_Pilot6_Pilot6_143-6001	PIDDrawing	[01A,1]	WORKING -	8/5/2004	DocRevision
SPIDSPF1_Pilot6_Pilot6_144-6001	PIDDrawing	[01A,1]	WORKING -	8/5/2004	DocRevision
TTEF2005	DocumentVersion	[1A,1]	CURRENT - (W...	10/2/2006	DocRevision

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## Using the List View

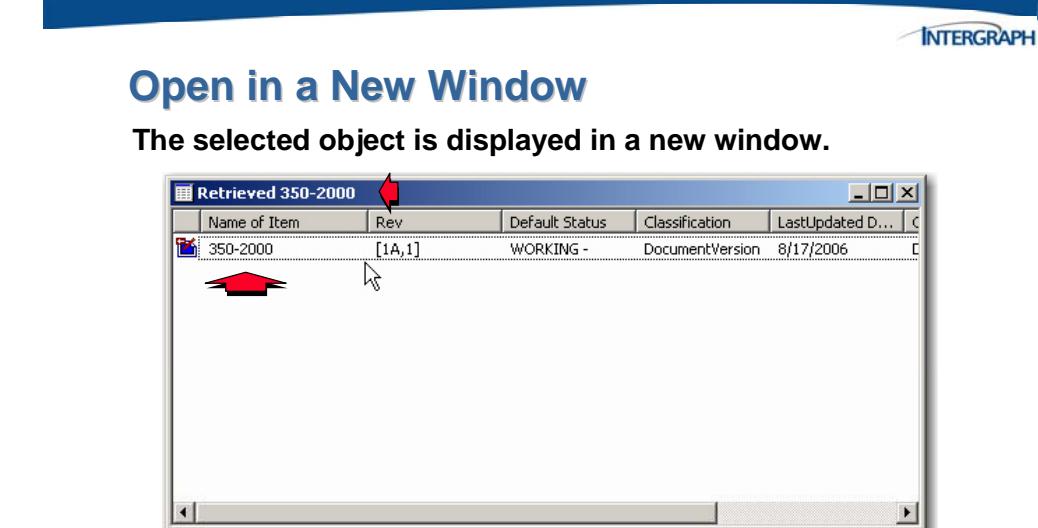
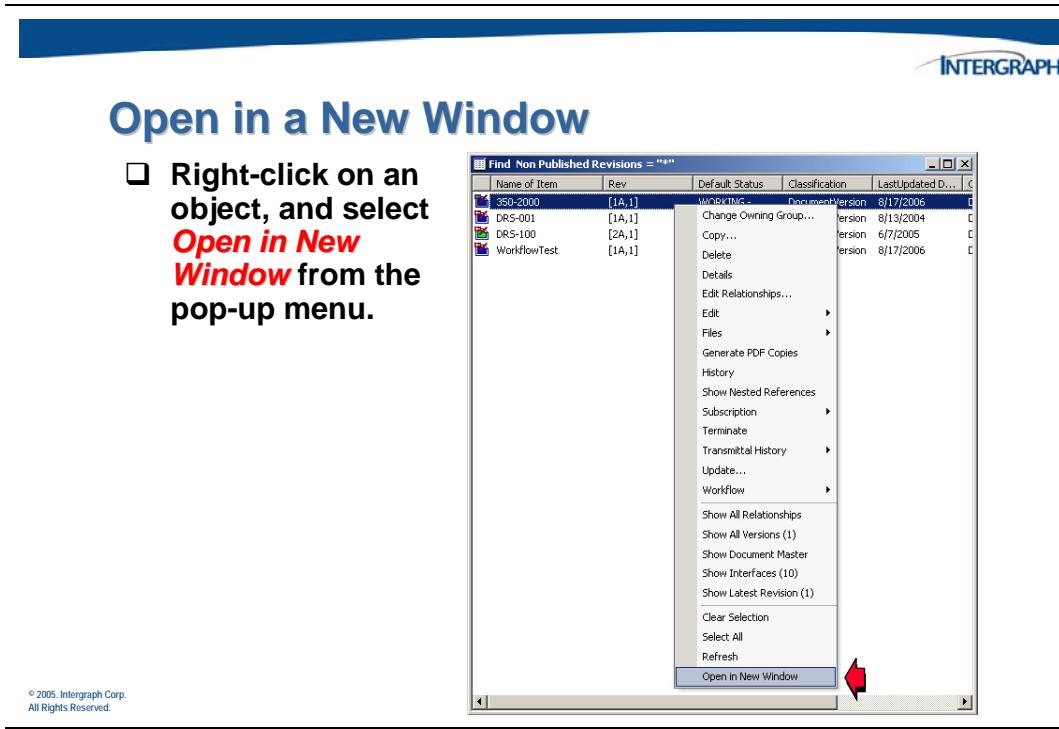
The column data will be displayed according to the criteria selected.

Name of Item	Classification	Rev	Default Status	LastUpdated D...	Class
DRS-001	DocumentVersion	[1A,1]	WORKING -	8/13/2004	DocRevision
DRS-100	DocumentVersion	[2A,1]	CURRENT -	6/7/2005	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_ControlValve-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
IPD_Flow-Normal	ProcessDocum...	[01,1]	WORKING -	10/5/2004	DocRevision
PBS Document for Plant EFPLANT-...	PBSDocument	[A,1]	WORKING -	9/12/2006	DocRevision
SPIDSPF1_Pilot6_Pilot6_142-6001	PIDDrawing	[01A,1]	WORKING -	8/5/2004	DocRevision
SPIDSPF1_Pilot6_Pilot6_143-6001	PIDDrawing	[01A,1]	WORKING -	8/5/2004	DocRevision
SPIDSPF1_Pilot6_Pilot6_144-6001	PIDDrawing	[01A,1]	WORKING -	8/5/2004	DocRevision
TTEF2005	DocumentVersion	[1A,1]	CURRENT - (W...	10/2/2006	DocRevision

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## 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.





## 2.7 Activity – Using the SPF Desktop Client

The goal of this activity is to familiarize you with starting and using the SmartPlant Foundation Desktop Client utility. You will start a SmartPlant Foundation session and use the mouse, menus, and Help.

1. If not already logged in, log on to your operating system (not SmartPlant Foundation) as *spfuser* with no password.

### Desktop Interface

2. Use the *Start > All Programs > Intergraph SmartPlant Foundation > SmartPlant Foundation Desktop Client* menu hierarchy to start the SmartPlant Foundation *Desktop Client*.
3. When the **Login** screen appears, use the **User name** *updateuser* and leave the Password blank. Verify that the **Server** field displays your host machine name (*pimdemo1*). When you have entered the User name field value, click the left mouse button on **OK** or press *Enter*.

---

**Note:** A password will not appear in the field as you key it in but will be represented by asterisks.

---

4. Once you are logged in to the *Desktop Client*, examine the different areas of the window. Before querying for object instances, if this is your first time to access the client, you must set your active scope.
  - Click the **Set Active Scope** icon on the tool bar.
  - When the *Set Active Scope* dialog appears, choose **EFPLANT-SC-2**, and click the *Query scope Set*, then choose **PRJ-2001** and click the *Query scope Set*.
  - Verify that the *Query scope* has been set to **EFPLANT-SC-2, PRJ-2001**.
  - Click **OK** to accept the *Set Active Scope* dialog.
  - Set the Create/Update Scope to **EFPLANT-SC-2, PRJ-2001** also.
5. What does the query scope define for the user?

6. Can a **view**-only user set their own create scope? \_\_\_\_\_

7. Turn on ***Look Ahead***.

8. How do you know ***Look Ahead*** is turned on? \_\_\_\_\_

9. What does ***Look Ahead*** provide for the user? \_\_\_\_\_

10. Change the ***Effective Date*** to July 12, 2006 11:26 and 45 seconds.

11. Change the ***Effective Date*** back to now.

12. Expand the **Tree View** relationships for the *Document category* objects.

- Click the  next to the *Document Category* object.

13. Use the pop-up (right mouse button) menu to display related objects.

- Right click on the *P&ID Documents* object.
- Select the **Show All Relationships** command from the pop up menu.

What happens to the *Tree View* display? \_\_\_\_\_

---

- Continue to use the **Show All Relationships** command on *P&ID*.
- Click the  next to the *Utility P&ID* object.

What happens to the display? \_\_\_\_\_

---

14. Clear the *Tree View* relationship expansions, and reset the *Tree View* back to its original state.

- Select the **Clear Tree** command from the tool bar.

Now what happens to the *Tree View* display? \_\_\_\_\_

---

15. Use the *Change User Preferences* command to set the following preferences:

- On the *Windows* tab, set the option to **Multiple floating windows, dockable**.
- Disable the **Create all new windows as tabs** toggle.
- On the *General* tab, set the **To Do List refresh interval in minutes** to **240**.
- Use the *Configuration setup Views* button to add 2 new columns (of your choice) to the REVISIONGROUP list view.
- Use the **Move Up** button to move one of these new columns to be the second in the list.
- On the *Expansion* tab, enable the **Always update Properties window to reflect selected item** toggle (if it is not already enabled).
- Click **OK** to close the *Change User Preferences* dialog and save your new preferences.

16. Even though the Find commands have not been discussed, you are going to perform a simple find to give you some data to work with in your window commands. On the *toolbar*, use the quick find to locate P&ID's.

- In the *Items* field use the list button to pick **P&IDs**.
- In the next field, the asterisk means to find all instances.
- Click the **Find** button.
- A *Find P&IDs = “\*”* list view window will appear.
- Use this window, the P&ID window, to perform the rest of the steps in this activity.

17. Right-click on an object in the P&ID window, and open this object into a new window.

- Once the object has been viewed in a new window, close the new window.

18. Highlight an object in the P&ID window. Make sure the properties for this object are displayed in the *Properties* window. If the *Properties* window is not displayed, use the **Window > Properties** command to turn on the display.
  - Change the Properties window display to an *Alphabetic* display.
  - Change the Properties window display to a *Categorized* display.
  - Change the Properties window display to an *Extended* display.
  - Change the Properties window display to a *Brief* display.
19. Use the P&ID window to change the column configuration.
  - Turn off the *Class* column.
  - Move the **LastUpdateDate** column (using drag and drop) to be positioned after the *Rev* column.
  - Set a **Custom Sort** by *Name* in *Descending* order.
  - After reviewing the results, set the Custom Sort to sort once more by Name in *Ascending* order.
  - Turn on the *Class* column.
  - Change the alignment of text in the *Classification* column to be **Center** aligned.
20. Use the **File > Exit** command to exit out of the SmartPlant Foundation *Desktop Client* interface.

C H A P T E R

---

# 3

## 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.

One way of manipulating objects is to move them through an electronic life cycle process, called a workflow. Using an SPF workflow is covered in a later chapter.



#### 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

##### Non-published documents only

- Update existing objects
- View relationships between objects



## **Finding and Manipulating Objects**

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

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

## 3.1 Searching for Objects

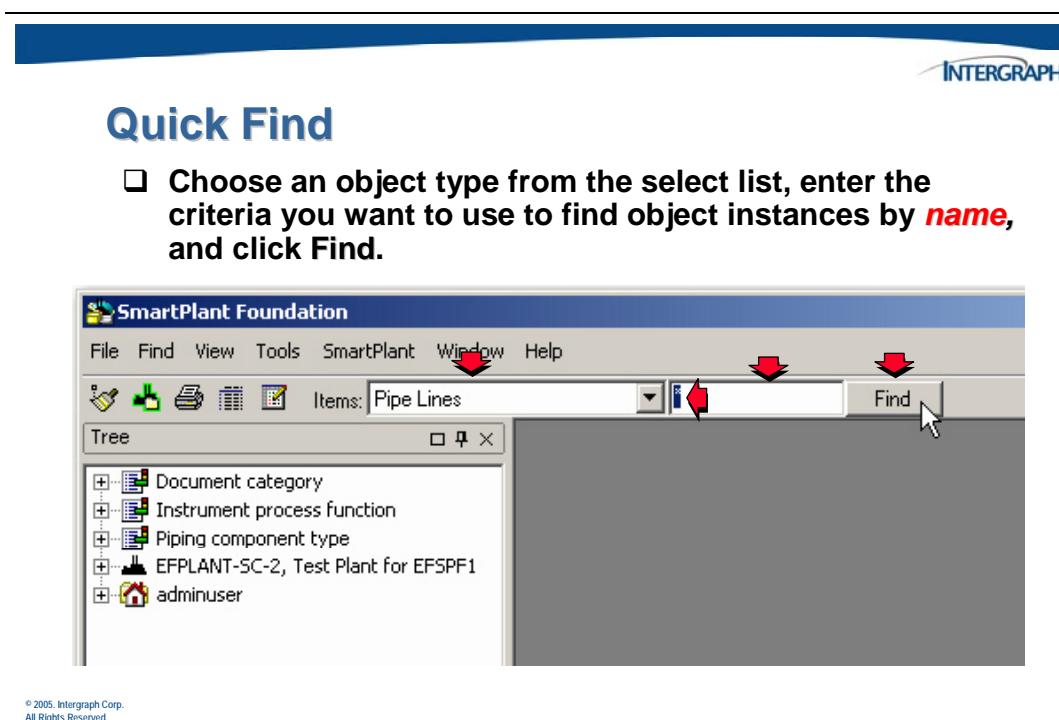
The SmartPlant Foundation Desktop Client search functions allow you to find objects based on your search criteria. You can perform two types of searches in SmartPlant Foundation: queries and quick finds.

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

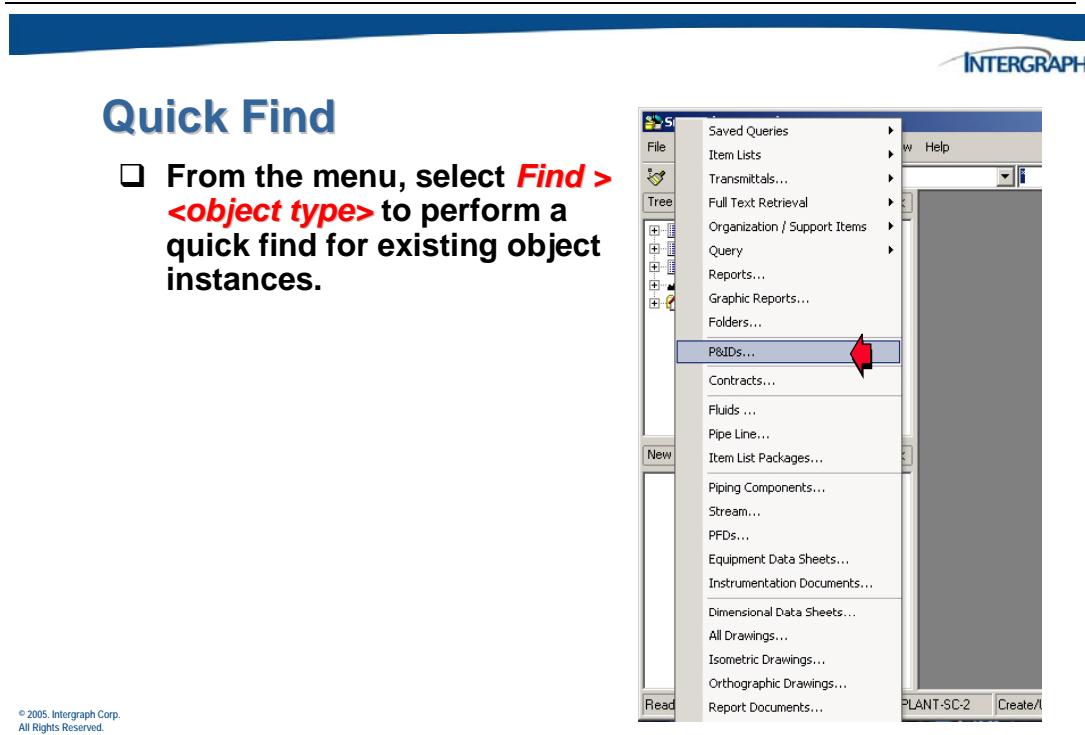
The main difference between quick finds and queries is that quick finds allow you to search on the objects name, where queries allow you to find objects based on detailed information about the object.

The commands that are available on the **Find** and **Query** menus are determined by the model you have loaded, such as the Business Object or SmartPlant model, and your organization's configuration.

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



The quick find options are available on the **Find** menu and on the toolbar.



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.



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---

The following wildcards can be applied to searches:

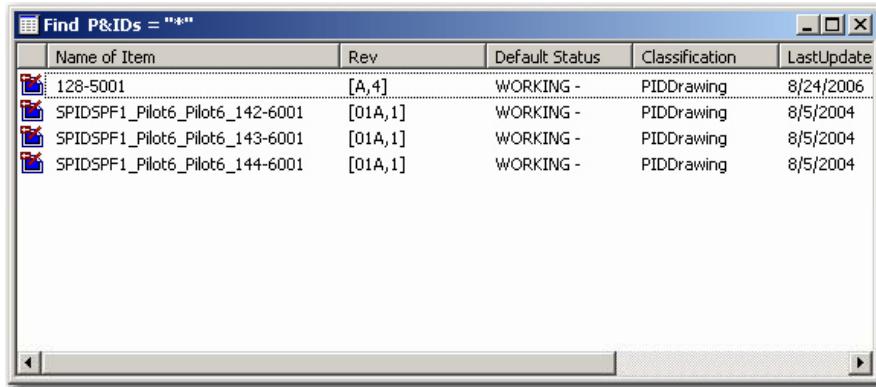
- ? - Finds any single character
- \* - Finds any string of characters
- % - Performs the same function as \*

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

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.**



The screenshot shows a Windows-style dialog box titled "Find P&IDs = \*\*\*". The dialog has a standard title bar with minimize, maximize, and close buttons. The main area is a table with the following columns: Name of Item, Rev, Default Status, Classification, and Last Update. There are four rows of data:

Name of Item	Rev	Default Status	Classification	Last Update
128-5001	[A,4]	WORKING -	PIDDrawing	8/24/2006
SPIDSPF1_Pilot6_Pilot6_142-6001	[01A,1]	WORKING -	PIDDrawing	8/5/2004
SPIDSPF1_Pilot6_Pilot6_143-6001	[01A,1]	WORKING -	PIDDrawing	8/5/2004
SPIDSPF1_Pilot6_Pilot6_144-6001	[01A,1]	WORKING -	PIDDrawing	8/5/2004

The following is another example of performing a quick find.



## Quick Find

- Enter **TS** and the wildcard character, \*, to find all **Piping Components** that begin with the letters TS.



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## Quick Find

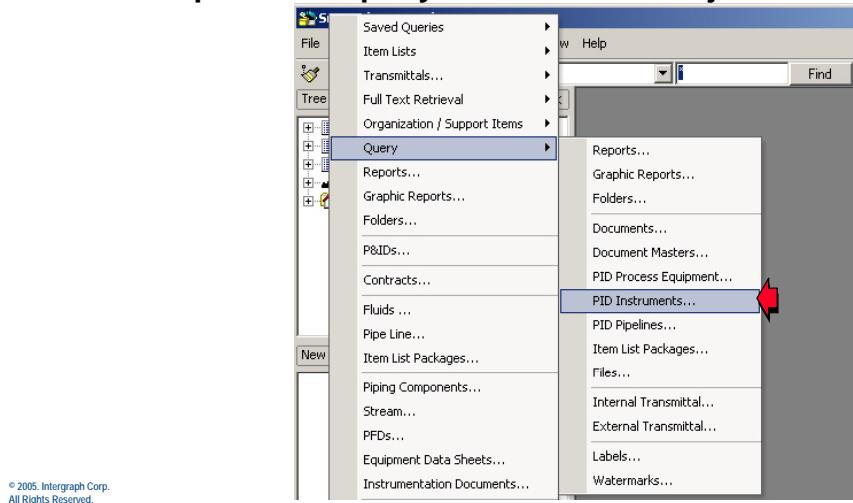
The results of the Find will be displayed in a list view window.

A screenshot of a Windows-style list view window titled "Find Piping Components = "TS\*\*"". The window contains a table with three columns: Name, Classification, and Description. Two items are listed: TS-181A and TS-181B. Both rows have a yellow folder icon next to them. A red arrow points from the left edge of the window towards the first row.

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## Querying for Objects

- From the menu, select **Find > Query > PID Instruments** to perform a query for instrument objects.



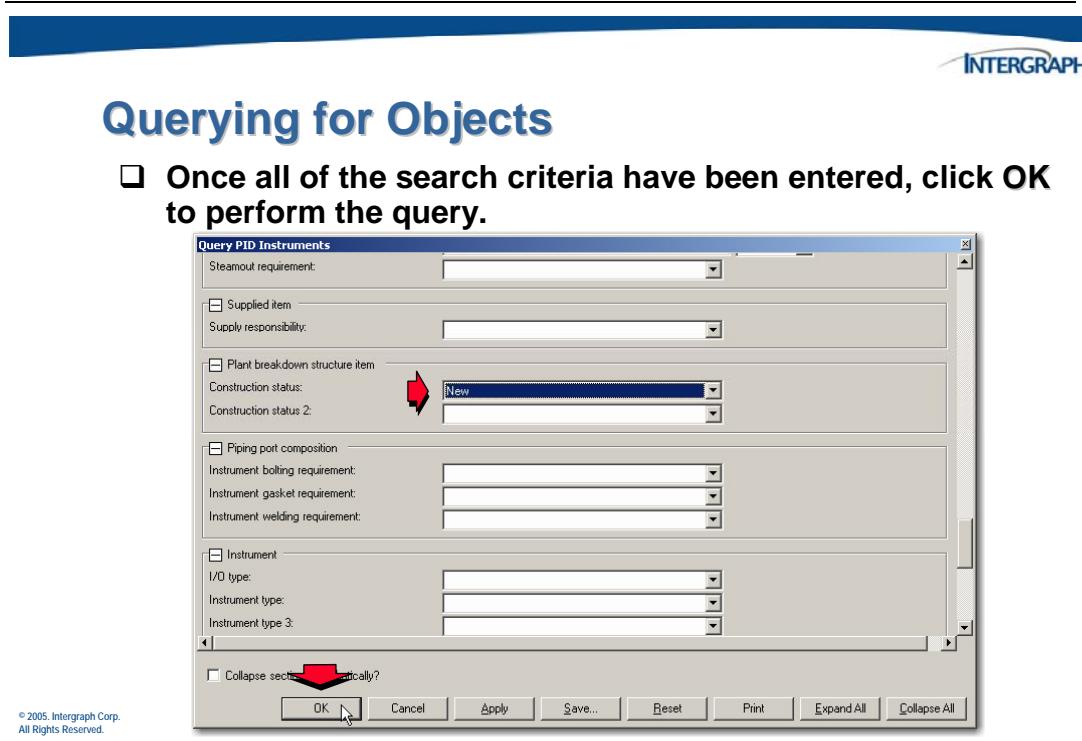
During a detailed query, you can specify search criteria that apply to several different properties of an object.

## Querying for Objects

- Enter the search criteria in the appropriate form fields.

The screenshot shows a dialog box titled 'Query PID Instruments'. It contains several sections with dropdown menus and input fields. One section is expanded, showing 'Name:' with the value 'ABV\*' and a red arrow pointing to the input field. Other sections include 'Description:', 'Cleaned item', 'Coated item', 'Heat-traced item', and a 'Collapse sections automatically?' checkbox. At the bottom are standard dialog buttons: OK, Cancel, Apply, Save..., Reset, Print, Expand All, and Collapse All.

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.



The following sections/fields are available on all standard query forms. The availability of other fields is determined by the System Administrator, who configures and manages query forms, and depends on the type of object for which you are searching:

### Configuration

- ❑ **Query scope** – This display-only field indicates what configuration the application will search using the criteria you specify. You cannot edit this value. To search within a different criteria, you must close the *Query* dialog box and change your Query Scope.

### Details

- ❑ **Name** – Search on the name of the business object.
- ❑ **Description** – Search against text provided in the description of the business object.

### History

- ❑ **Creation date** – Search for objects that were created on a specific date. When you click in this field, the *Set Date and Time* dialog box appears, providing additional options for setting dates and times for use in queries.
- ❑ **Create user** – Search for objects created by a specific user in the system.

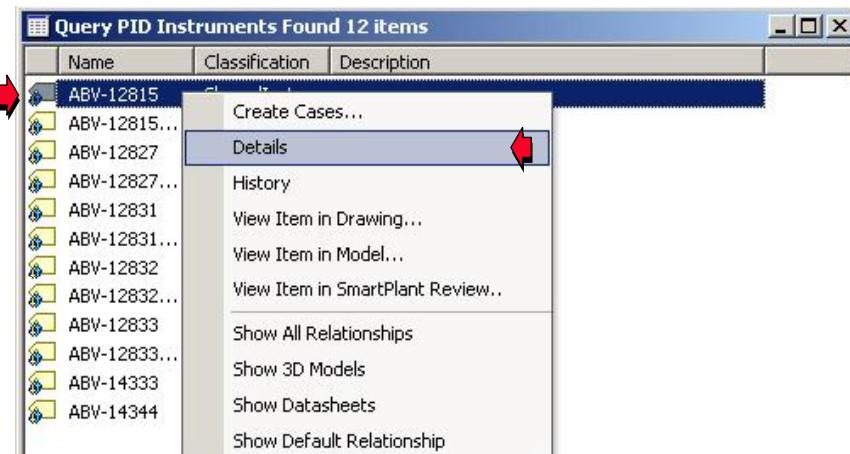
- ❑ **Last updated** – Search for objects based on the date on which it was last changed. When you click in this field, the *Set Date and Time* dialog box appears, providing additional options for setting dates and times for use in queries.

The Details command allows you to view the properties of the selected object. This command is available when you right-click an object in the tree view.



## Querying for Objects

- ❑ Right-click on an object in the list view window, and select **Details** from the pop-up menu.



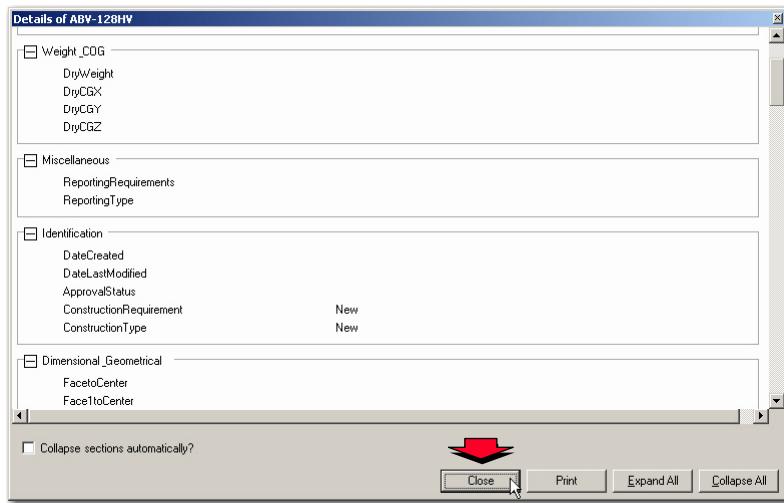
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## Querying for Objects

- Review the details of the selected instance, and click Close to dismiss the window.



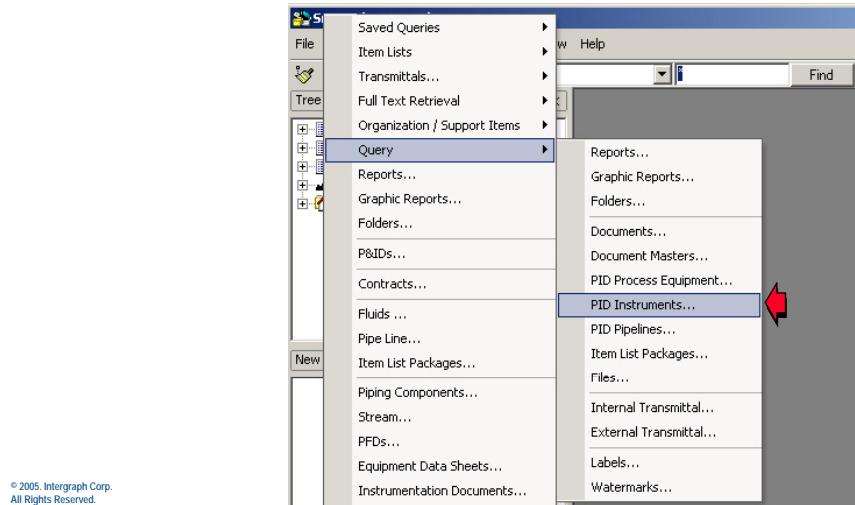
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### 3.1.1 Saved Queries

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.

#### Saved Queries

- Again select the **Find > Query > PID Instruments** command to display the query form.



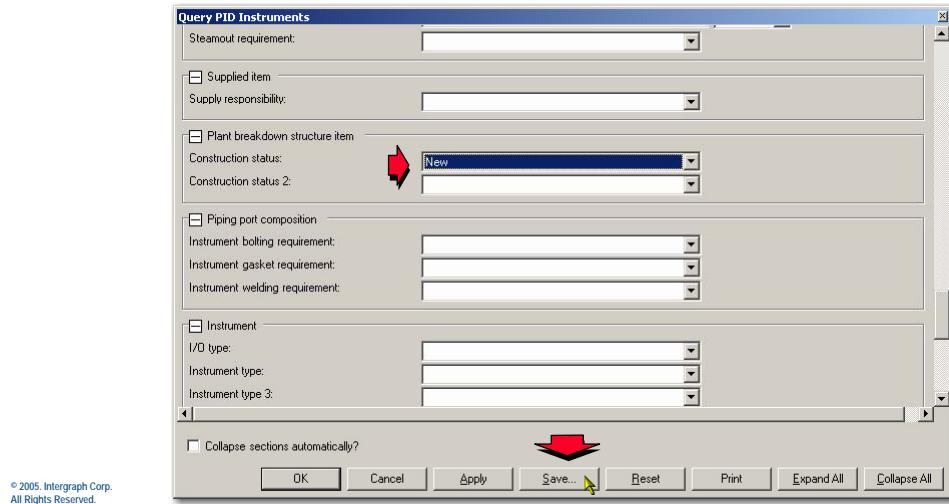
---

This will re-display 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.



## Saved Queries

- Once all of the search criteria have been re-entered, click **Save** to save the query criteria.



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



## Saved Queries

- Enter a required **Name** and an optional **Description**, and click **OK** to save the query criteria.



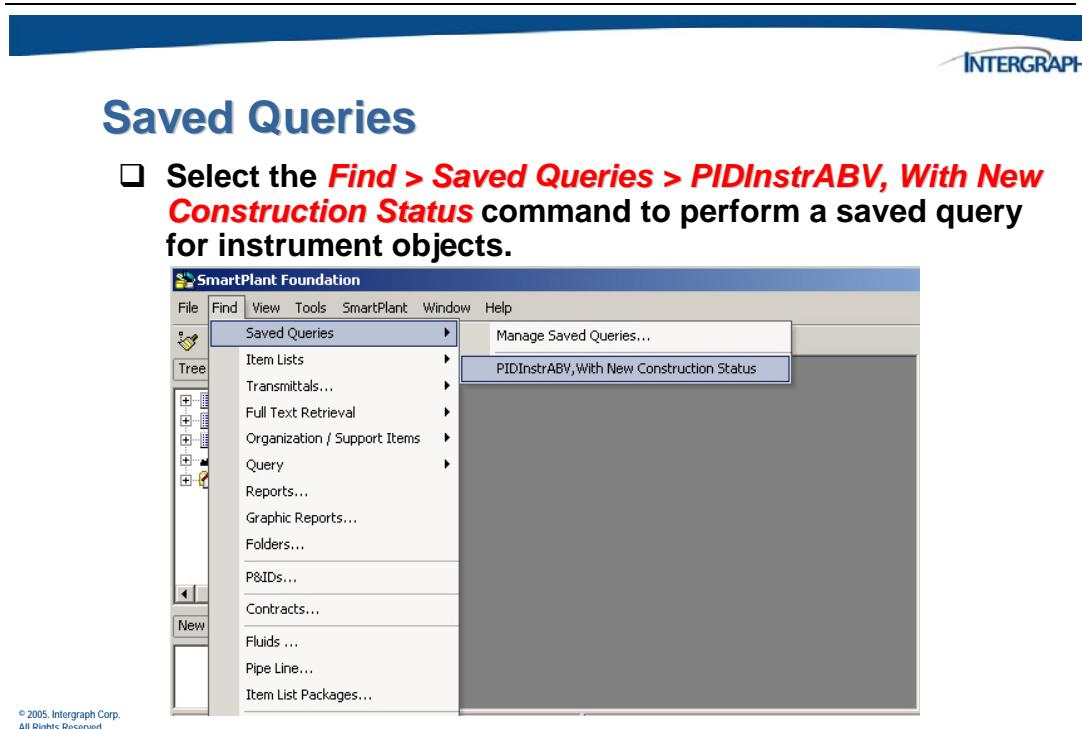
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The following fields are available on the *Save Query* dialog:

- Query name** - Enter a name for the query.
- Description** - Enter a description for the query.

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

The *Saved Query* can be executed from the *Find* menu.



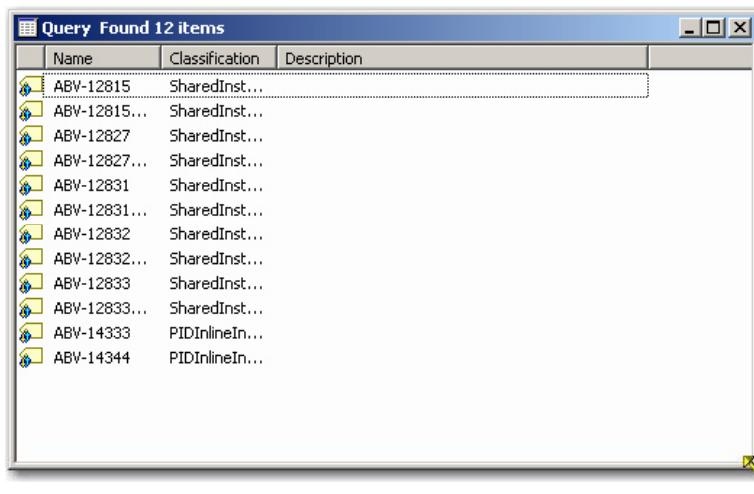
---

The Saved Queries submenu provides a list of all queries saved by the active user.



## Saved Queries

The results of the executed **Saved Query** will appear in a list view window.



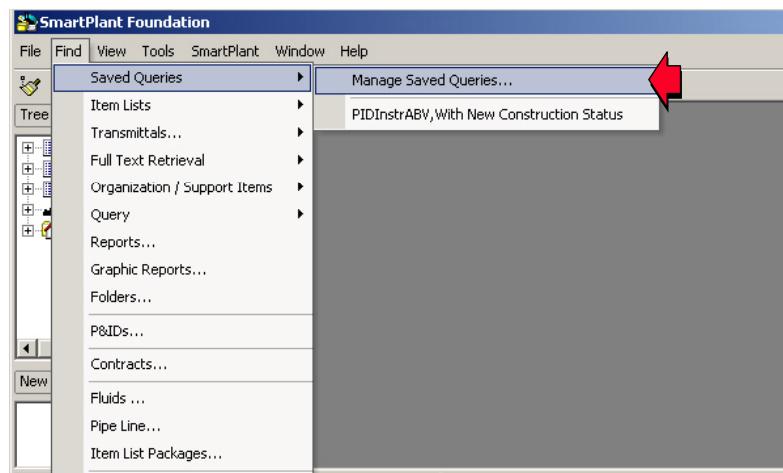
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The **Query > Saved Queries > Manage Saved Queries** command allows you to edit or delete saved queries.



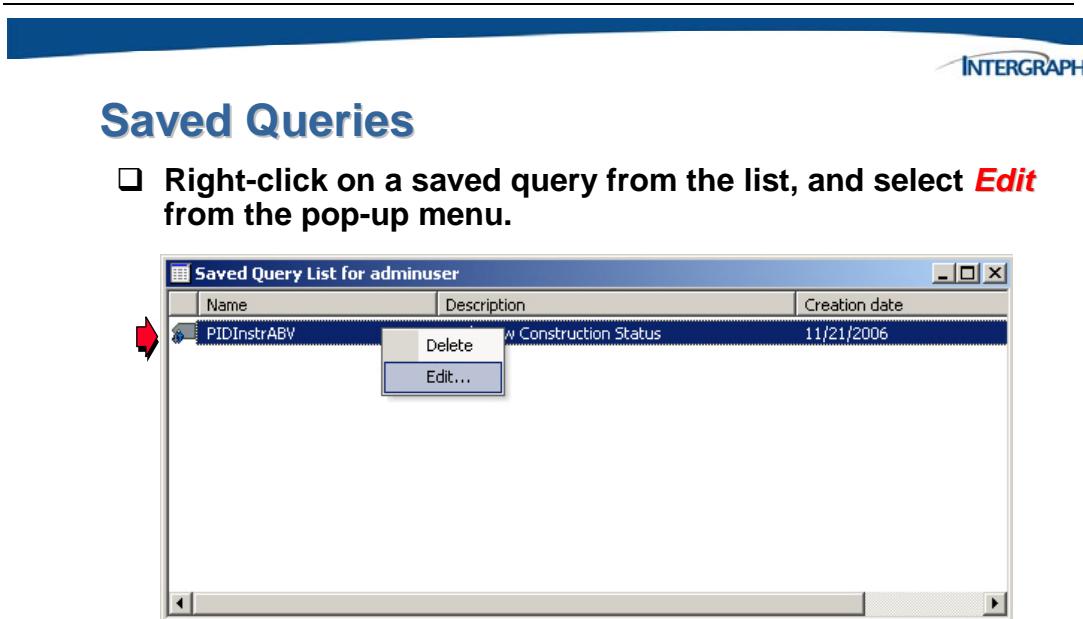
## Saved Queries

- Choose **Find > Saved Queries > Manage Saved Queries** to display a list of saved queries.



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



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### To edit saved queries

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

### To delete a saved query

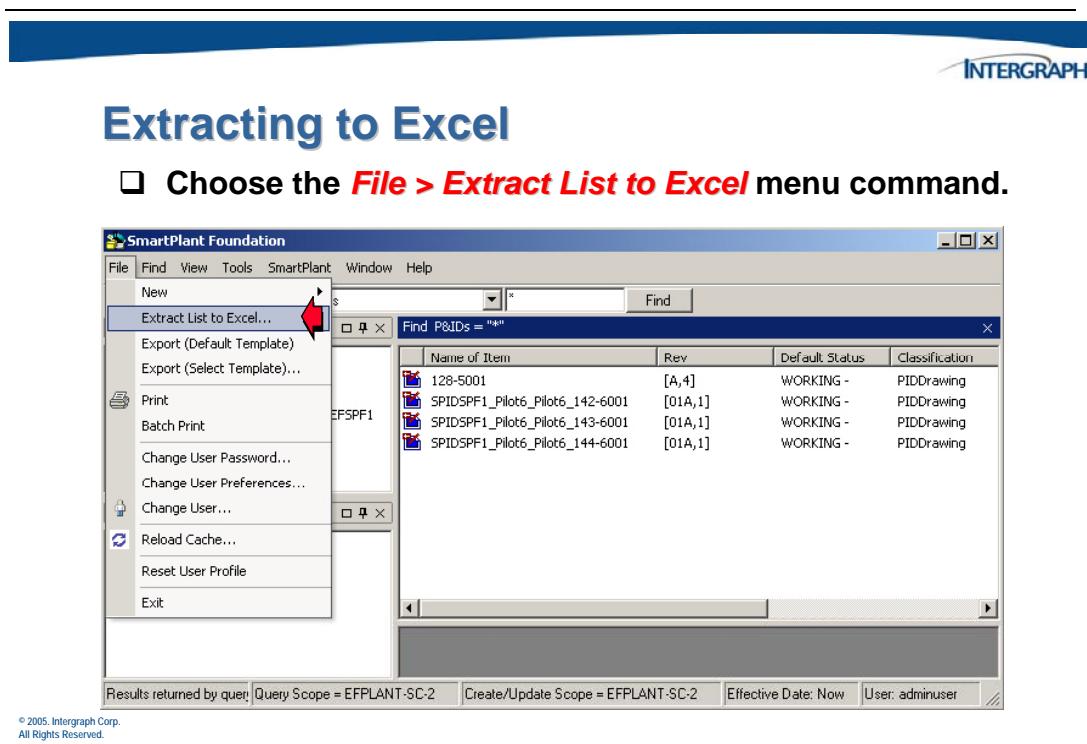
- ❑ Click *Saved Queryies > Manage Saved Queries*.
- ❑ In the *Saved Query List*, right-click the query that you want to delete.
- ❑ Click **Delete**.

## 3.2 Extracting/Exporting to Excel

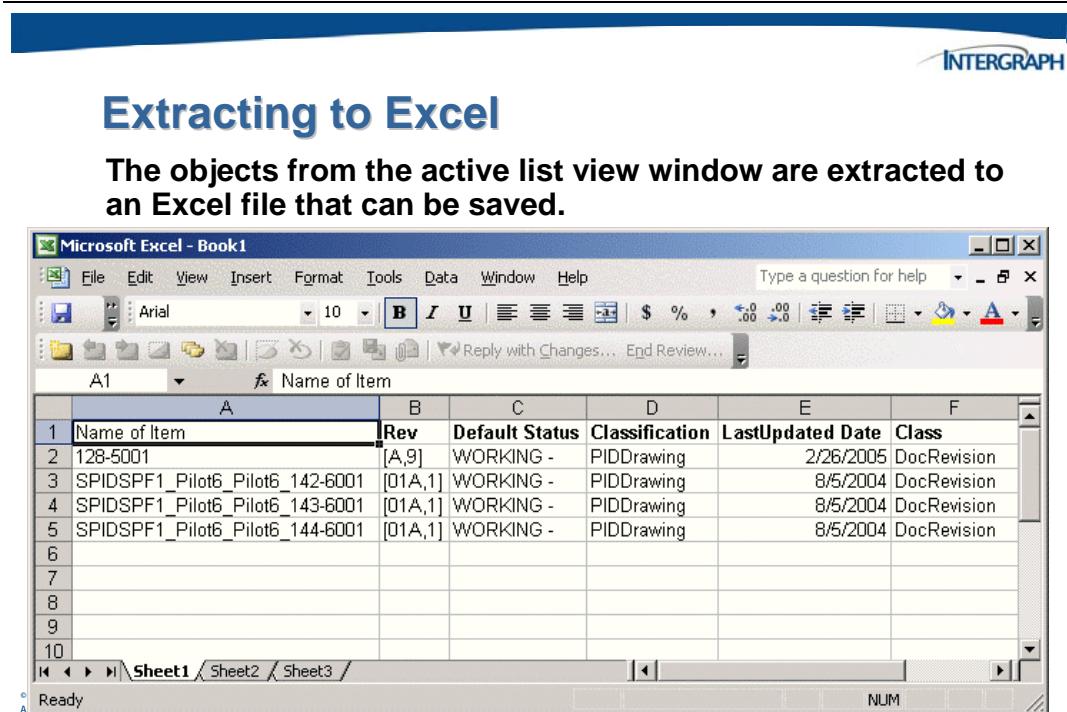
There are several commands available on the Desktop Client *File* menu to allow you to export the contents of a list view window to an excel file. You must have Microsoft Excel installed on the client computer to use these commands.

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.



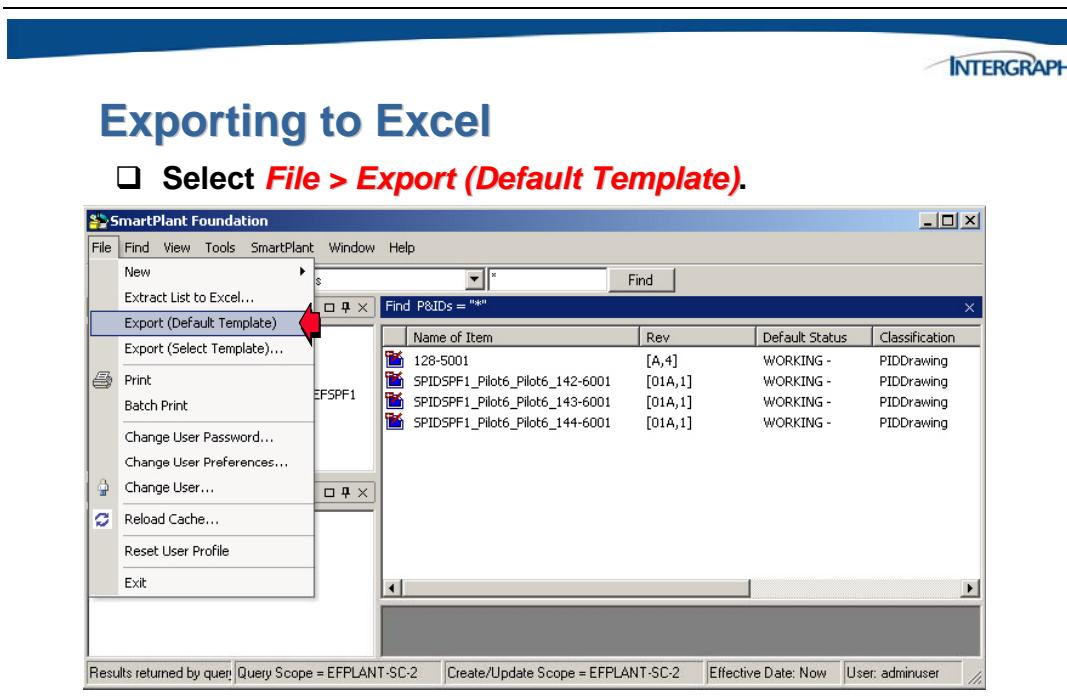
**Extracting to Excel**

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

The screenshot shows a Microsoft Excel window titled "Microsoft Excel - Book1". The spreadsheet contains a table with the following data:

	A	B	C	D	E	F
1	Name of Item	Rev	Default Status	Classification	LastUpdated Date	Class
2	128-5001	[A,9]	WORKING -	PIDDrawing	2/26/2005	DocRevision
3	SPIDSPF1_Pilot6_Pilot6_142-6001	[01A,1]	WORKING -	PIDDrawing	8/5/2004	DocRevision
4	SPIDSPF1_Pilot6_Pilot6_143-6001	[01A,1]	WORKING -	PIDDrawing	8/5/2004	DocRevision
5	SPIDSPF1_Pilot6_Pilot6_144-6001	[01A,1]	WORKING -	PIDDrawing	8/5/2004	DocRevision
6						
7						
8						
9						
10						

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



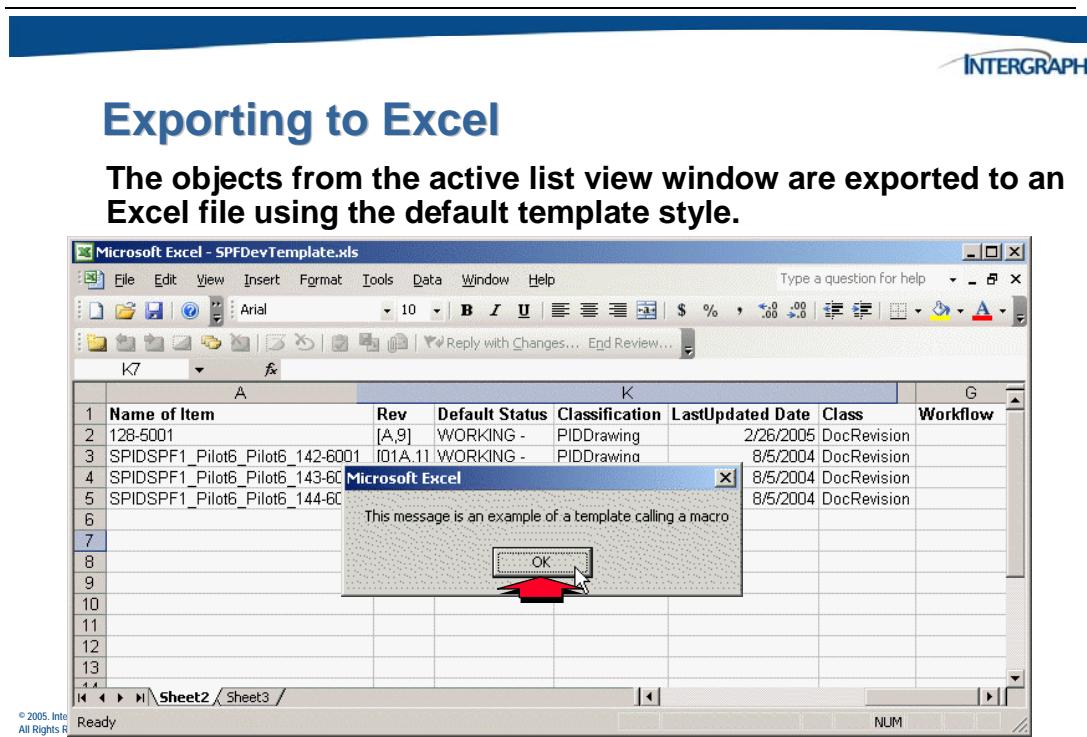
**Exporting to Excel**

Select **File > Export (Default Template)**.

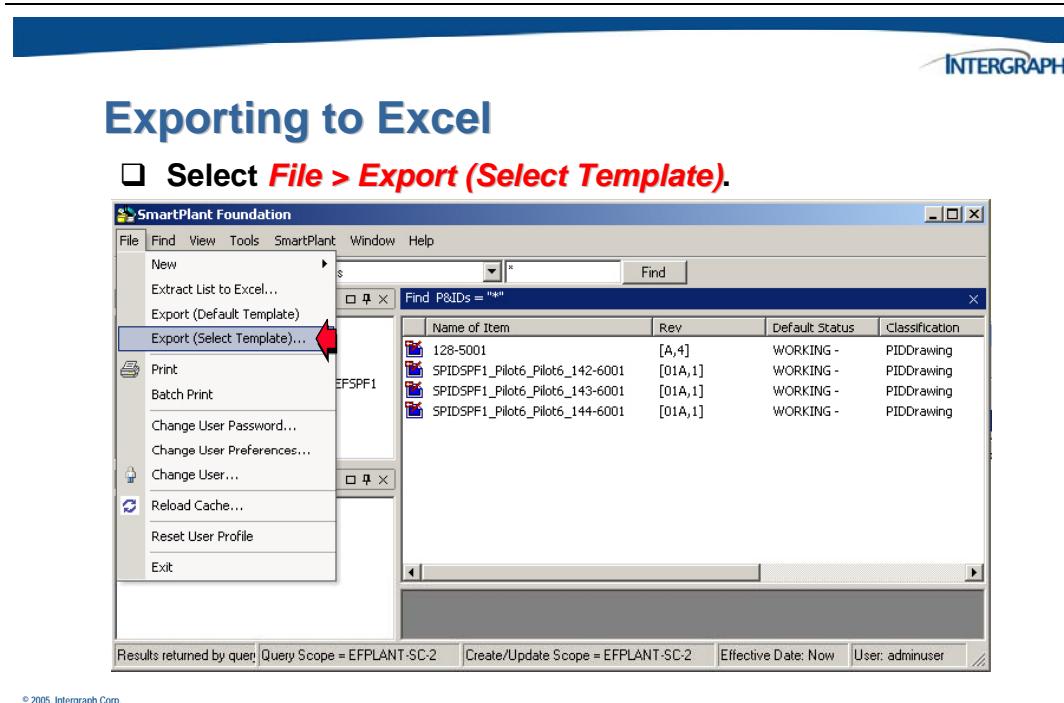
The screenshot shows the SmartPlant Foundation application window with the "File" menu open. The "Export (Default Template)" option is highlighted with a red arrow. To the right of the menu, there is a list view window showing the same data as the Excel screenshot above. The list view includes columns for Name of Item, Rev, Default Status, and Classification. The data is identical to the Excel table.

Before using the export command, display in a list view the items for which you want to export data. You can use a query to find the items that you want to export. Click the list view that contains your items to make it the active view.

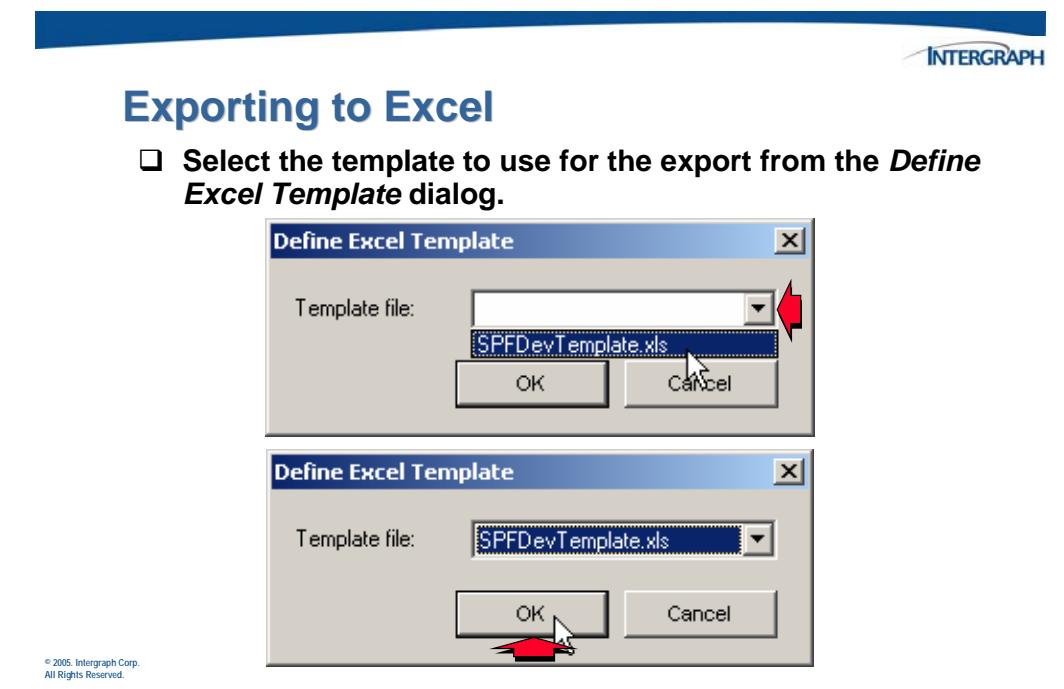
The items you have selected appear in Microsoft Excel.



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 (Selected Template)***.



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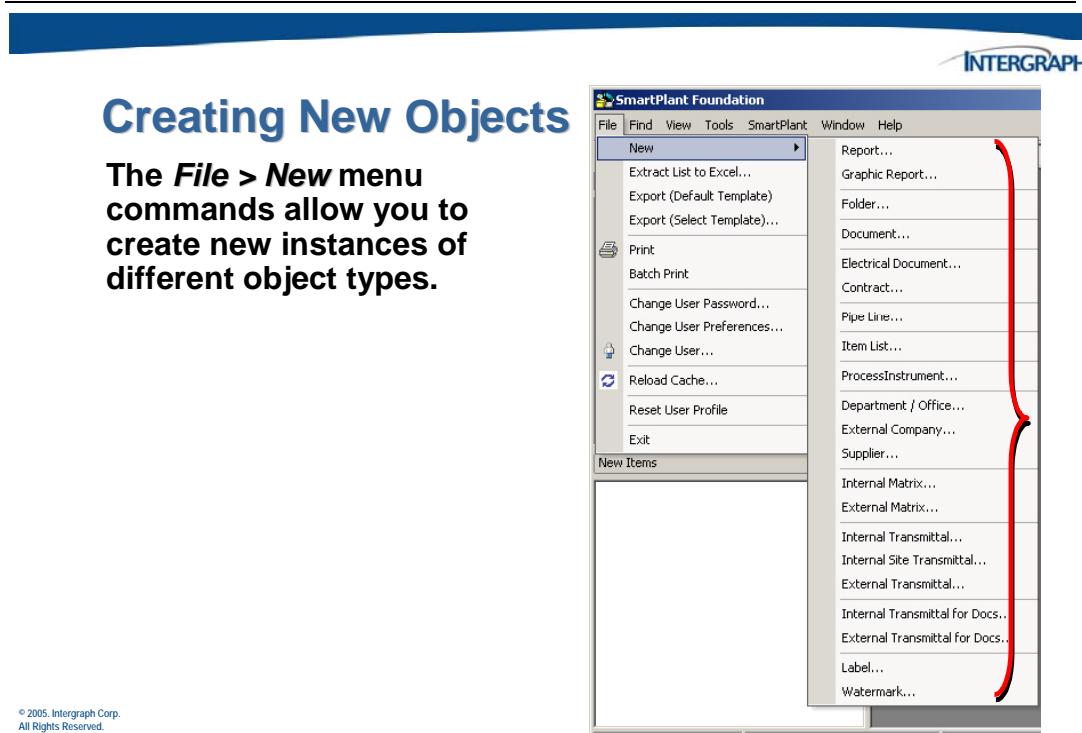


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## 3.3 Creating New Objects

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

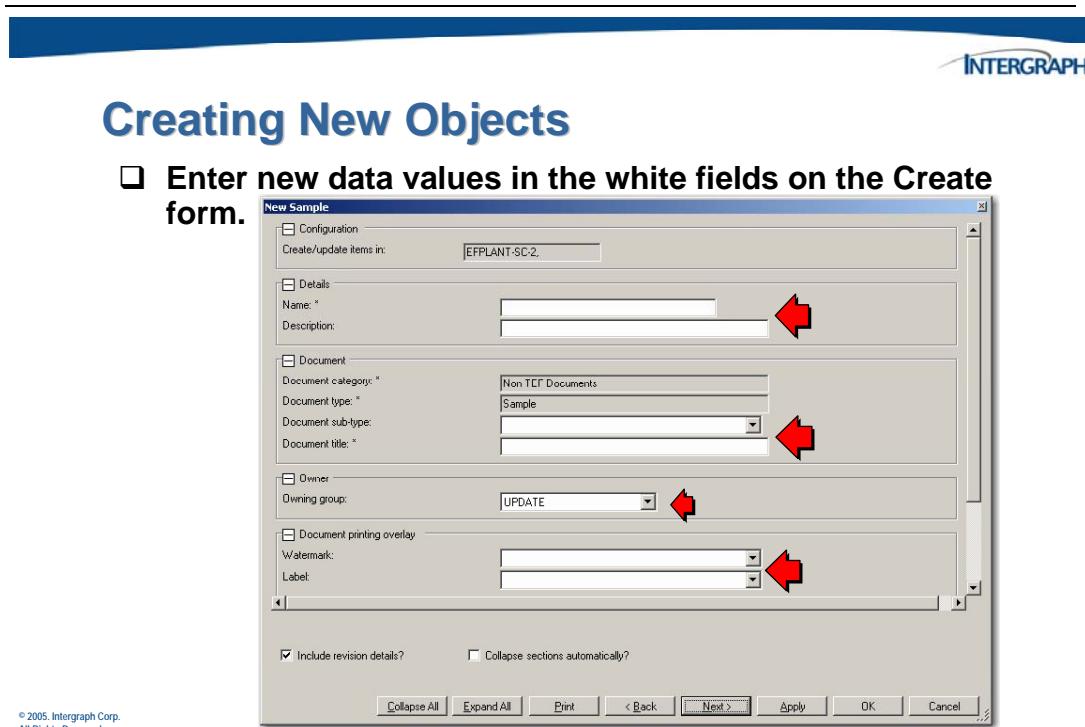
You can create some types of objects, like tags and documents, using the *Create wizard*. You can access the Create wizard for the objects that have one by clicking **File > New** and clicking the type of object that you want to create.



The commands available on the **File > New** submenu vary depending on your model, 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 > 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.



The *Create* dialog box contains the following minimum 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.

### Configuration

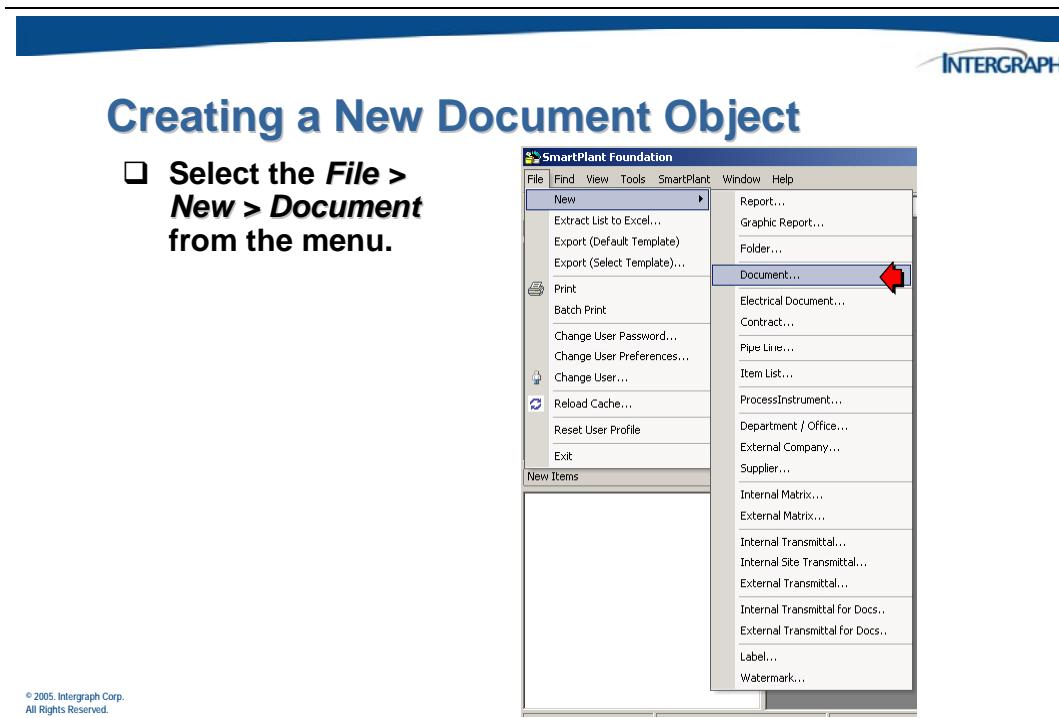
- Create/update items in** – Displays the scope within which the object is being created. This field is display-only and cannot be edited from this screen. To create the new object in a different configuration, you must cancel the Create operation and change your Create/Update Scope.

### Details

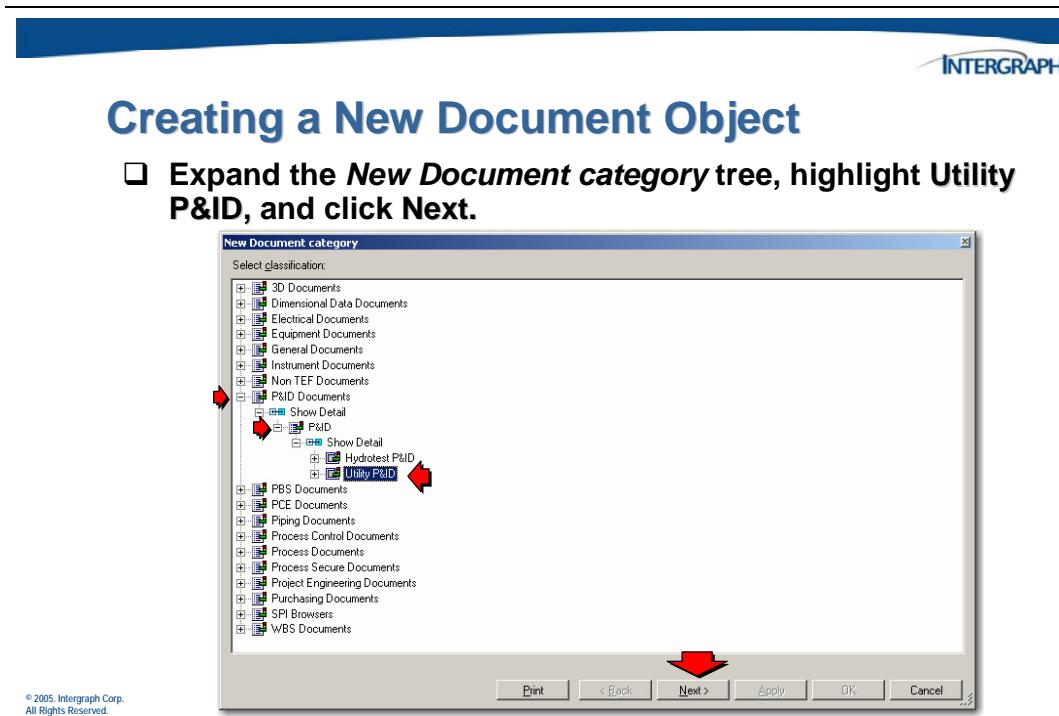
- Name** – Provide a name for the object.
- Description** – Provide a brief description of the object.

In the SmartPlant model, most objects are created when a document is **published**.

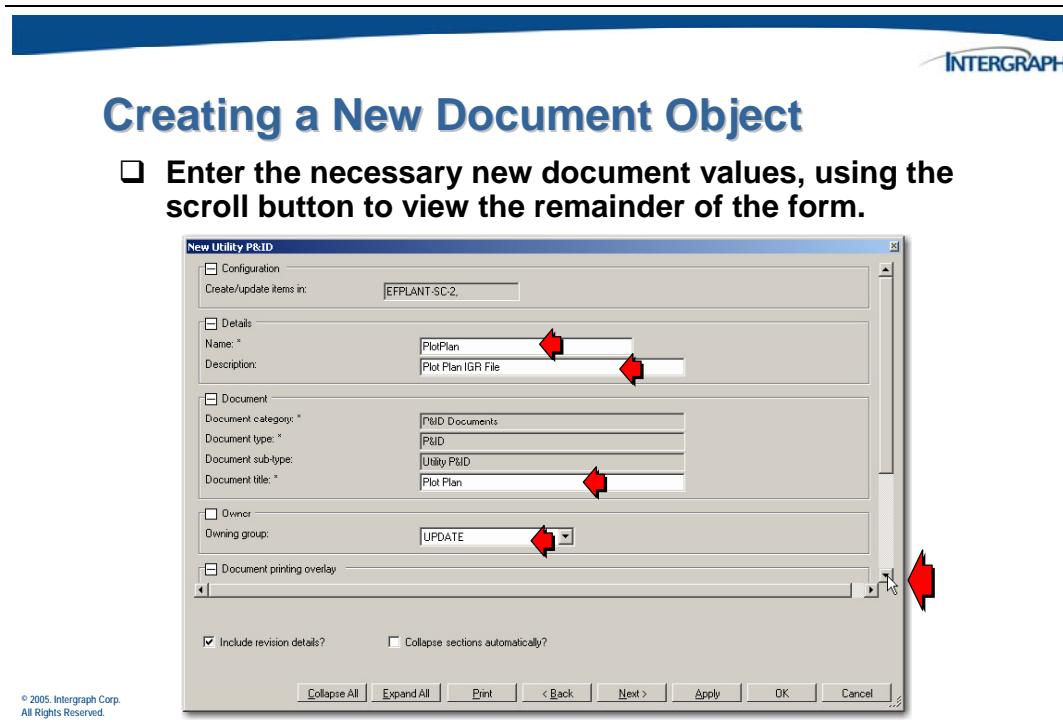
The following example demonstrates how to create a new object using the create wizard. For example, to create a new document, click **File > New > Document**.



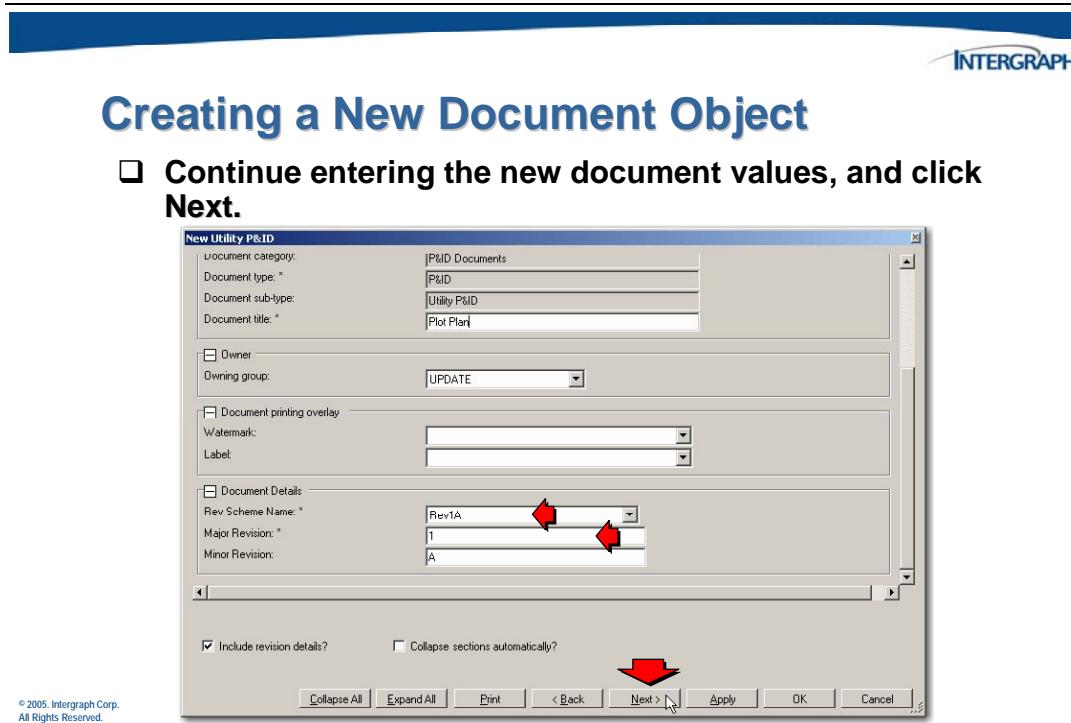
In the tree view, click the classification for the new object. For example, to create a Utility P&ID, click *P&ID Documents > P&ID > Utility P&ID* in the tree view.



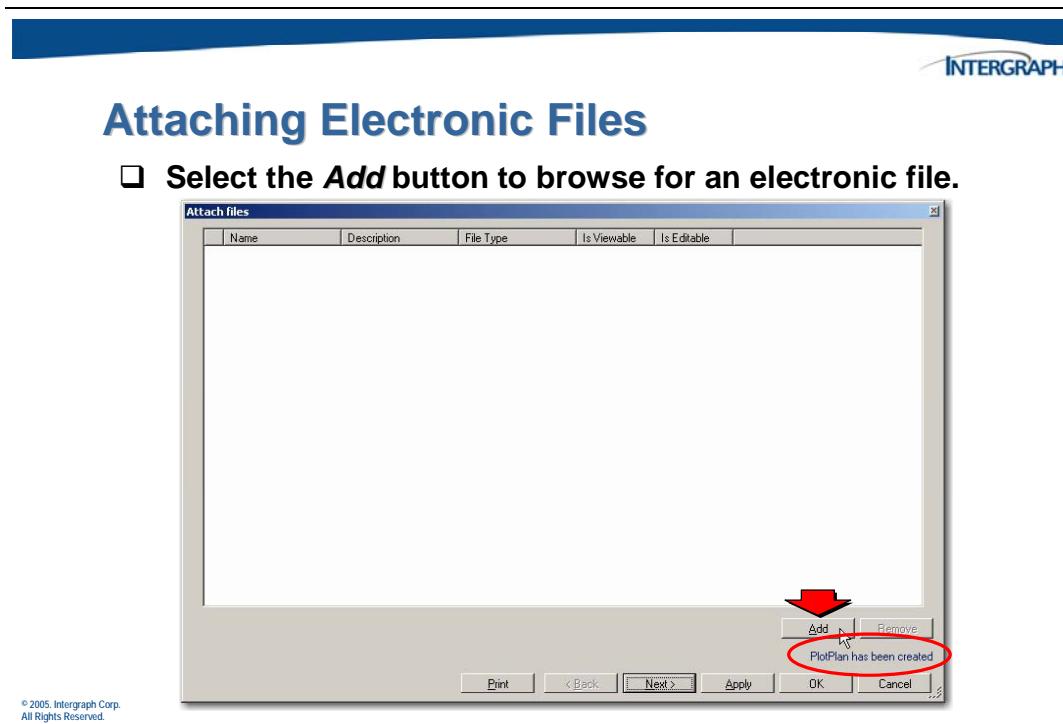
Define details for the new object, such as the name, description, owning group, and revision information for the document.



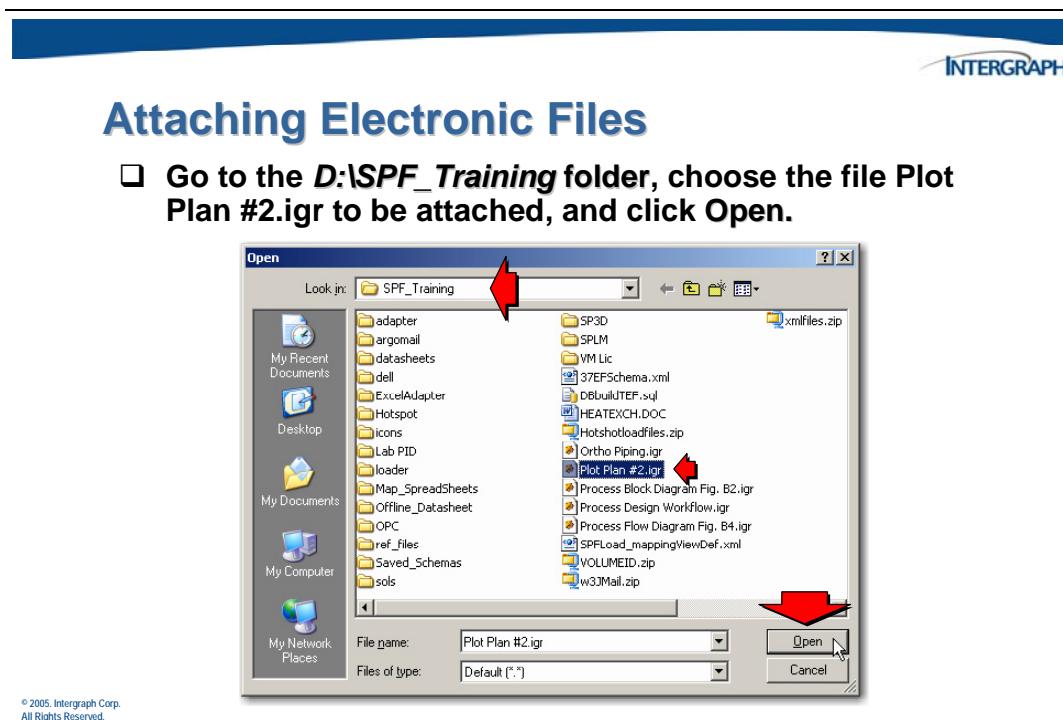
Remember, fields followed by an asterisk (\*) are required to create the selected object.



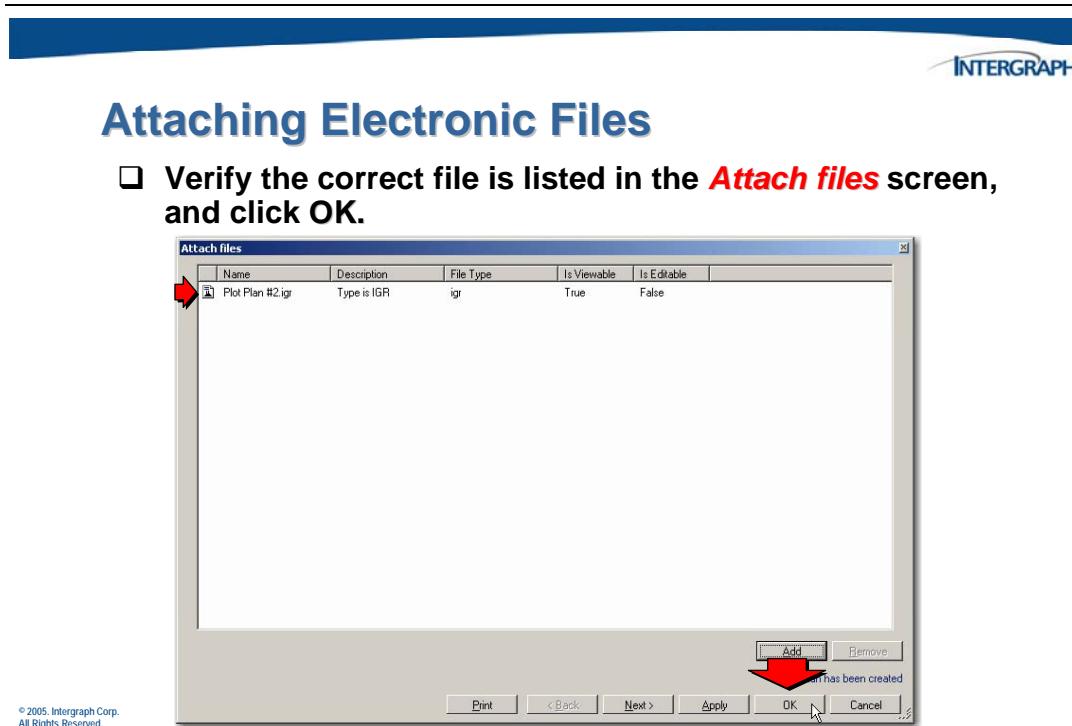
The *Attach files* dialog will appear allowing you to attach a file to this new document. This procedure can be performed now or at a later time.



Use the folder browser to locate the file that will be attached to the new document. The file can reside in any folder on the client.

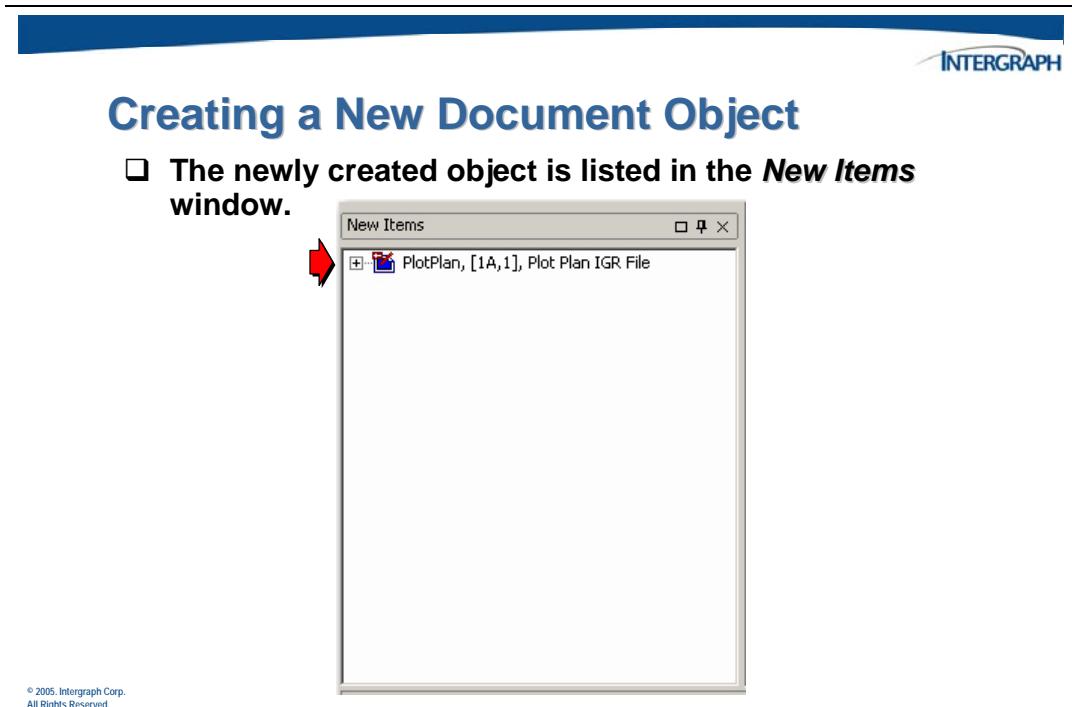


The selected file will be displayed in the *Attach files* window.

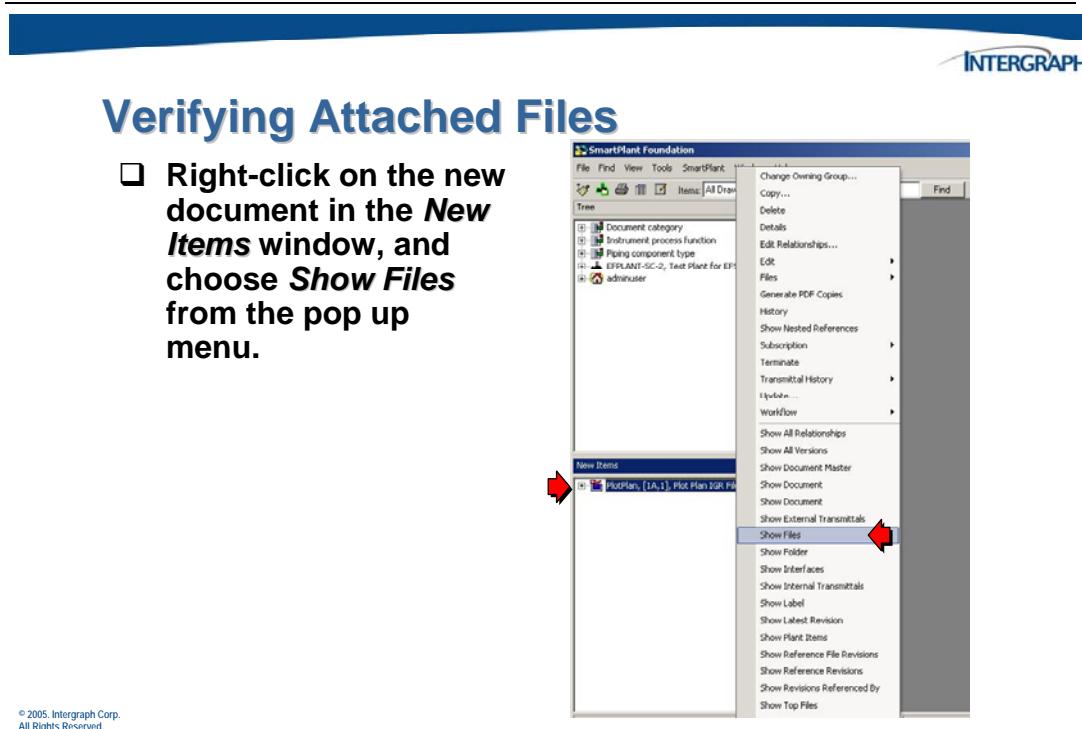


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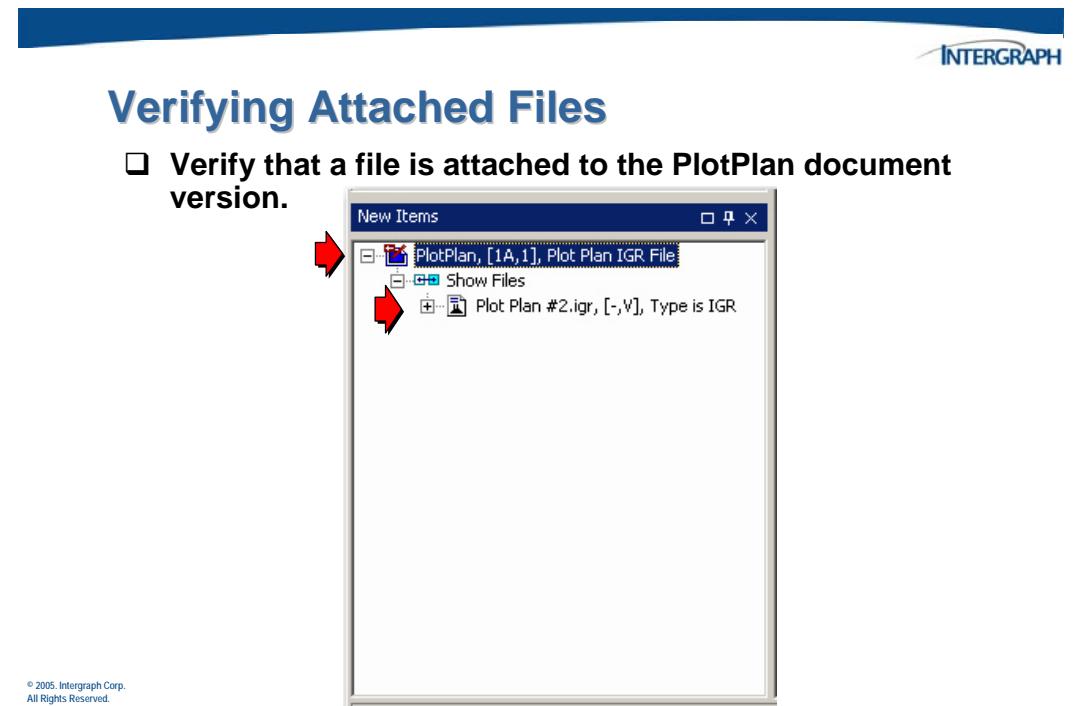
For objects with additional details or actions, click **Next**. For example, the next dialog box in the wizard might allow you to submit a document to a workflow.



Verify that the file was attached to the new document.



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.

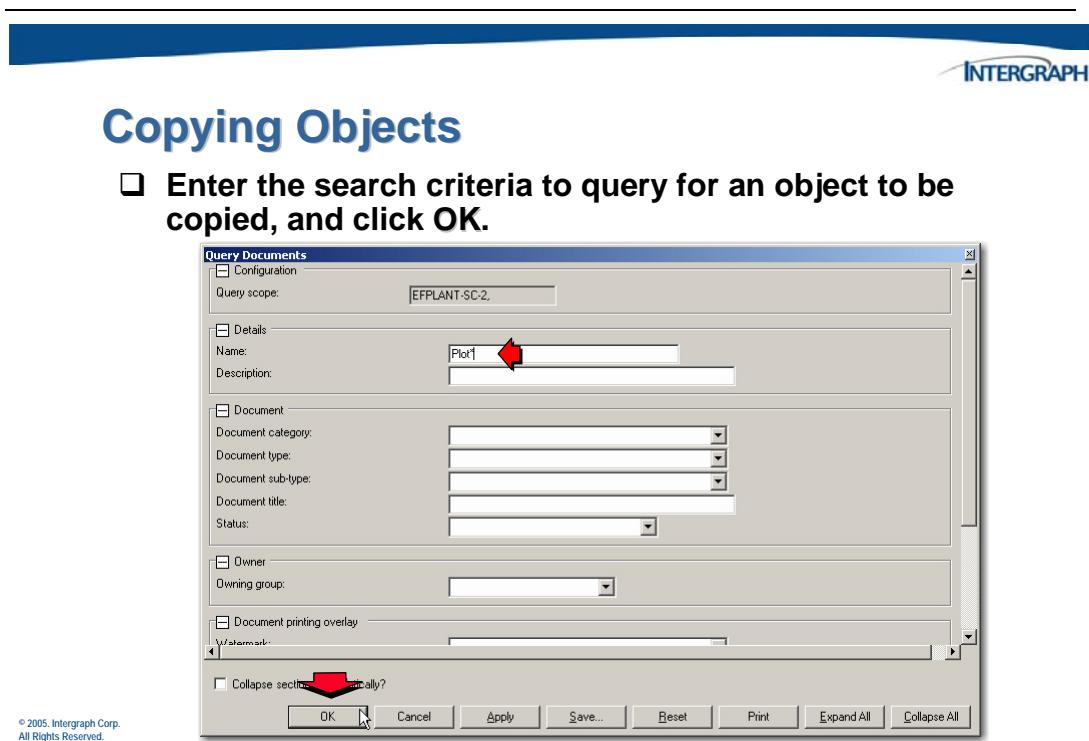
Object manipulations can also include the interactive creation and editing of relationships.

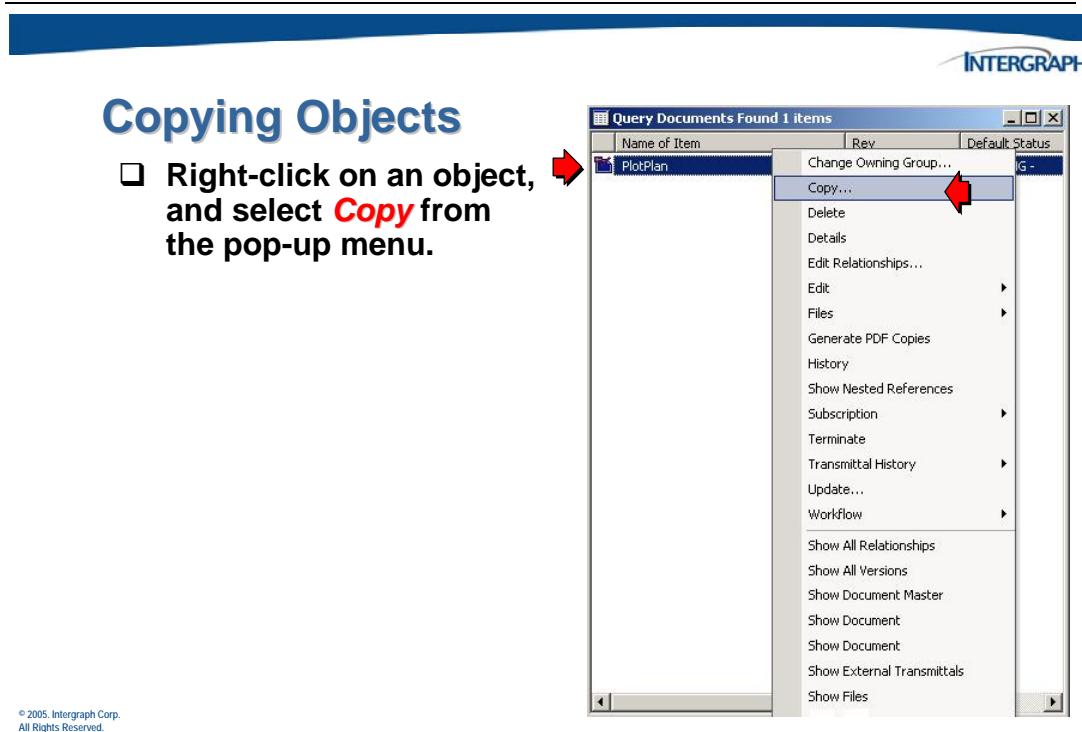
### 3.4.1 Copying an Object

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.

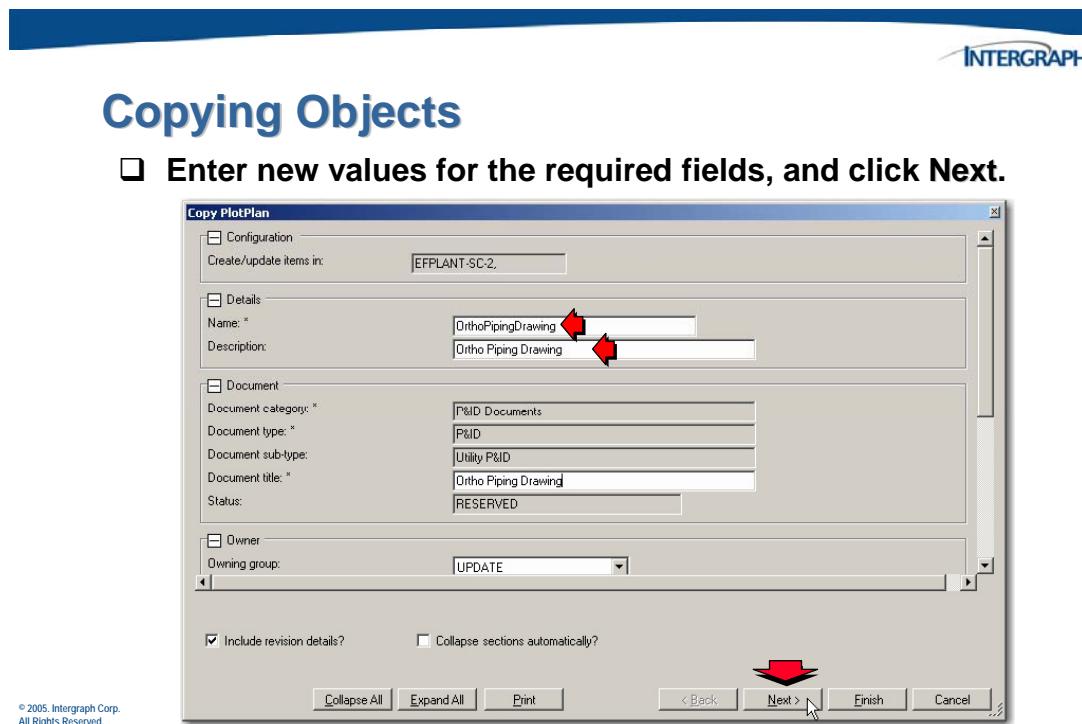
In both the Schema Object and Development models, the copy command can be used to create a new sheet by simply changing the number at the end of the document name. Once you have created the new copy, you can update attributes, add files, or modify the copy in any way necessary.

Perform a find or query to locate the object that will be copied.

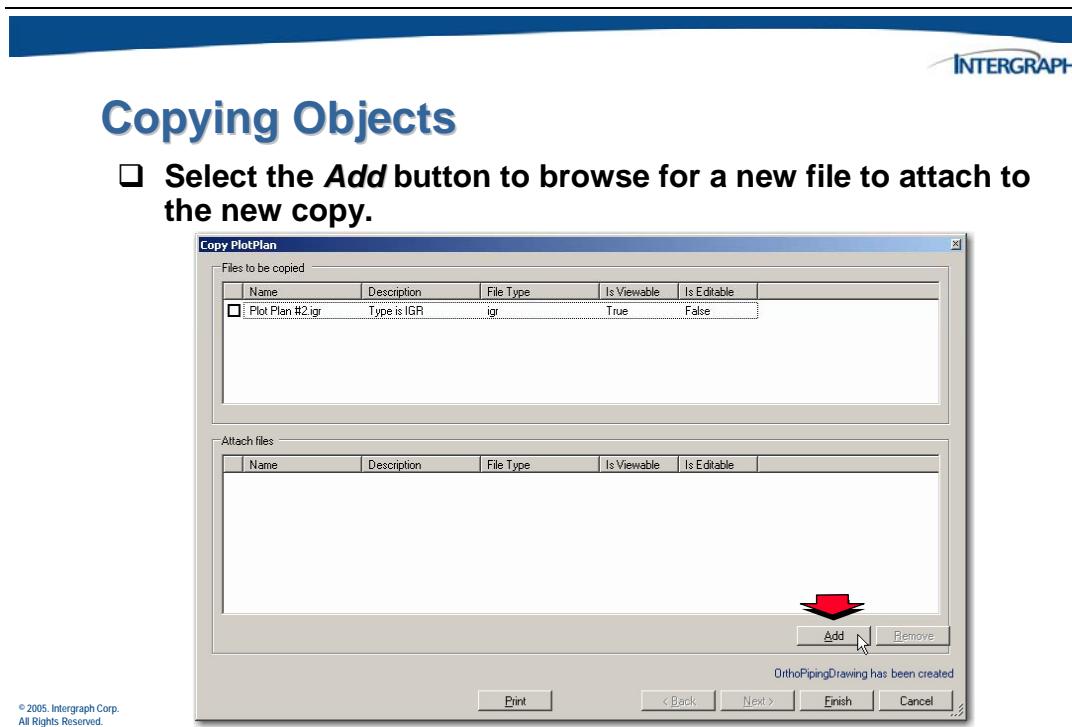
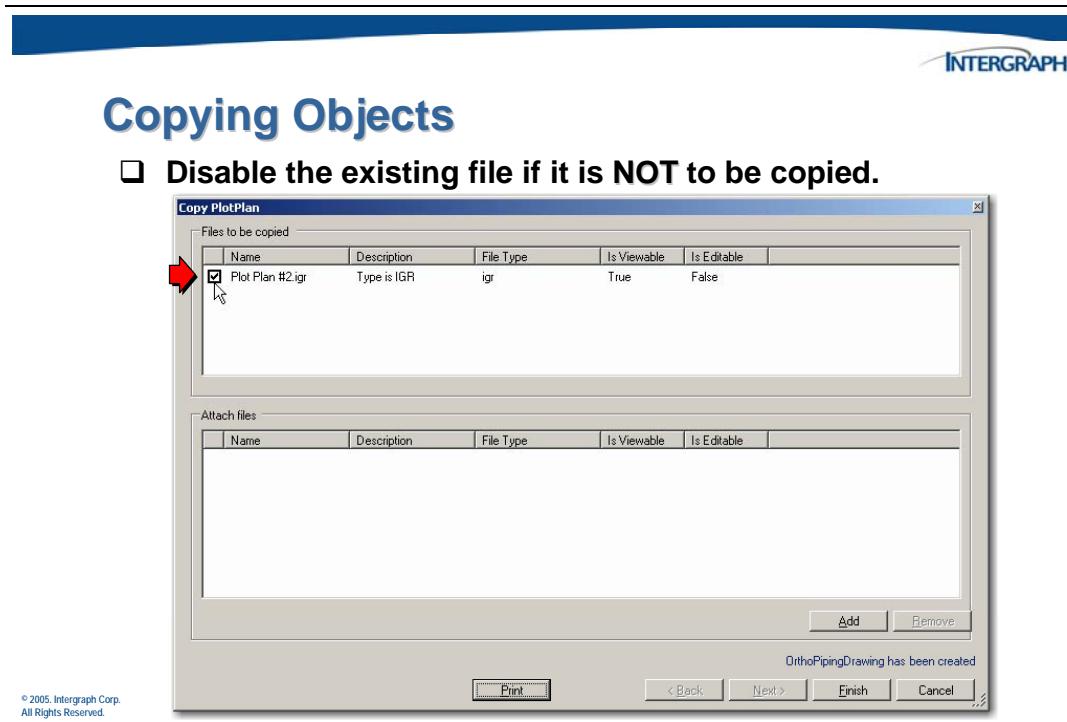




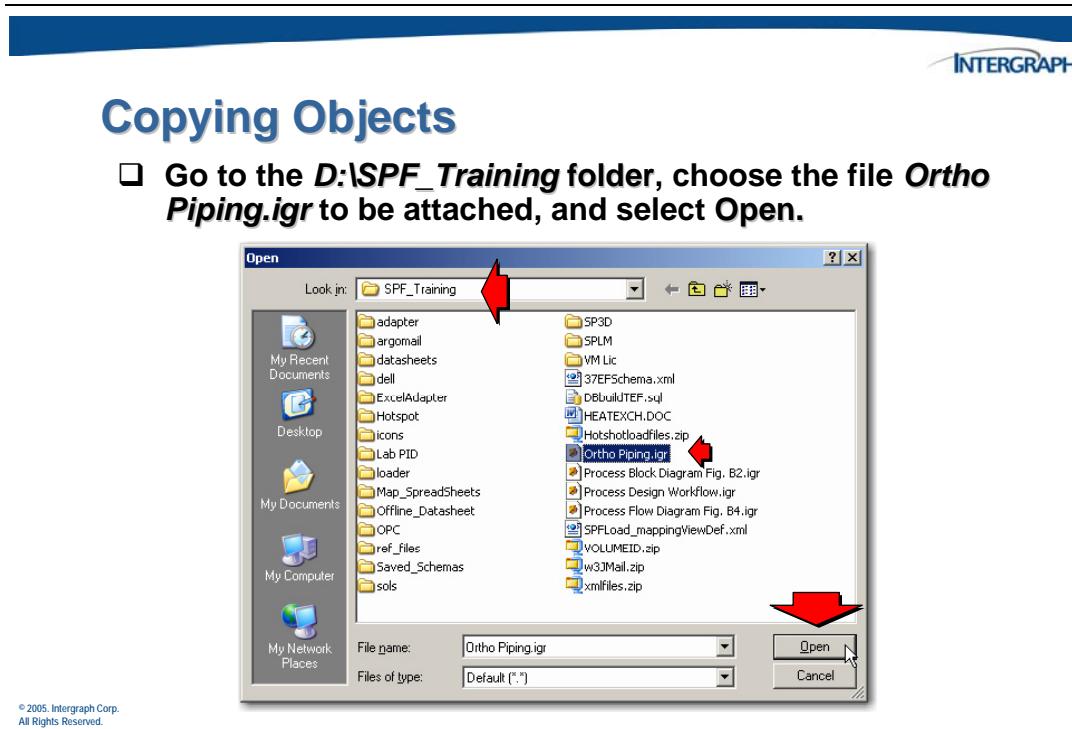
In the *Copy* dialog box, make changes to the attributes for the object you copied.



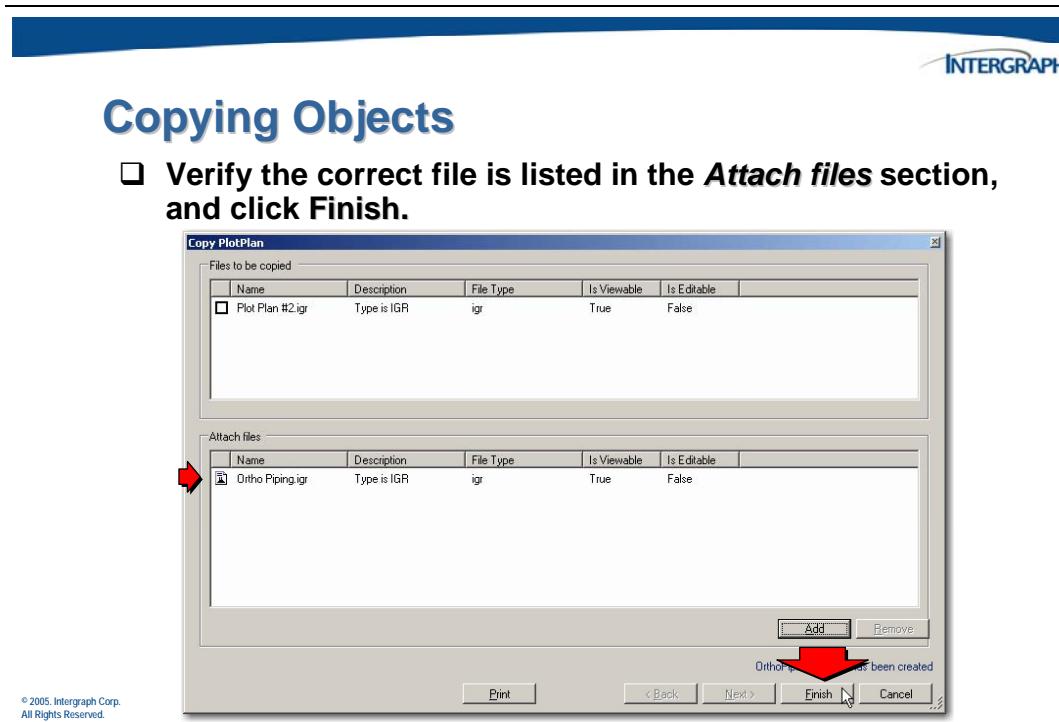
You have the option to make a copy of the currently attached file, or attach a completely new file to the new object.



Use the folder browser to locate the file that will be attached to the copied document.

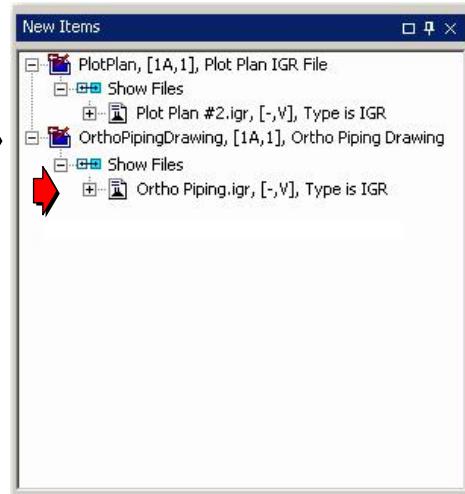


The selected file will be displayed in the bottom half of the *Copy* window.



## Copying Objects

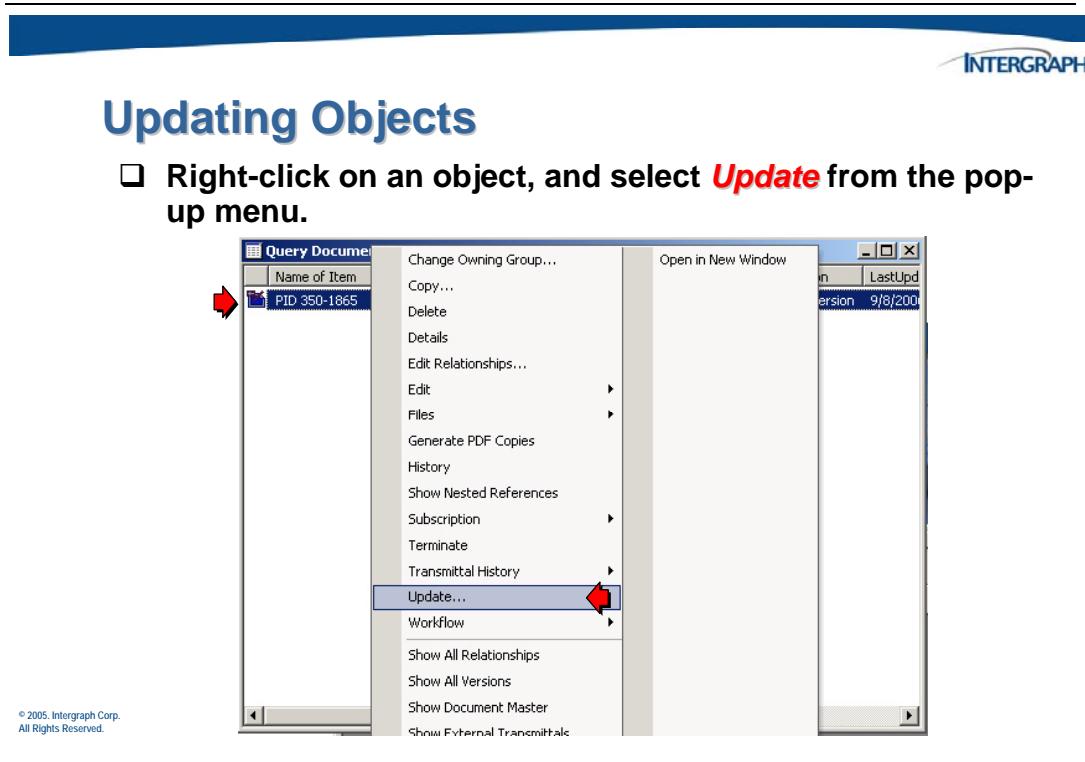
- The new object is listed in the **New Items** window.



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### 3.4.2 Updating Objects

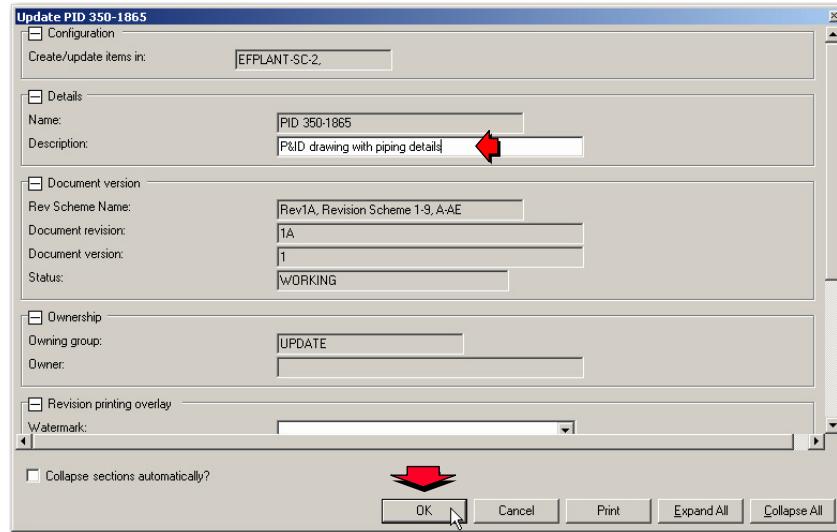
The **Update** command allows you to update the attributes for the selected object. This command is available when you right-click an object in the tree view.





## Updating Objects

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



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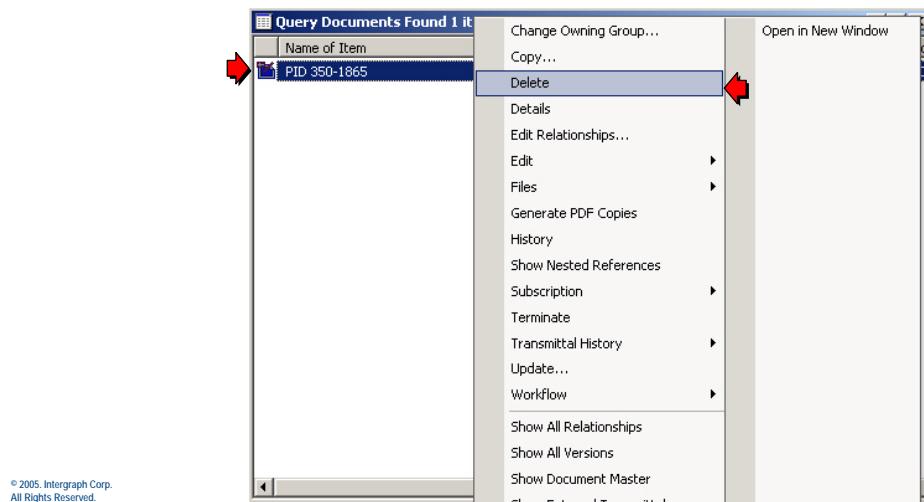
### 3.4.3 Deleting Objects

The **Delete** command allows you to delete the selected object. This command is available when you right-click an object in the tree view. 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.



#### Deleting Objects

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



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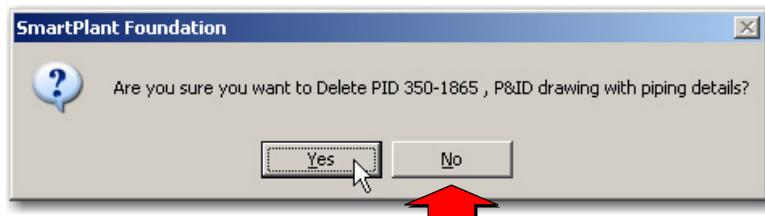
Deleting an object will remove its information from the SmartPlant Foundation database as if it never existed.

A delete confirmation dialog will appear.



## Deleting Objects

- Click Yes to confirm the deletion of the object.



### 3.4.4 Object Termination

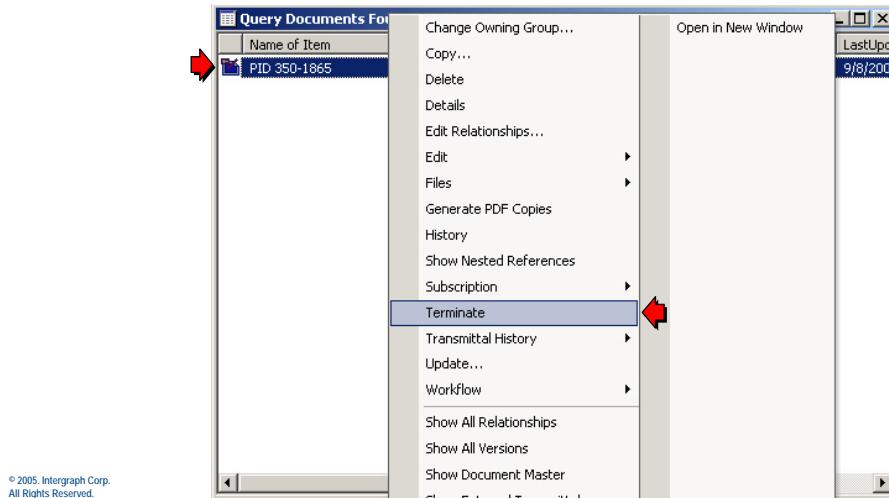
The **Terminate** command allows you to terminate the selected object. This command is available when you right-click an object in the tree view.

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*.



#### Terminating Objects

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

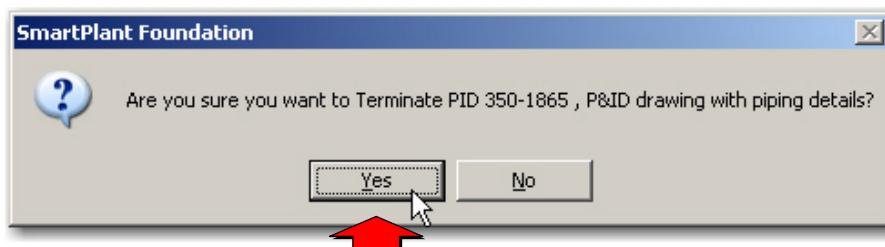


A termination confirmation dialog will appear.



## Terminating Objects

- Click Yes to confirm the termination of the object.



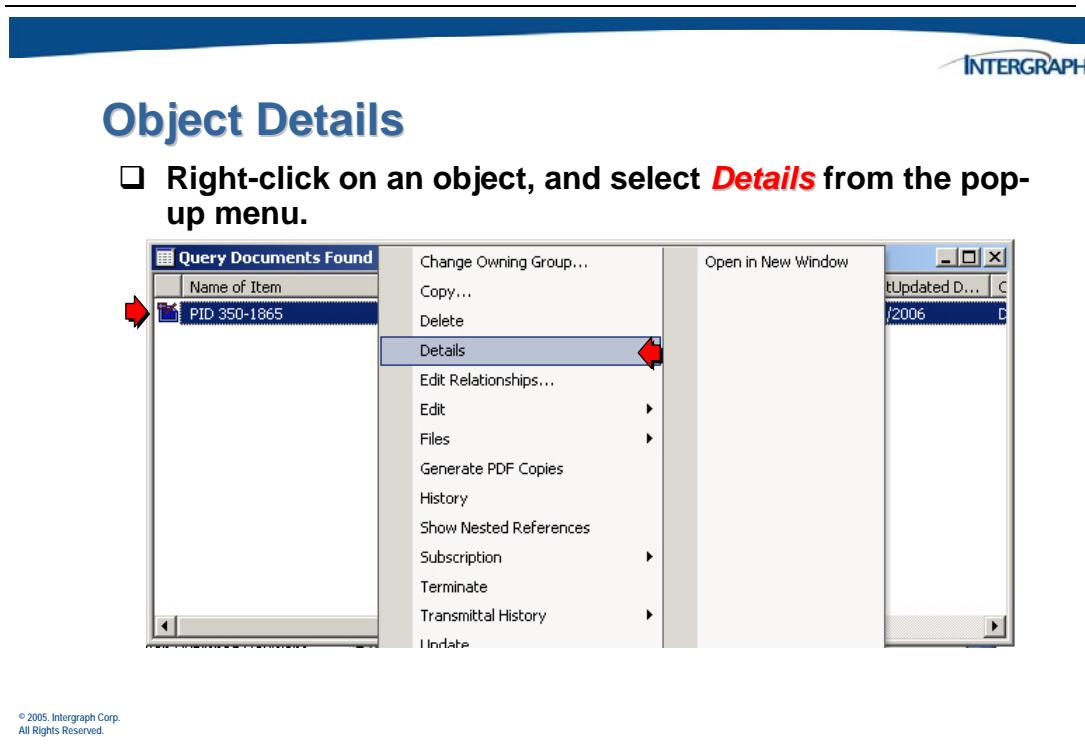
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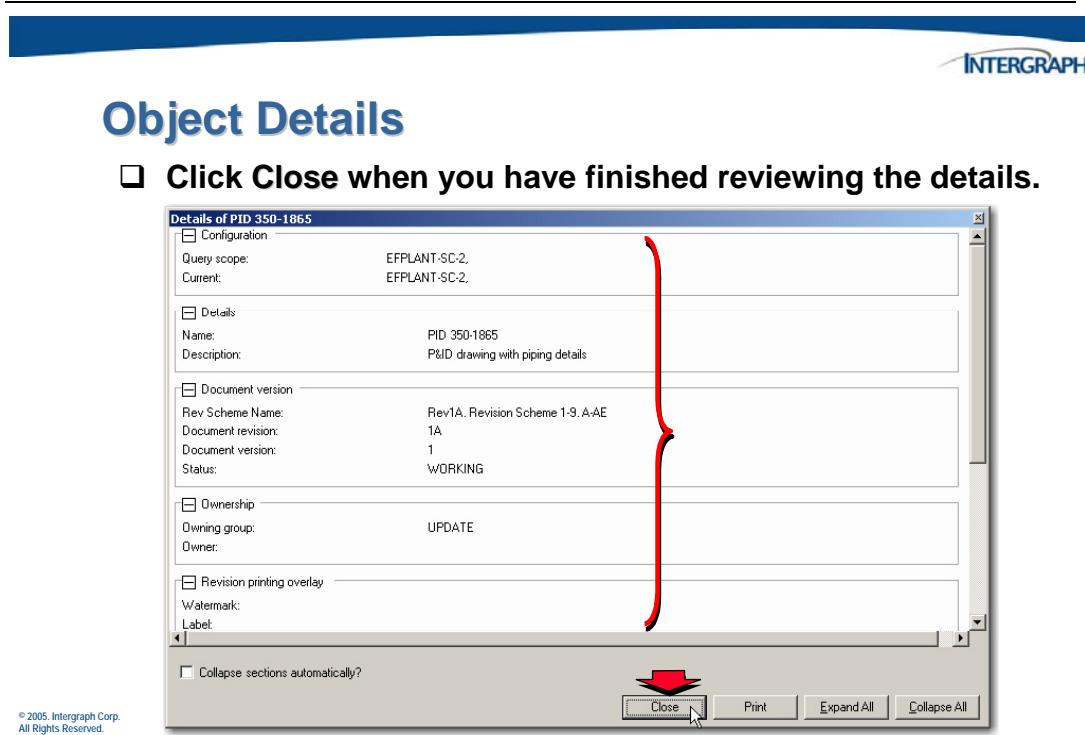
Even though the terminated object disappears from the window, and it will not be returned by finds or queries run on the current database, it will remain in the SPF database, and you can view it again by setting the effective date to a time before the termination command was issued.

### 3.4.5 Object Details

The **Details** command allows you to view the properties of the selected object. This command is available when you right-click an object in the tree view.



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



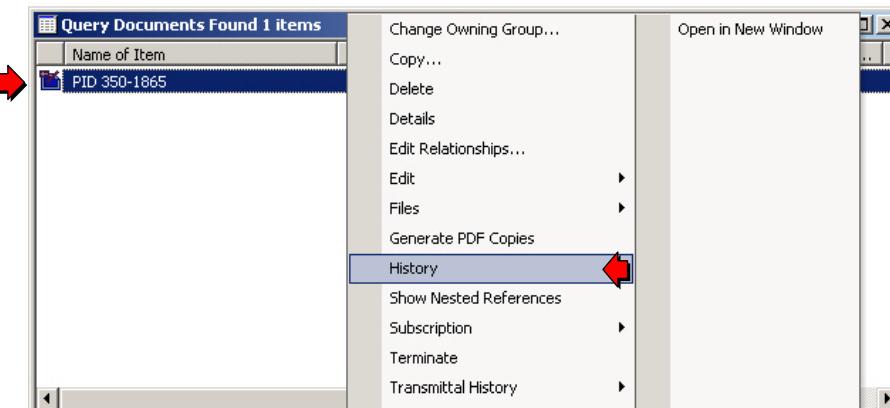
### 3.4.6 Object History

The **History** command allows you to view the update history of the selected object. This command is available when you right-click an object in the tree view.

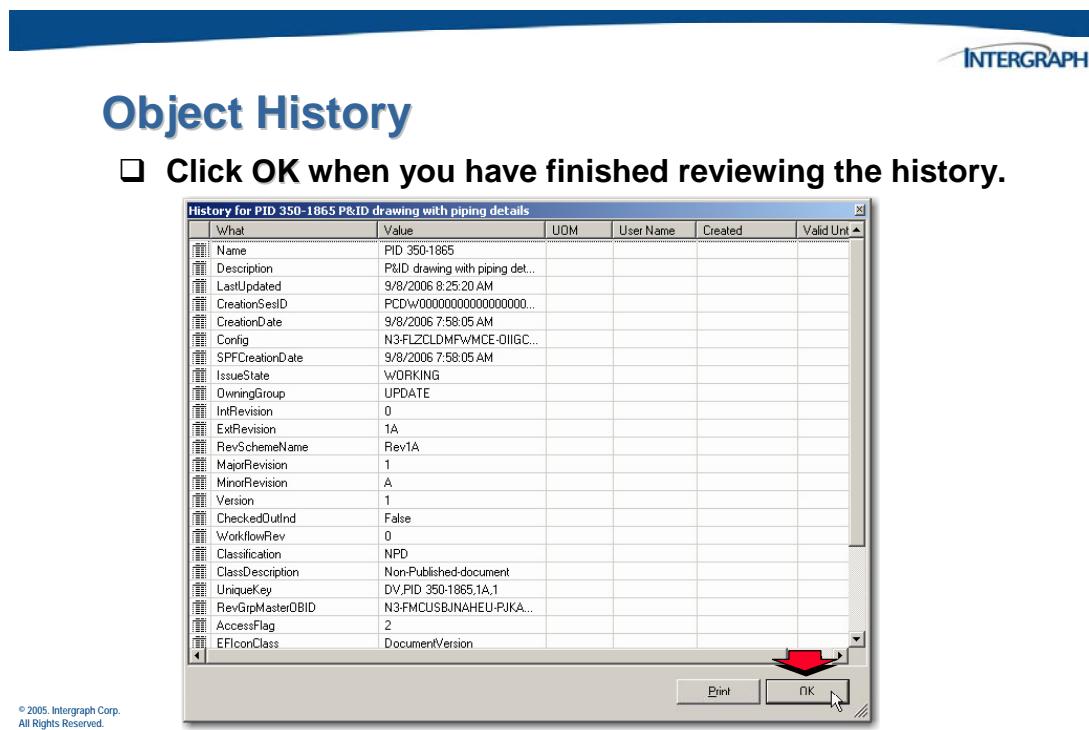


#### Object History

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



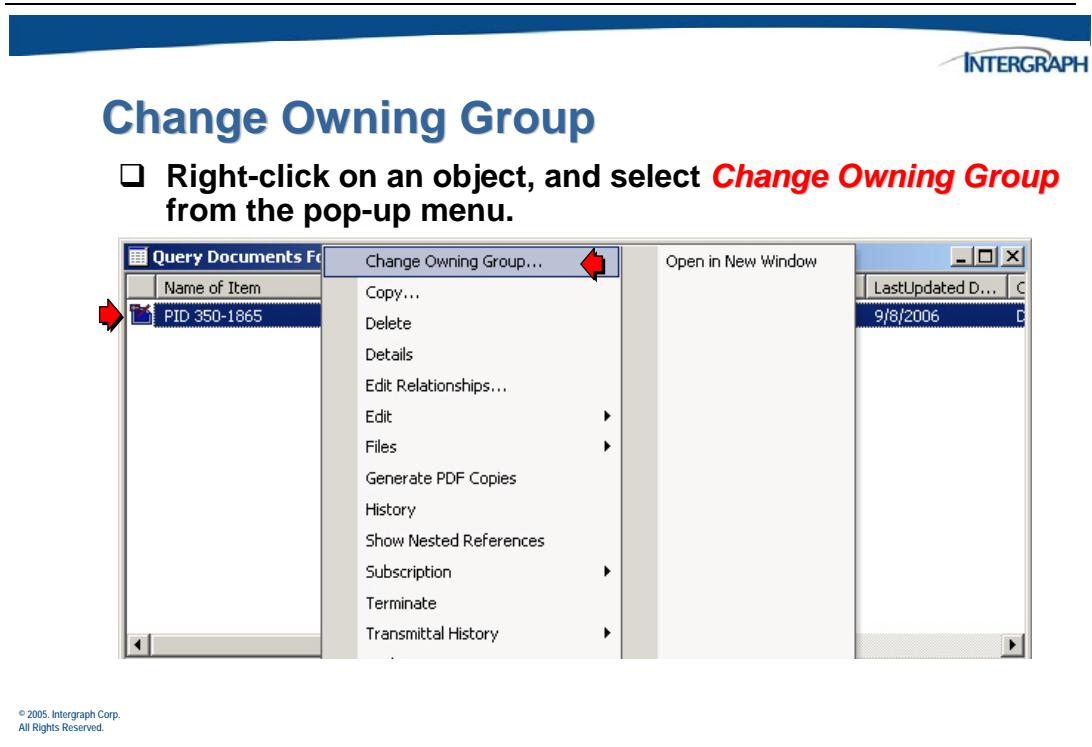
An object *History* window will appear with a list of properties and their values.



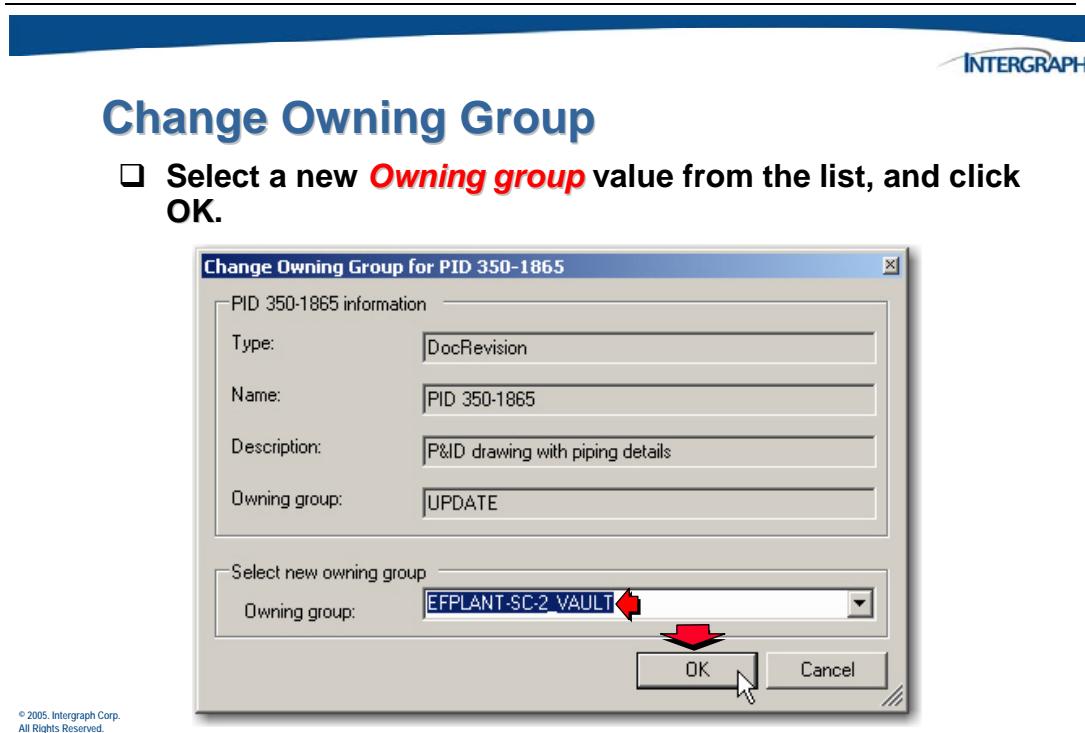
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### 3.4.7 Change Owning Group

The **Change Owning Group** command allows you to change the owning group to which the selected object belongs. This command is available when you right-click objects in the tree view.



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** – Displays the current owning group for the item. This field is for display only.
- ❑ **Select new 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.

## 3.5 Creating and Showing Relationships

In the Desktop Client, you can create relationships between objects using two different methods. If there is a Create wizard that supports relationship definition, you can create relationships between objects while creating the object. For example, when you define a unit, you may also be able to select the area to which that unit belongs when you create the unit. Selecting the area when you create the unit automatically creates a relationship between the unit and the area when you create the new unit. The tasks that are supported by the create wizard are defined in System Administration.

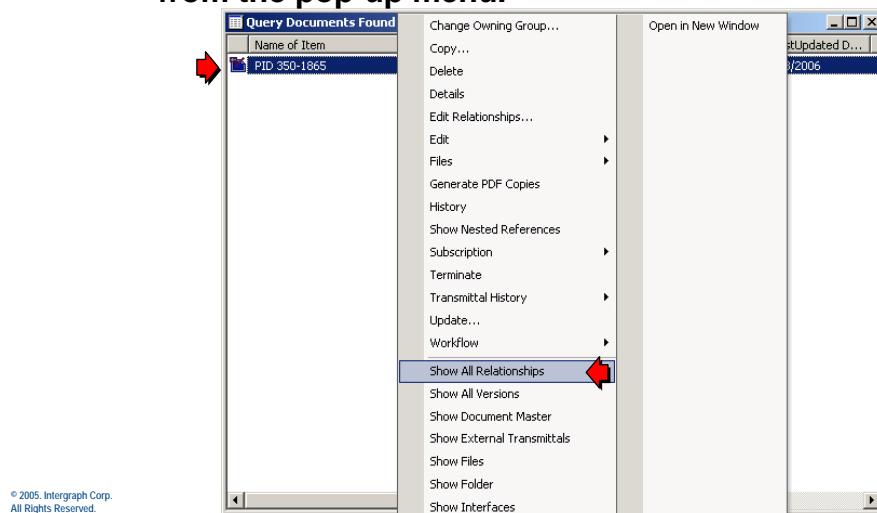
### 3.5.1 Showing Relationships

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 when you right-click an object in the tree view.



#### 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.

The screenshot shows a software interface with a dark blue header bar. In the top right corner of the header, the INTERGRAPH logo is visible. Below the header, the main title "Show Relationships" is displayed in a large, bold, blue font. Underneath the title, a subtitle reads "An *All Relations* window will appear, showing the related objects." A window titled "[PID 350-1865] - All Relations" is open in the foreground. This window has a standard Windows-style title bar and contains a table with the following data:

Name of Item	Rev	Default Status	Classification	Last Updated
PID 350-1865	[1A,1]	WORKING -	DocumentVersion	9/8/2006
P&ID With Detail.igr	[-,V]	RESERVED -	Document	9/8/2006
IFileComposition				9/8/2006
IDocumentVersion				
ISPFDocumentRevision				
ISPFDocumentVersion				
ISPNNonPublishedRevision				
ISPFObject				
ISPFOwnedObj				
ISPRReferenceRevisionCollection				
ISPRRevisionItemsCollection				
ISPFWorkflow				
ITitleBlock				
PID 350-1865	[1A,1]	WORKING -	DocumentVersion	9/8/2006
P&ID With Detail.igr	[-,V]			9/8/2006

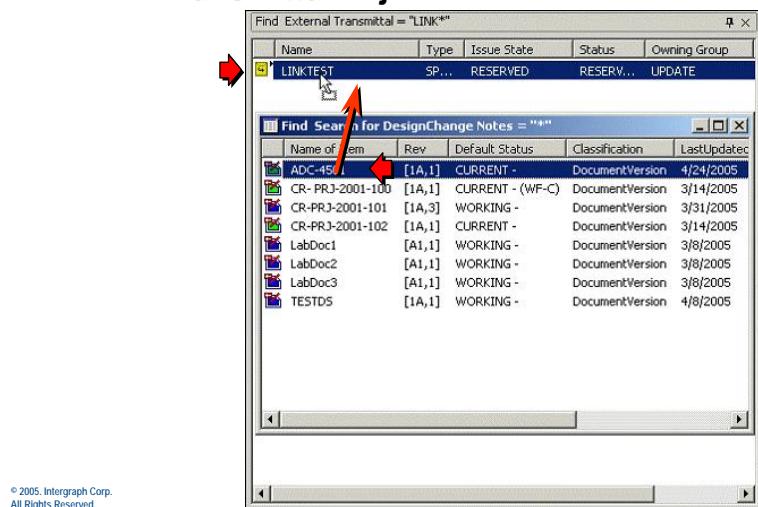
At the bottom left of the window, there is a copyright notice: "© 2005 Intergraph Corp.  
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### 3.5.2 Creating Relationships

After you create an object, you can also create relationships between that object and others by dragging and dropping a child object on top of a parent object in the tree or list views. You can create relationships by dragging an object onto another object in the same window or another window.

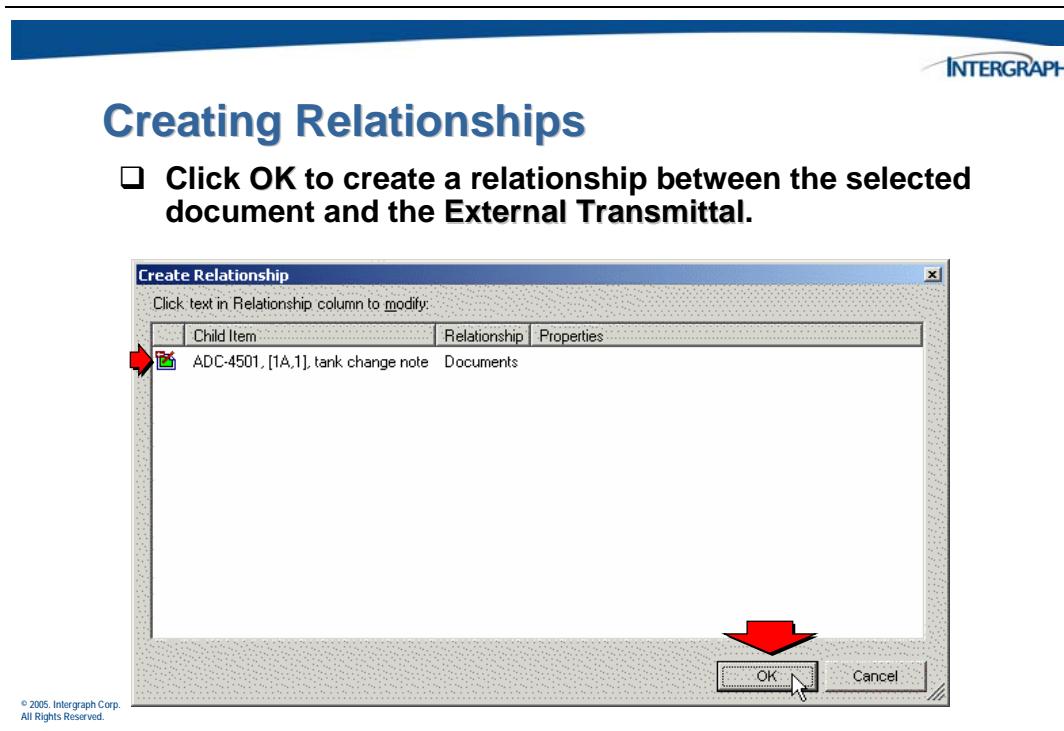
## Creating Relationships

- Drag and drop a document object onto an External Transmittal object.



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

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

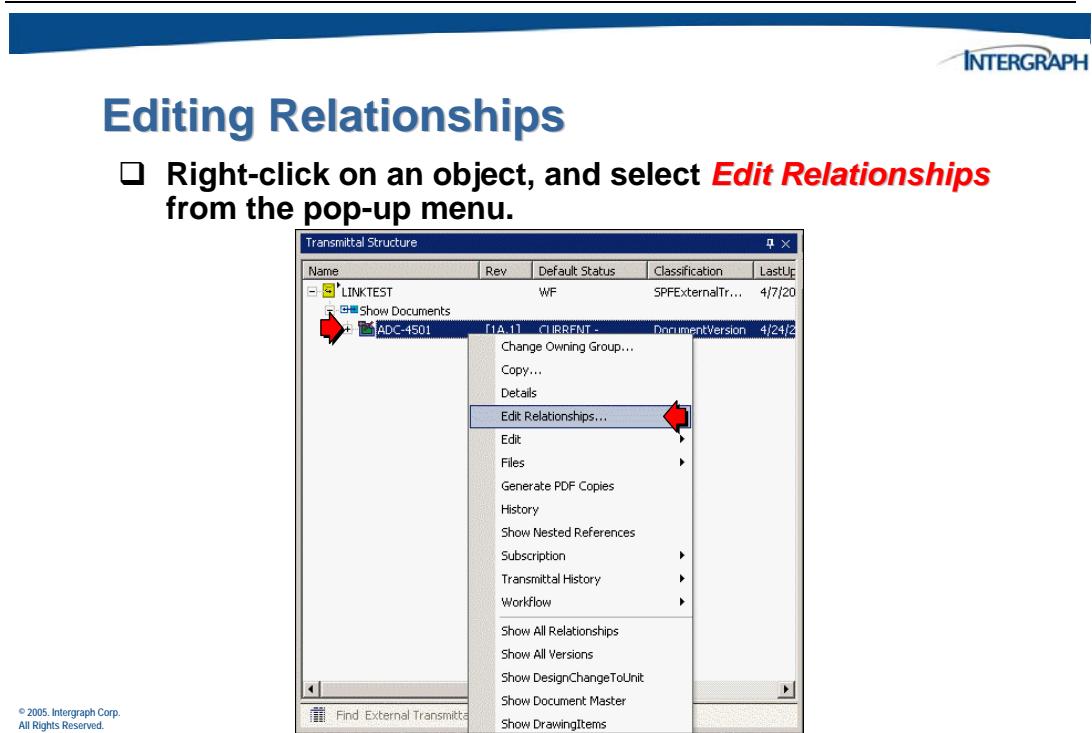


The following fields are found on the *Create Relationship* dialog:

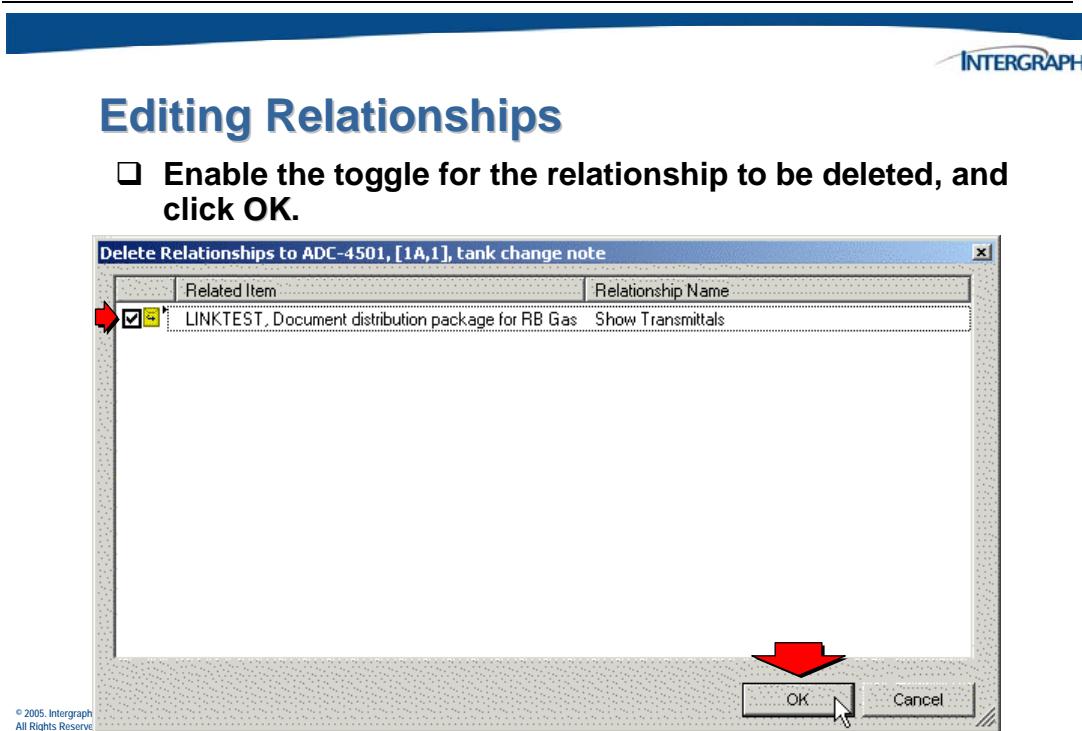
- **Child Item** - Displays the name of the child object.
- **Relationship** - Displays the type of relationship that is being created.
- **Properties** - Displays any properties for the relationship.

### 3.5.3 Editing Relationships

The **Edit Relationships** command allows you to update (remove) relationships that exist between the selected object and other objects. This command is available when you right-click an object in the tree view.



The *Delete Relationships* dialog will appear.



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

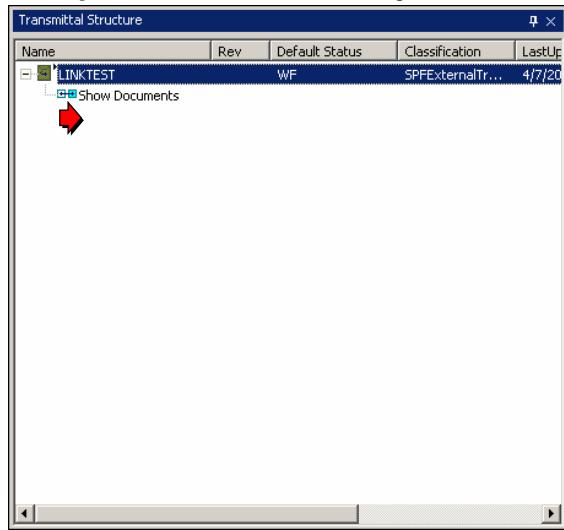
- ❑ **Check box** - Specifies whether or not to delete a relationship. To delete a relationship, fill the box. To keep a relationship, clear the box.
- ❑ **Related Item** - Displays the objects related to the selected object. This field is display-only.
- ❑ **Description** - Displays name of the relationship between the selected object and the object in the Related Item column. This field is display-only.

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



## Editing Relationships

The relationship between the two objects has been deleted.



## 3.6 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 Admin database. When user authentication is in effect, SPF processes user logins by using the network domain information for the user. That is, the user must specify a network domain username and password to successfully log in.

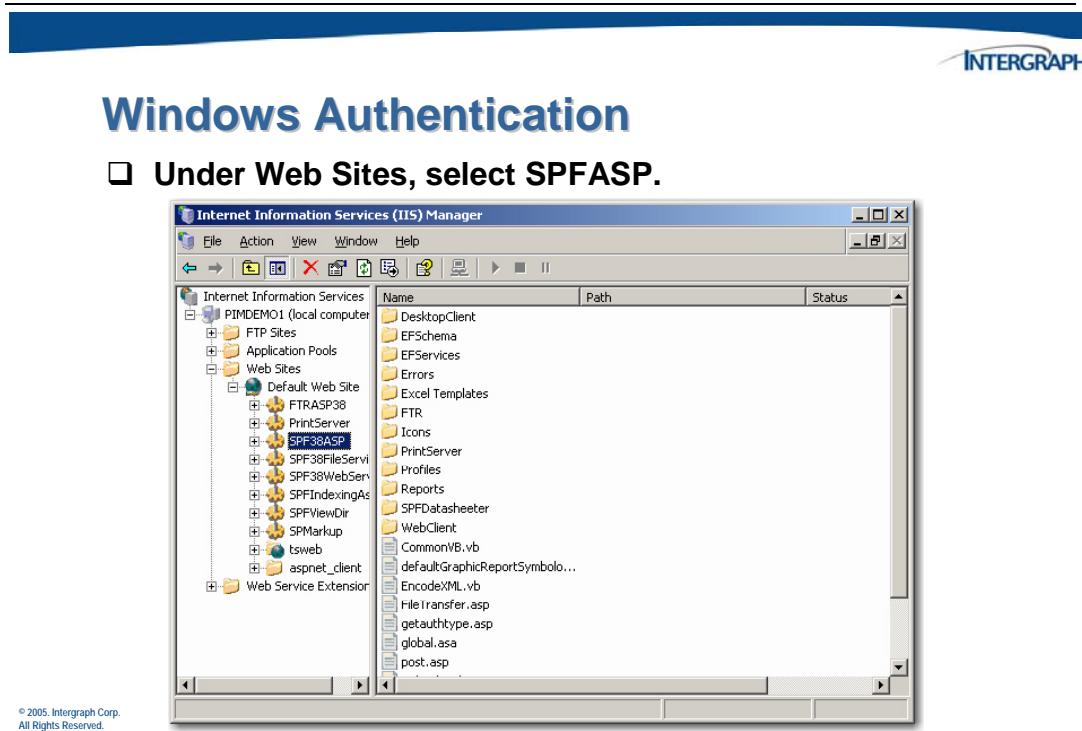
### 3.6.1 Changing the Integrated Windows Authentication

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

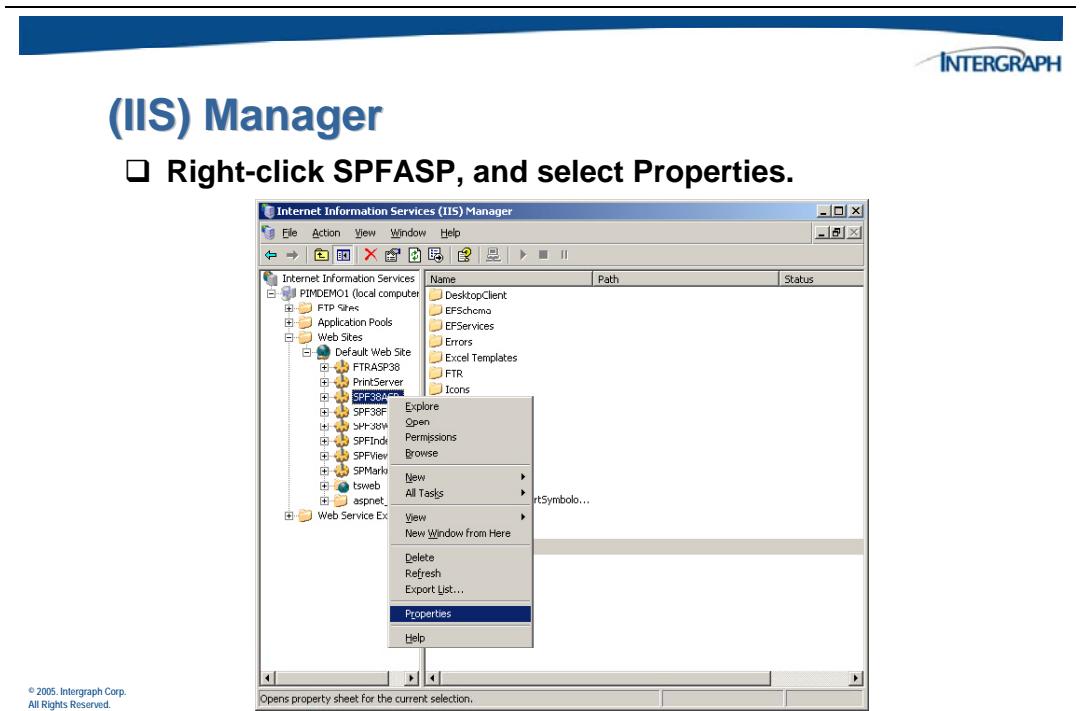
User authentication is set or unset on the security dialog for the SPF web site, which is SPFASP by default. Use the steps below to change the user authentication setting for an SPF server.



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



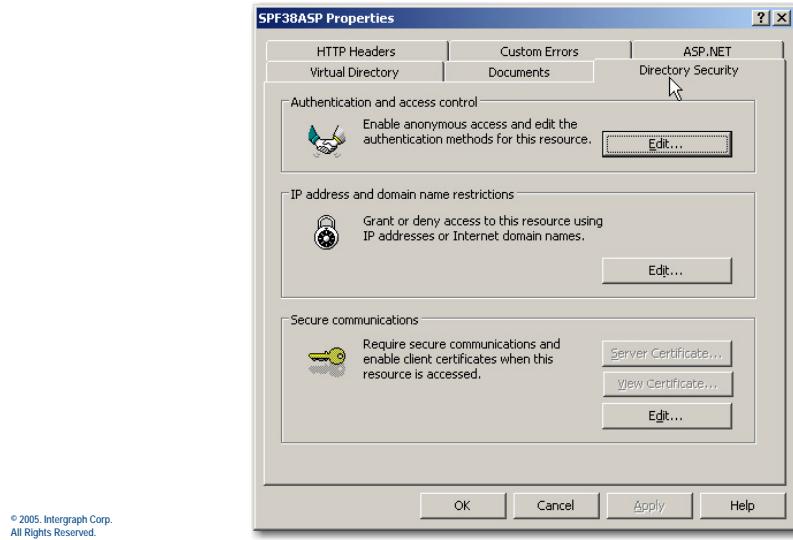
Right click on the SPFASP web site, and select *Properties*.





## SPFASP Properties

- ❑ Go to the Directory Security tab.

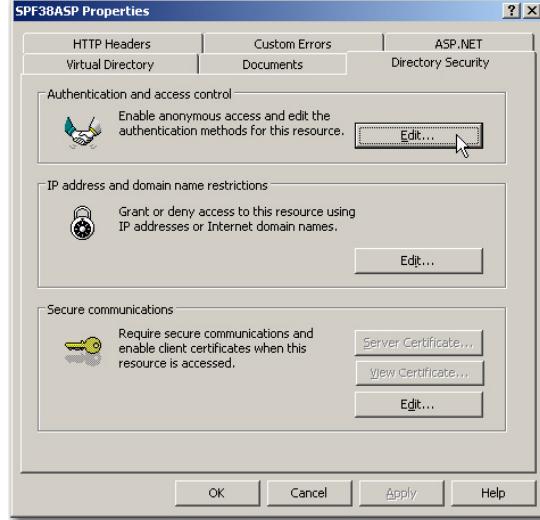


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## SPFASP Properties

- ❑ Click Edit in the Authentication and Access Control section.



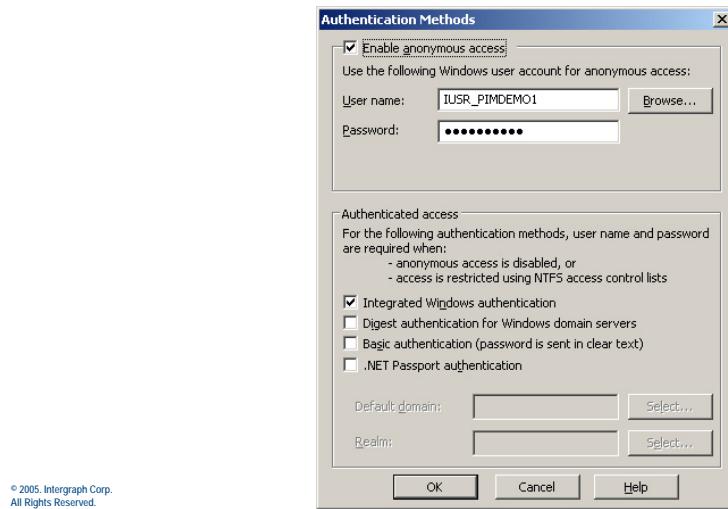
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The Integrated Windows authentication check box is what controls the authentication setting for SPF. When a check mark is in the check box, user authentication is in effect.



## Authentication Methods

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





## Authentication Methods

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



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



## Resetting IIS

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

```
ca 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>
```

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### **3.6.2 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.

## 3.7 Activity – Finding and Manipulating Objects

The goal of this activity is to familiarize you with searching for objects and then performing operations on the found objects. You will also create new documents and familiarize yourself with some of the manipulation commands available in the Desktop Client.

1. Log on to your operating system (not SmartPlant Foundation) as *spfuser* with no password (if not already logged in).
2. Use ***Start > All Programs > Intergraph SmartPlant Foundation > SmartPlant Foundation Desktop Client*** to start the SmartPlant Foundation *Desktop Client*.
4. When the **Login** screen displays, use the **User name** *updateuser*, and leave the Password field blank.
5. Perform a quick **Find** on all P&IDs.
6. Review the results in the displayed list view window.
7. Perform a quick **Find** on all *Piping Components*.

Review the results in the displayed list view window. Write down some of the characters found in values in the *Name* field so that you can use that information later to perform a more specific quick Find. \_\_\_\_\_

8. Perform a quick **Find** on *Piping Components* using the \* wildcard character and some of the information that you wrote down in step 7 above.
9. Perform a **Query** on *P&ID Instruments*. Key in some query criteria in the search form. Click **OK** to execute the query. (Use the Construction Status field.)
10. Review the results in the displayed list view window to confirm that the query returned the desired results.

11. Select one of the objects from the list view, and use the **Details** command to view the object details.
12. Re-execute the **Query** on *P&ID Instruments*. Enter the same search criteria that you entered in step 10. Click **Save** on the bottom of the query form.
13. Enter a name and description for this saved query in the *Save Query* dialog.
14. **Cancel** the query form.
15. Use the **Find > Saved Queries** command to execute the saved query.
16. Select one of the objects from the list view window, and use the **File > Extract List to Excel** command.
17. What happens? \_\_\_\_\_
18. Select one of the objects from the list view window, and use the **File > Export (Default Template)** command.
19. What is the difference between this command and the **Extract** command above?
20. Create a new document object. Use the *Document category* path **P&ID Documents > P&ID > Utility P&ID**. Enter the necessary information in the new object form. Use your own choice of values. Click **Next** to continue to the next dialog.
21. Attach the file **Plot Plan #2.igr** file to this new document. This file is in the folder d:\spf\_training. Click **OK** when the file has been attached. (Do not click next to go to the workflow dialog.)
22. Verify that the file was attached to the new document.

23. Make a copy of the new *Utility P&ID* document. Give the copy a new name and attach a different file, **Ortho Piping.igr**.
  
24. Update the first document that you created (from step 20), and change the description field. Can you change the name of the document? Why or why not?  
\_\_\_\_\_
  
25. Terminate the object that you copied in step 23.
  
26. View the **Details** of the object you created in step 20.
  
27. View the **History** of the object you created in step 20.
  
28. When you have finished with this activity, take a short break until everyone else has finished.



C H A P T E R

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# 4

## Using a Workflow in SmartPlant Foundation



## 4. SmartPlant Foundation Workflows

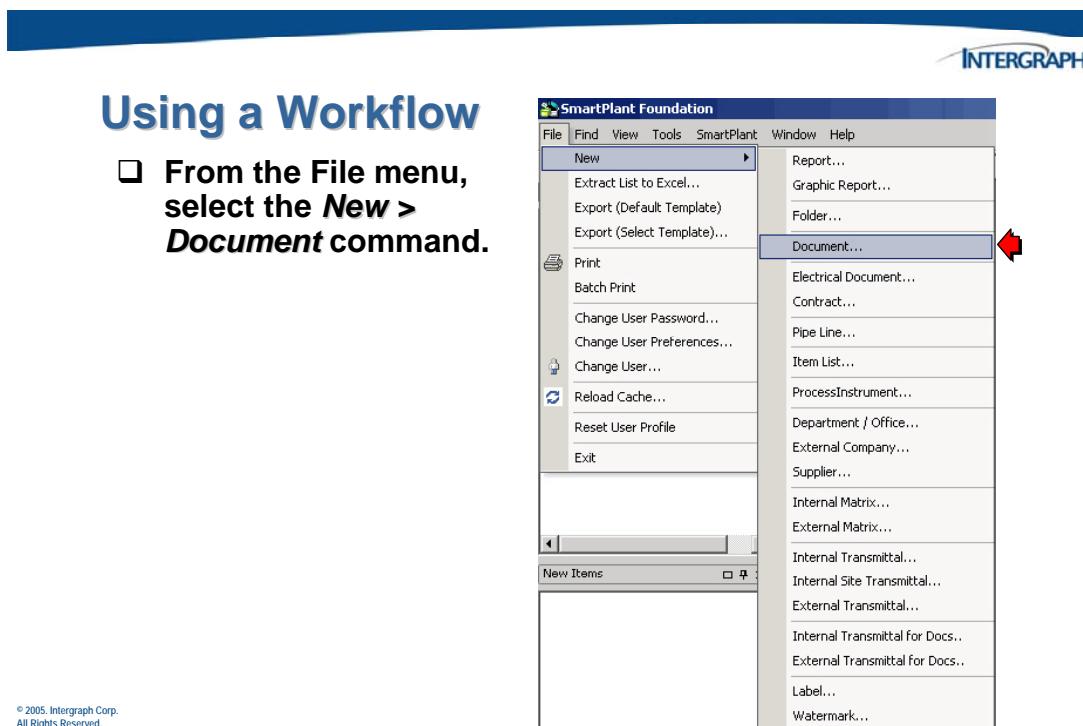
Workflows allow you to perform a review/approval using a configured process cycle. In SmartPlant Foundation, the **To Do List** provides a place for you to view all workflow steps that have been assigned to users and their statuses. For example, when a SmartPlant Foundation object is assigned to a workflow and a user name or user group 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:**

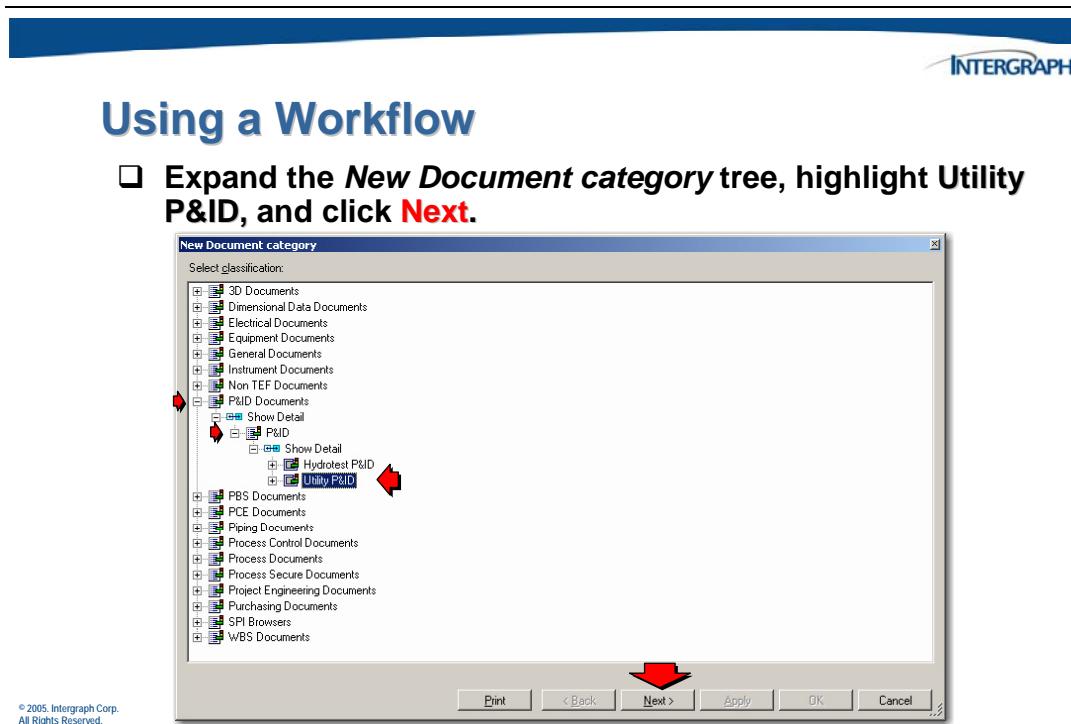
- The examples in this chapter use the ReviewAndSignOffDocs workflow. While this workflow is delivered with the out-of-the box software, additional steps have been taken to make this workflow available in our examples. In the SPF Configuration and Administration II class, you will learn how to make this workflow available for non-published documents, as you see in this chapter.

## 4.1 Using Workflows

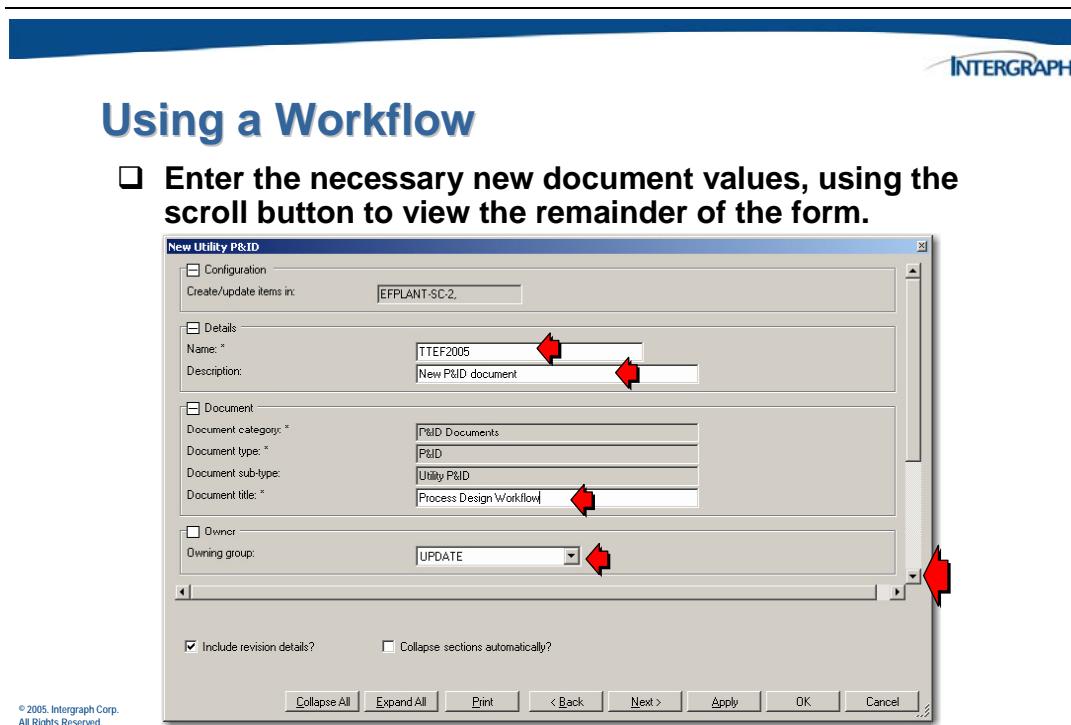
The first step when using workflows is to create an object, such as a document, which will be used by the workflow in a custom review/approval process. You can assign an object to a workflow when you first create it, or you can attach it later. First, we look at attaching an object to a workflow during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



A *New Document category* window will appear.



The *New Utility P&ID* dialog will appear.





## Using a Workflow

- Continue entering the new document values, and click **Next.**

New Utility P&ID

Document type: P&ID  
Document sub-type: Utility P&ID  
Document title: Process Design Workflow

Owner:  Owning group: UPDATE

Document printing overlay:  
Watermark:   
Label:

Document Details:  
Rev Scheme Name: Rev1A  
Major Revision: 1  
Minor Revision: A

Include revision details?  Collapse sections automatically?

Buttons: Collapse All, Expand All, Print, < Back, Next >, Apply, OK, Cancel

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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 at a later time.



## Using a Workflow

- Click the **Add** button to browse for a file.

Attach files

Name	Description	File Type	Is Viewable	Is Editable

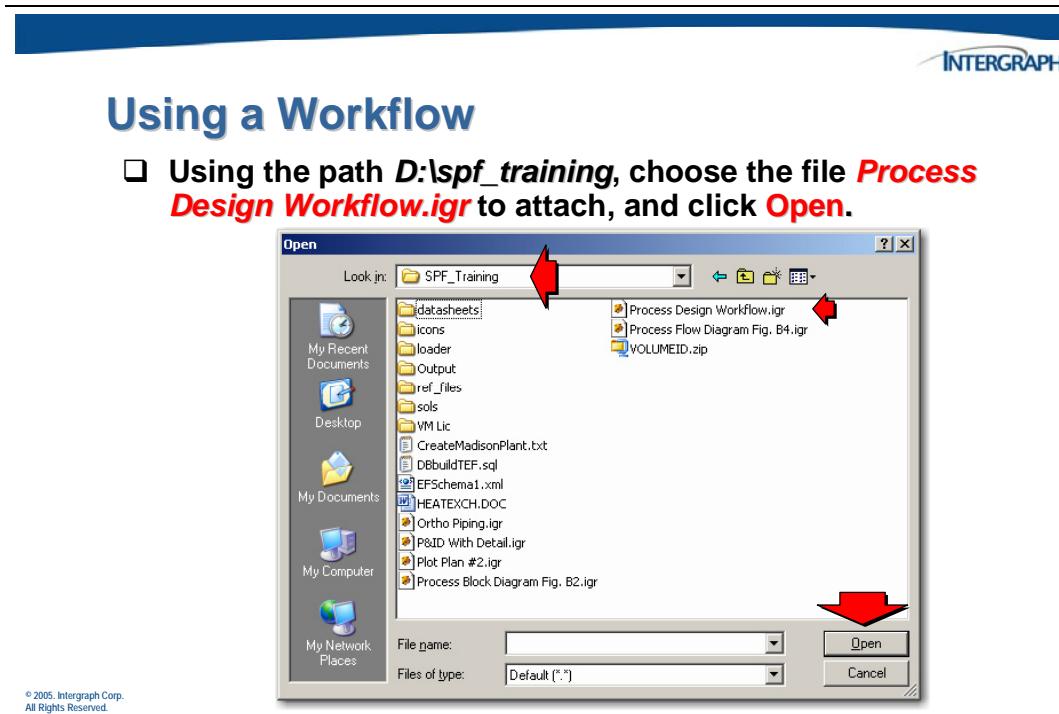
Add Remove

TTEF2005 has been created

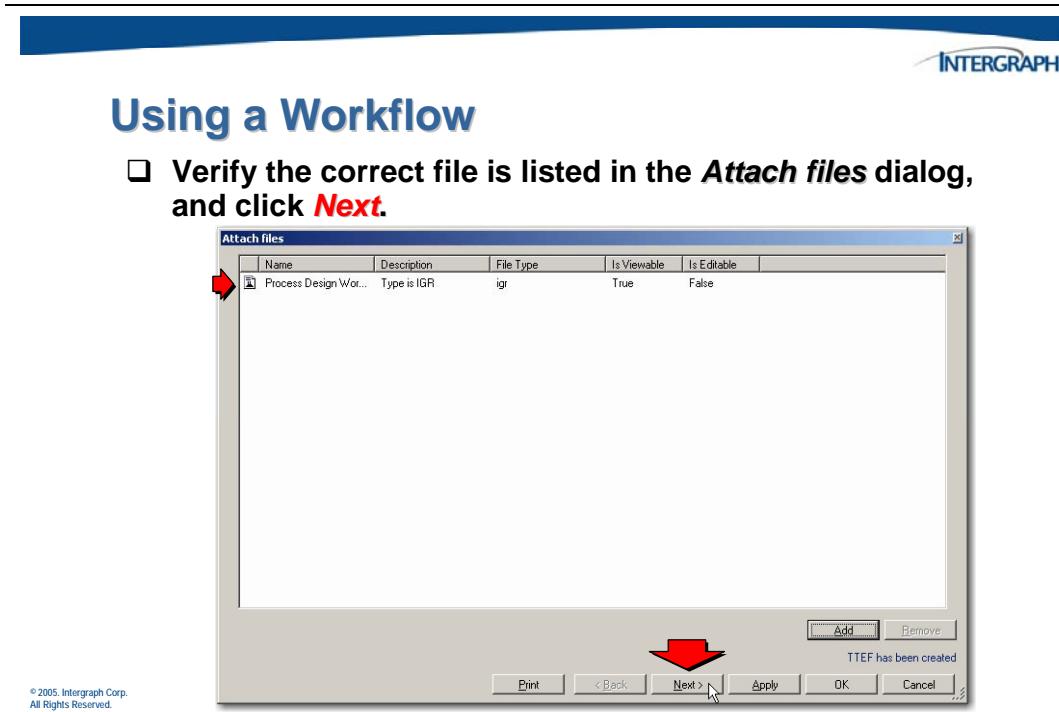
Buttons: Print, < Back, Next >, Apply, OK, Cancel

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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.

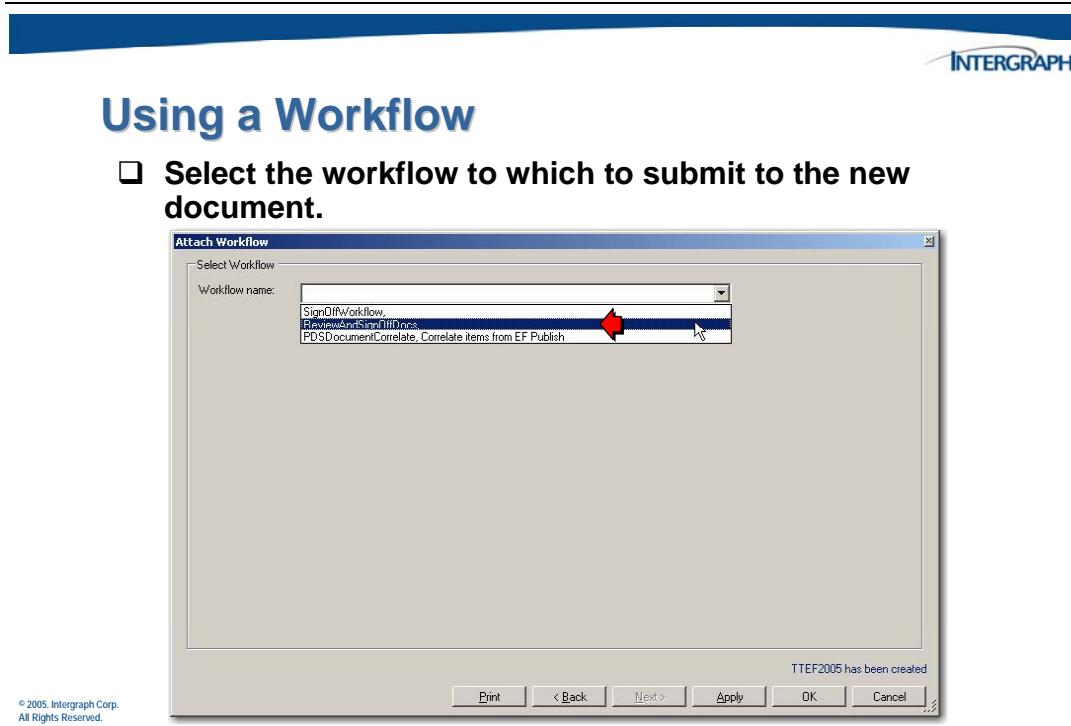


The selected file will be displayed in the *Attach files* window.



## 4.1.1 Attaching a Workflow

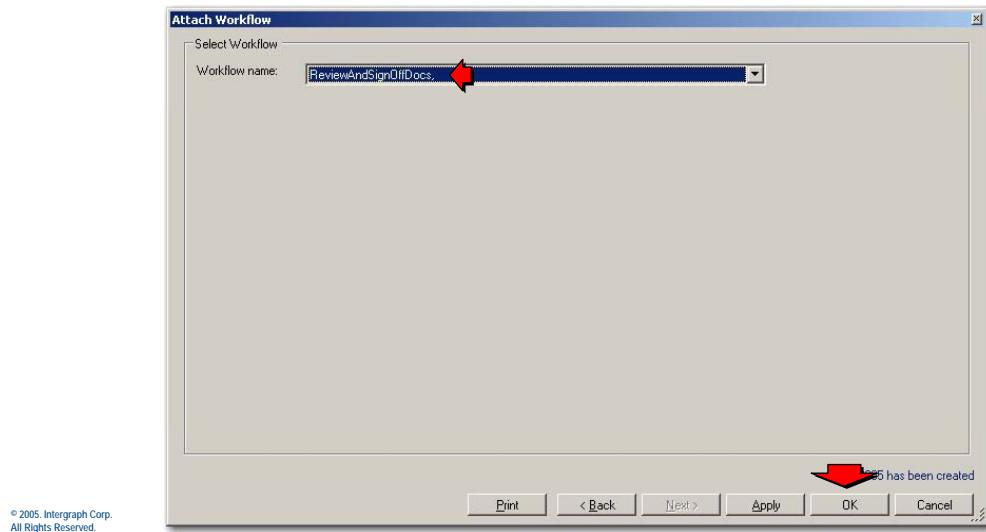
In order to submit the document and attached file to the workflow, the workflow must first be attached to the document. To start the workflow review and approval process, continue with the following steps:





## Using a Workflow

- Click **OK** to submit the document to the attached workflow.

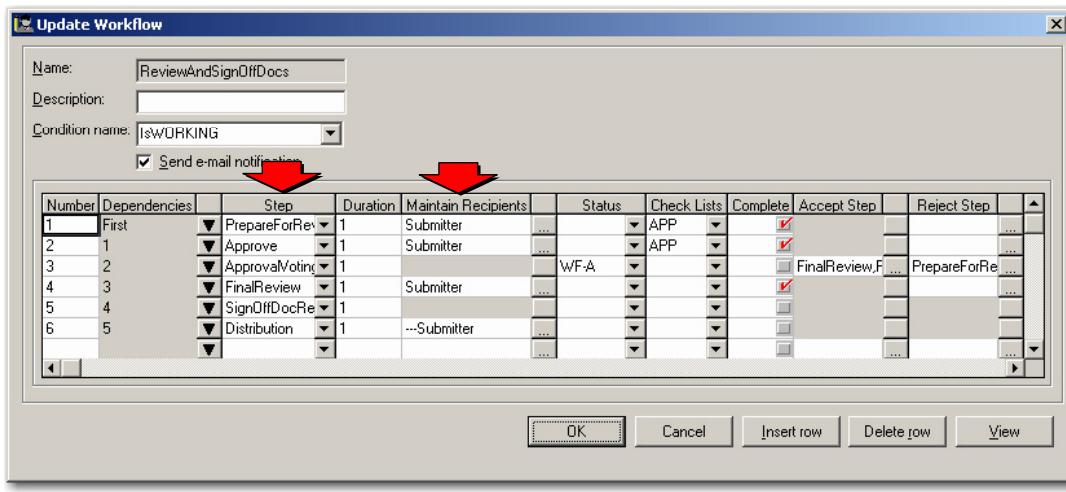


Attaching the workflow will also submit the document to the workflow automatically.



## Using a Workflow

These are the steps and recipients used in the example workflow.

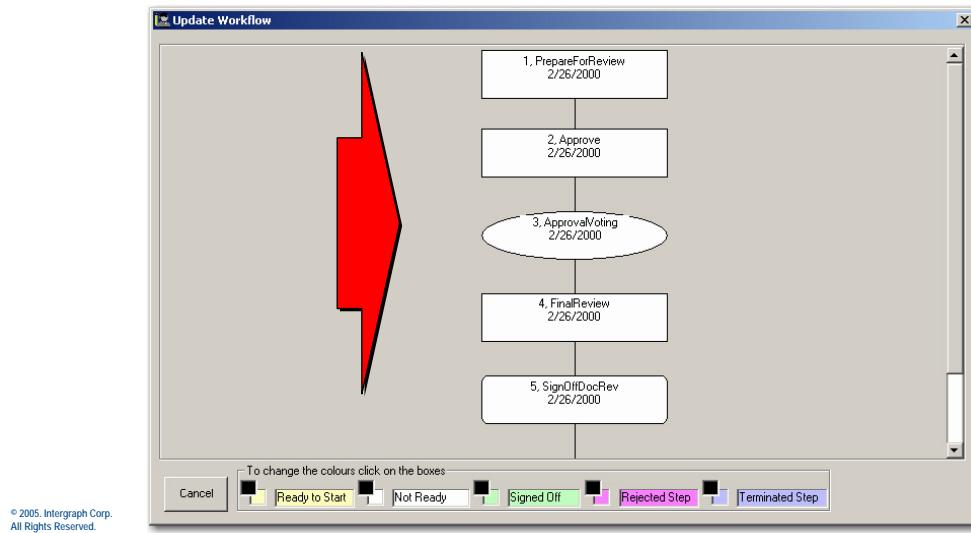


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## Using a Workflow

This is a graphical representation of the example workflow.



Next, view the instance of the **TTEF2005** document that was created earlier, and verify that the file was successfully attached to the document.



## Verifying Attached Files

- Right-click on the new document in the **New Items** window, and click **Show Files** from the pop up menu.

The view will expand to show the file relationship.

---



## Verifying Attached Files

Verify that a file is attached to the new **TTEF2005** document.

New Items

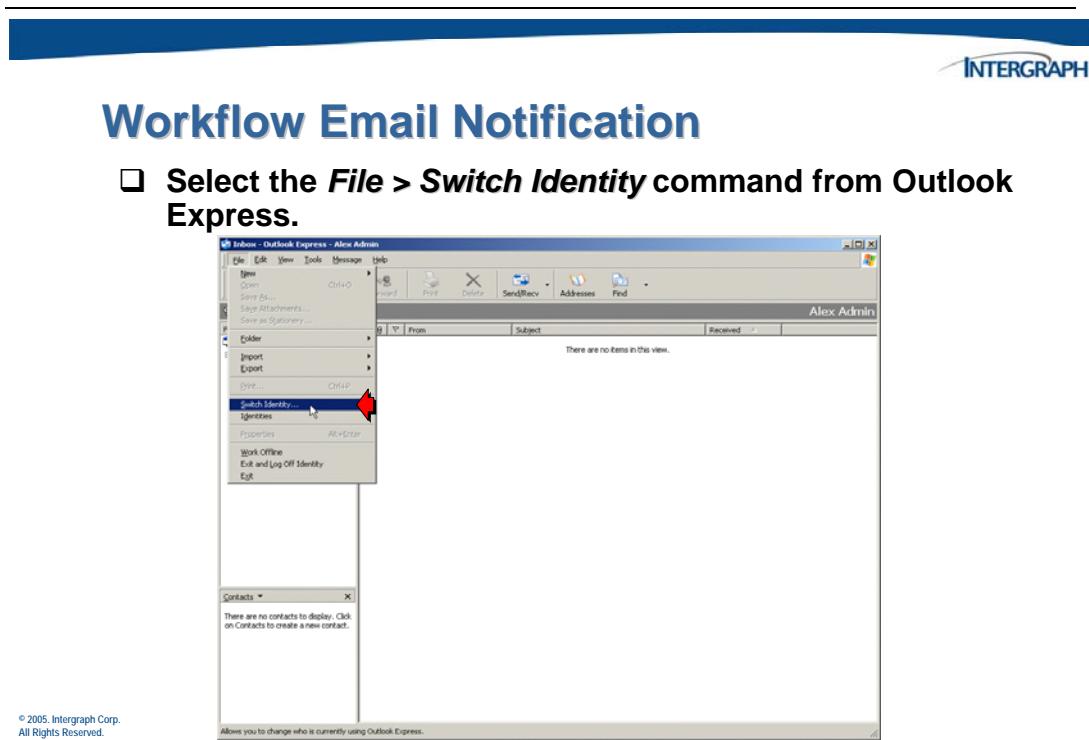
- TTEF2005, [1A,1], New P&ID document
  - Show Files
  - + Process Design Workflow.igr, [-,V], Type is IGR

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---

## 4.1.2 Workflow Email Notification

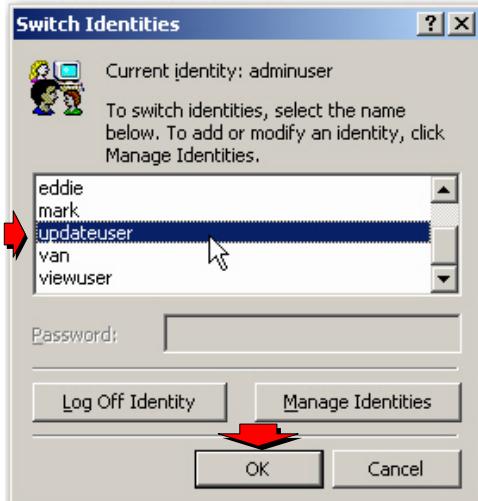
Submitting a document to a workflow will also send out an email notification. Open the *Outlook Express* email client.





## Workflow Email Notification

- From the list, select *updateuser* and click **OK**.



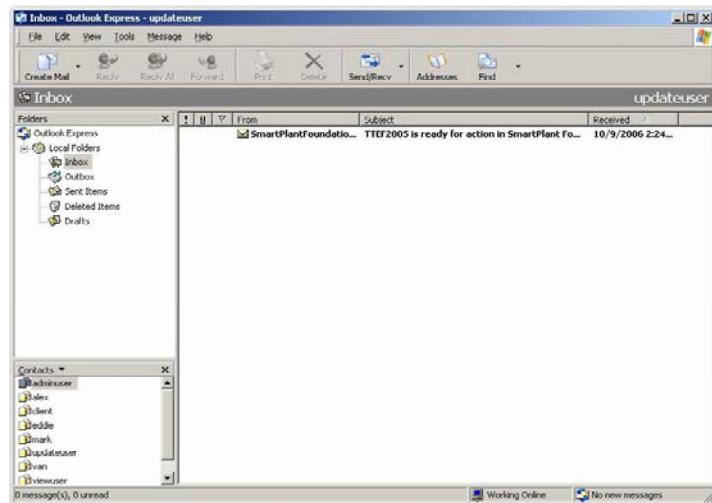
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Once you are logged in to the correct email account, review the email notifications.



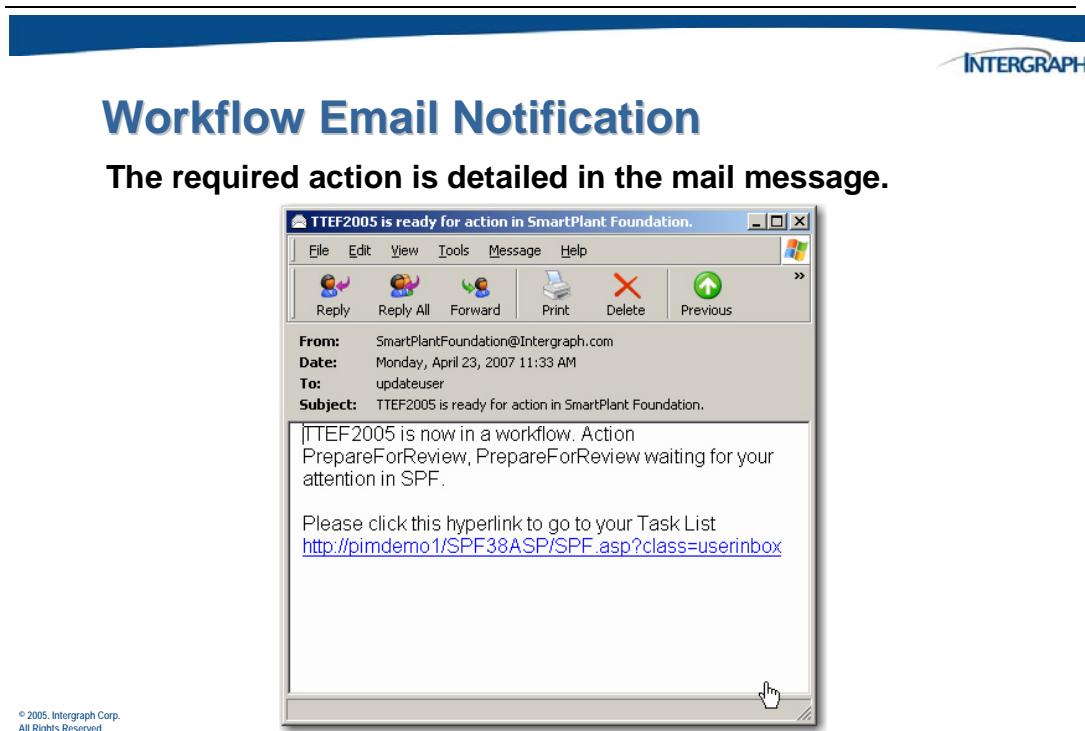
## Workflow Email Notification

- Double-click to view the mail message sent by SmartPlant Foundation.



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The selected mail message will open.



## 4.1.3 The To Do List

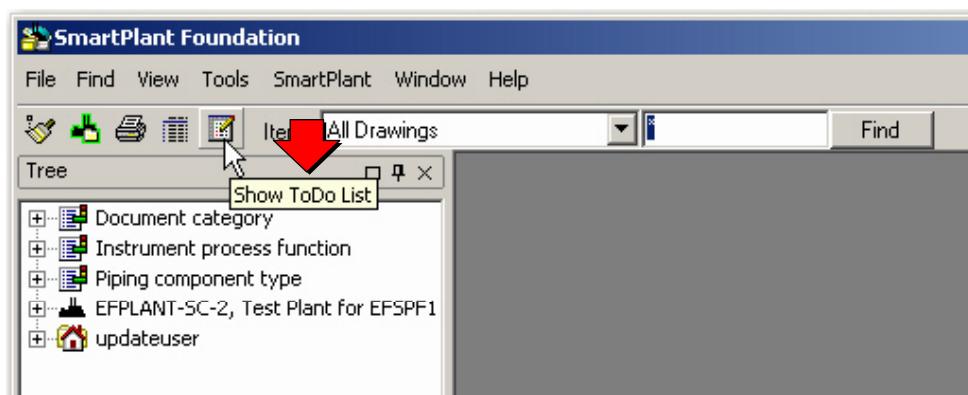
A workflow is made up of different steps with one or more users assigned to perform some kind of task within each step. In the **To Do List**, you can also view and complete checklists associated with workflow steps. You can also complete voting steps and mark other steps completed or unable to complete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

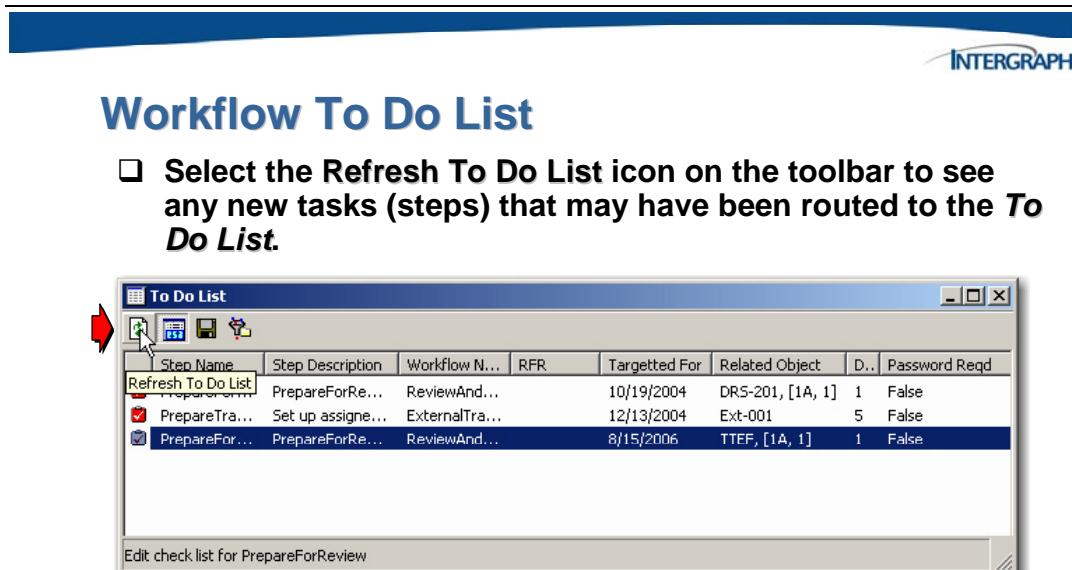


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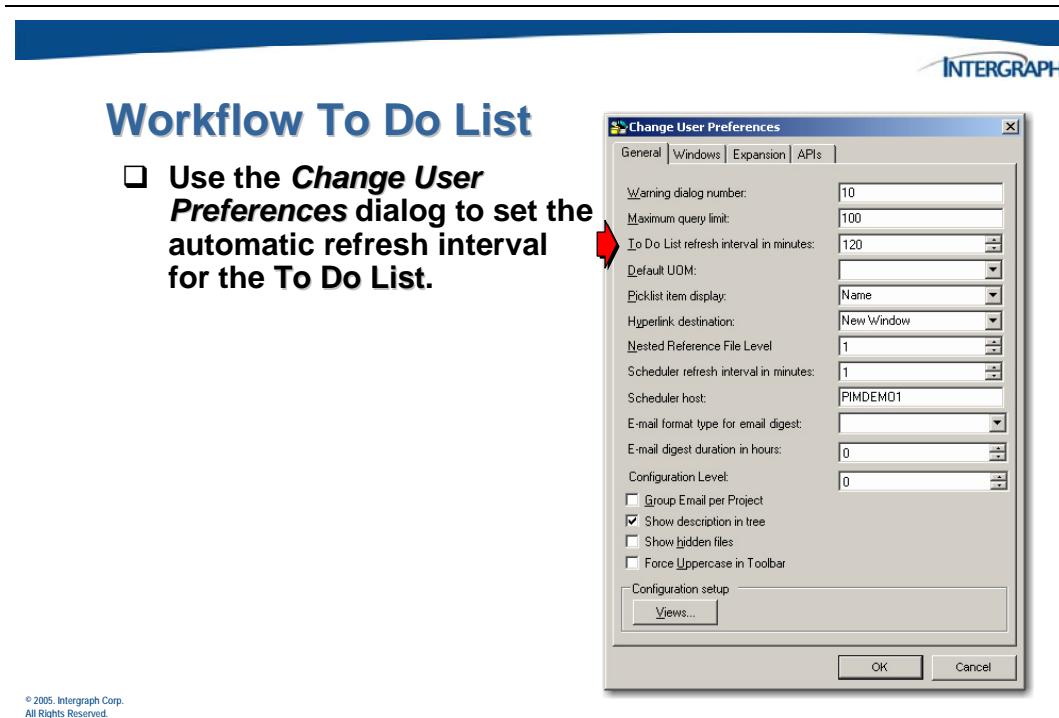
The list view displays a list of all workflow steps assigned to you. There are several types of steps, called step classes, that may appear in the To Do List. The following icons represent these steps:

Icon	Step Class	Description
1	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.

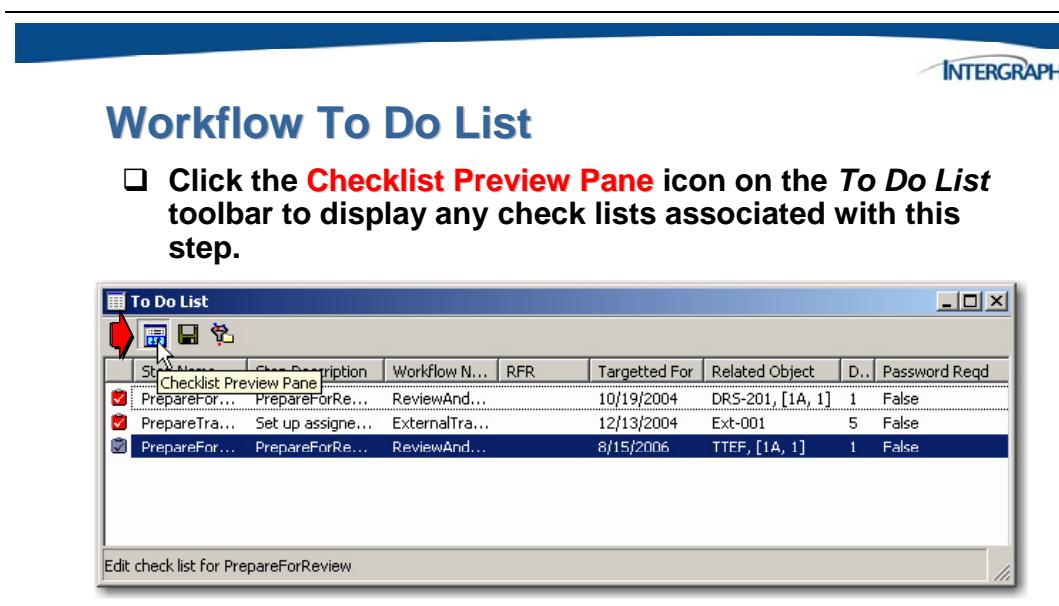
The *To Do List* window will show all the steps assigned to this user. Click the **Refresh** toolbar command to manually refresh the To Do List.



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



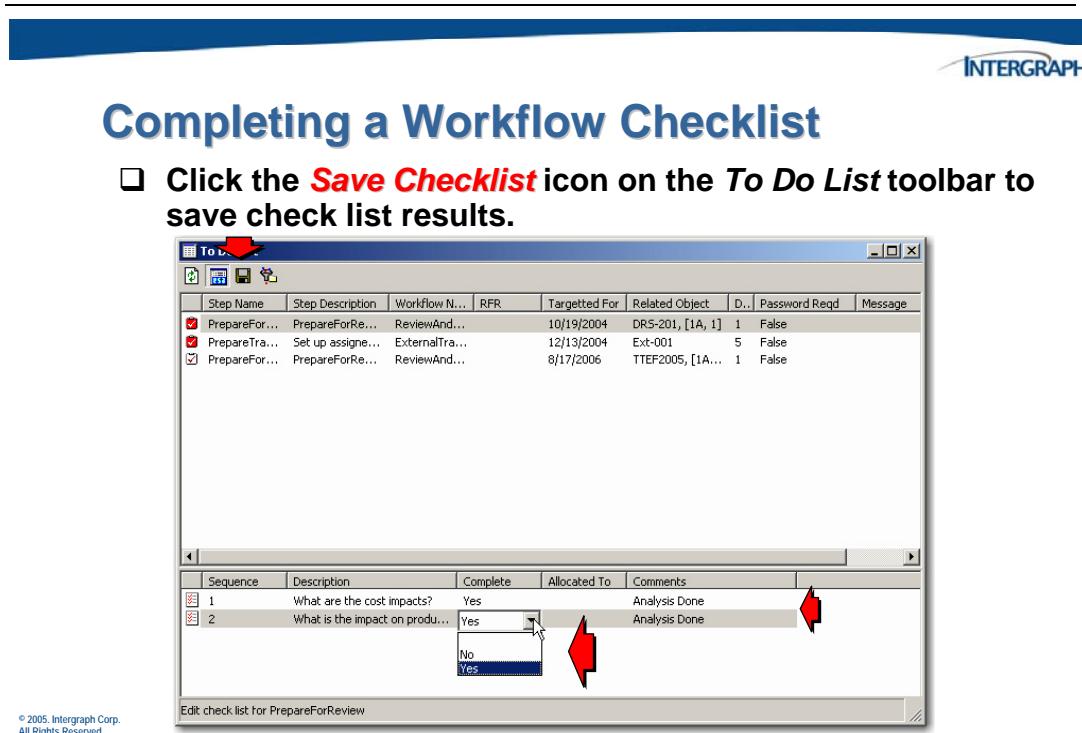
Remember, checklists are a series of questions or sub tasks that the user should complete before a step can be marked completed in a workflow.



## 4.1.4 Completing a Workflow Checklist

If you select a workflow step that has a checklist associated with it in the list view, the checklist preview pane displays the checklist associated with the step. You can update the checklist by right-clicking the item that you want to change in the checklist. You can also update a checklist for a step by right-clicking the step in the list view. Checklists can contain no more than 25 items.

In this example, the user will complete the check list questions before continuing. In a later example, the check list will be by-passed.



Icons with red backgrounds indicate that the step is overdue. For example, if an assignment step is overdue, the following icon appears beside the step in the *To Do List*:

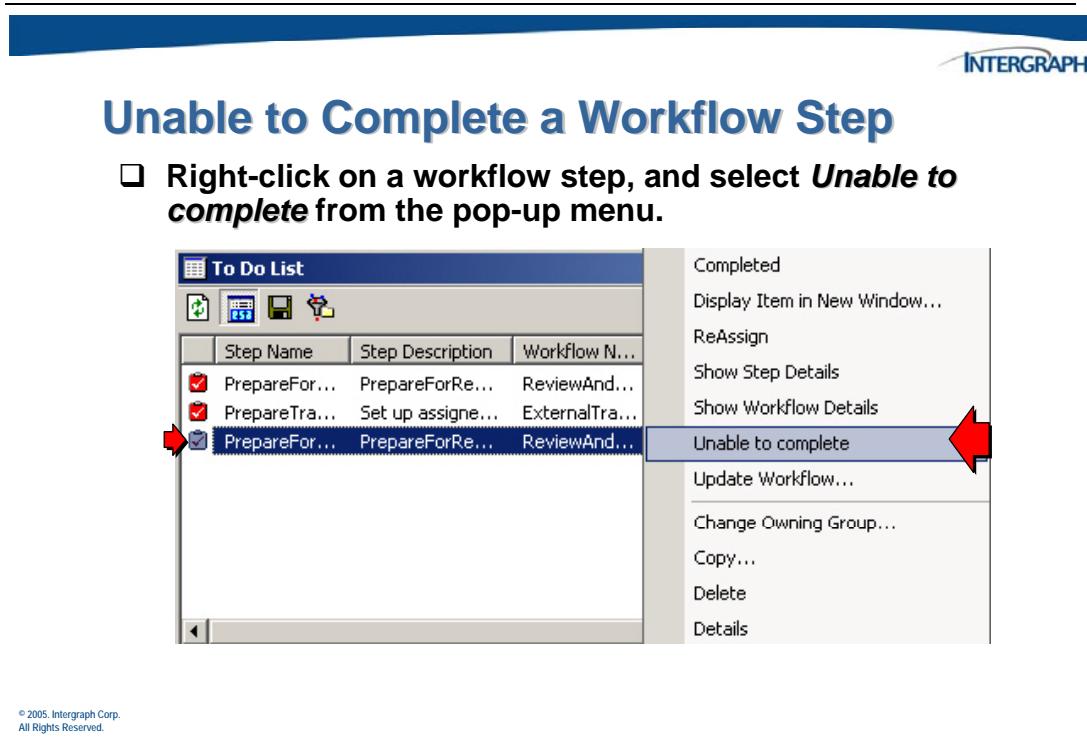
The *To Do List* window contains the following sections/fields:

- Refresh** - Refreshes the To Do List with new tasks assigned to you. By default, the software automatically refreshes the To Do List every 10 minutes if the value is not changed through user preferences. However, you can force a manual update on the To Do List data using the **Refresh** button. You can change the default refresh interval by clicking **File > Change User Preferences**.
- Checklist Preview Pane** - Displays the checklist associated with the workflow step in a pane at the bottom of the To Do List.

- Save Checklist** - Saves your changes to the checklist associated with the workflow step.
- Configuration Filtering** - Displays only the workflow steps for items in your current configuration.
- List View** - Displays a list of all workflow steps assigned to you. There are several types of steps, called step classes, that may appear in the To Do List.
- Step Name** - Displays the name of the step.
- Step Description** - Displays a description of the step.
- Workflow Name** - Displays the name of the workflow to which the step is assigned.
- RTR** – Provide information about the reason for receipt for this workflow step.
- Targetted For** - Displays a target date for the step.
- Related Object** - Displays the object to which the workflow is attached.
- Days** - Displays the number of days you have to complete this action.
- Password Reqd** - Indicates if a password is required upon sign off of the step.
- Message** - Displays the message entered by the person on the previous step, this could be some comments or instructions.
- Checklist Preview Pane** - Displays the checklist associated with the step, if one exists. You can update the checklist by right-clicking the item that you want to change in the checklist. You can also update a checklist for a step by right-clicking the step in the list view, and then editing the checklist fields.
- Sequence** - Displays the sequence in which the checklist steps must be performed.
- Description** - Displays a description of each checklist step.
- Complete** - Indicates that the checklist step has been completed.
- Allocated To** - Allows you to enter the user name for which the checklist step is assigned.
- Comments** - Allows you to enter text about the checklist step.

## 4.1.5 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.



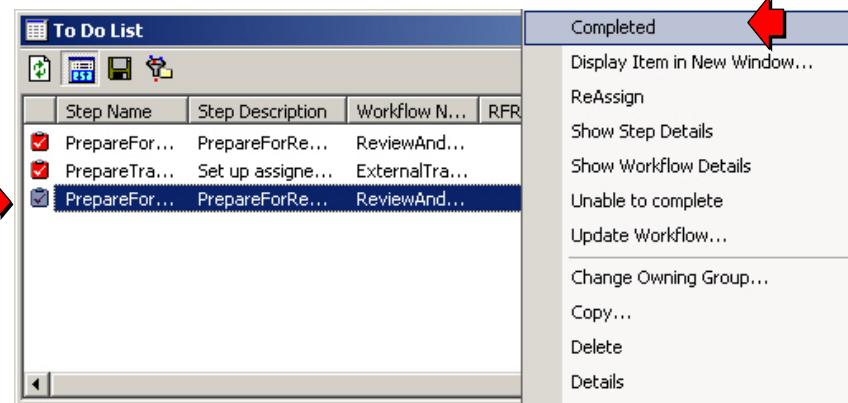
Type any comments in the **Comments** box of the *SignOff* dialog, and then click **OK**.

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.

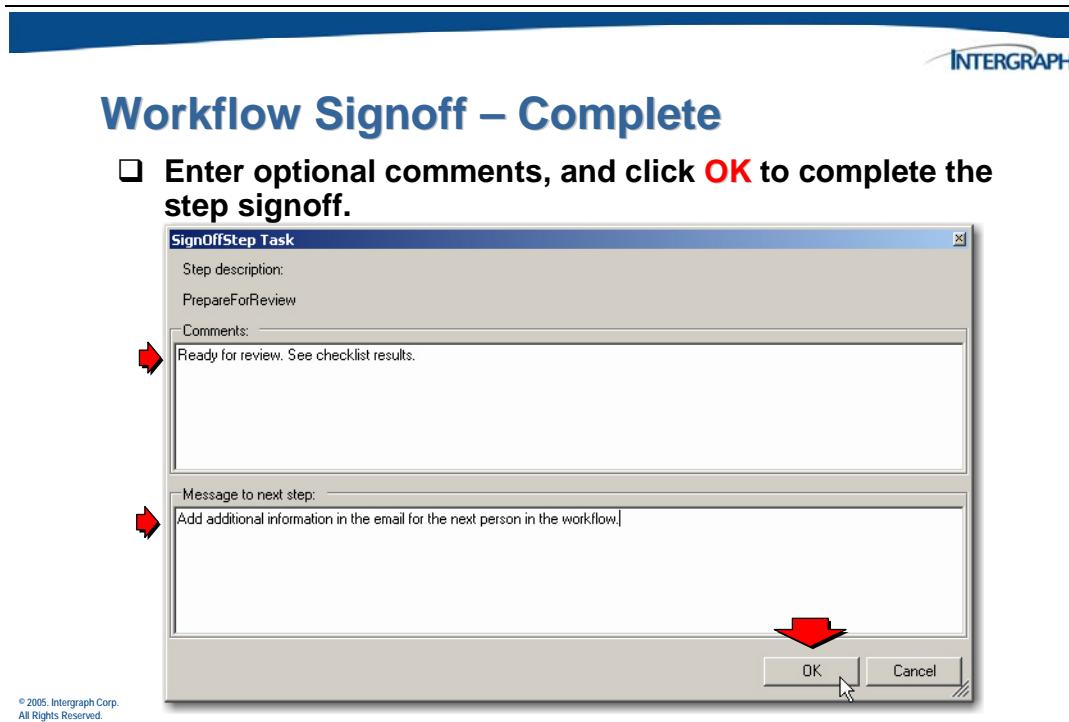
Once the checklist questions have been answered, the step (*PrepareForReview*) can be signed off. The **Completed** command allows you to mark the selected workflow step as completed.

## Complete a Workflow Step

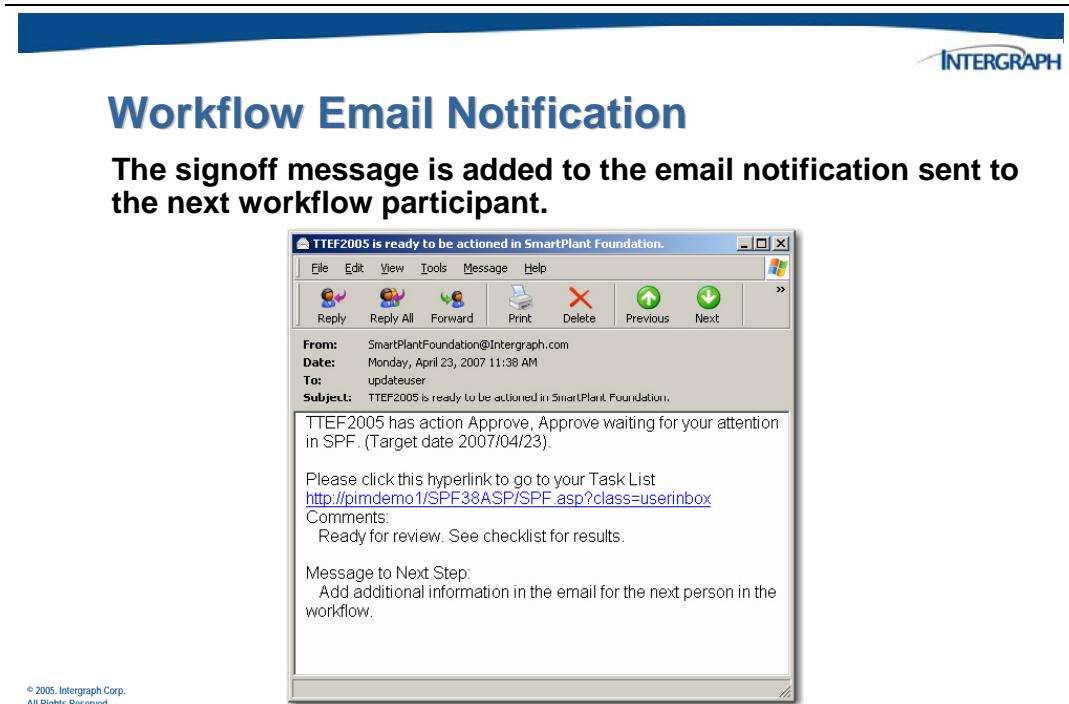
- Right-click on a workflow step, and select **Completed** from the pop-up menu.



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

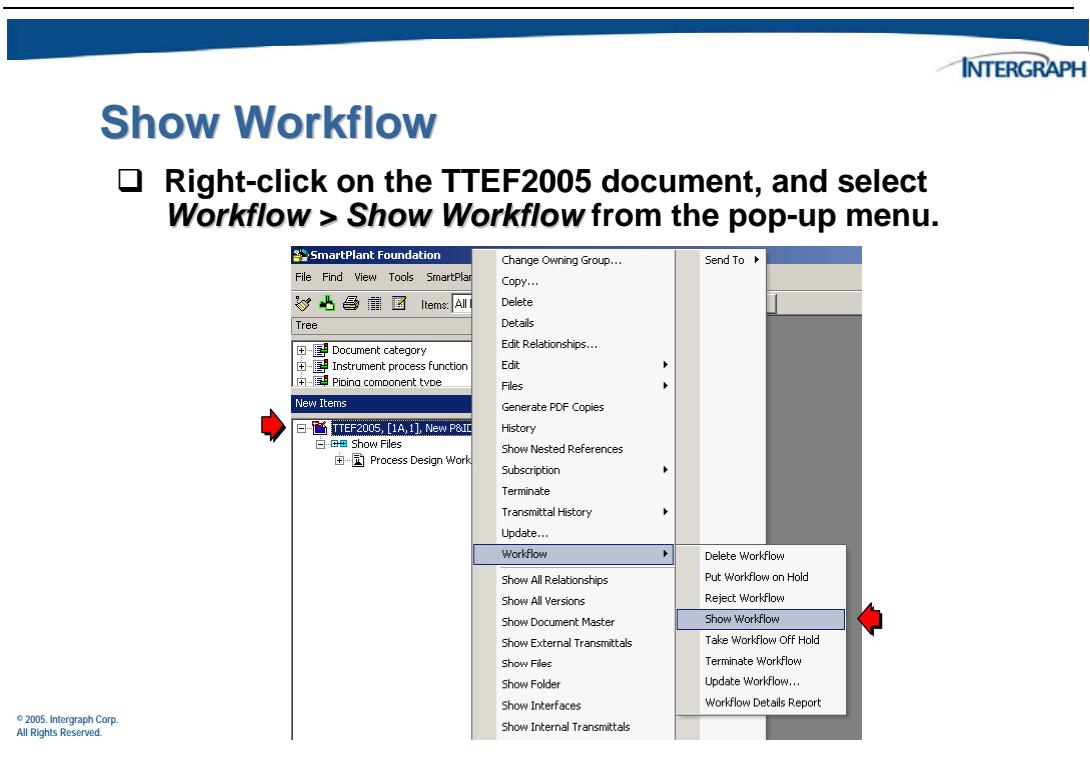


Type any comments in the **Comments** box of the *SignOff* dialog, and then click **OK**.



## 4.1.6 Show Graphical Workflow

A graphical view of the workflow progress can be displayed by clicking on the document in the workflow and using the **Workflow > Show Workflow** shortcut command.



In this example, **updateuser** is the user checking the workflow progress.

**Show Workflow**

- The signed off step will turn green to indicate that it is completed. Click the Fields button to configure the step information displayed.

Displaying workflow for TTEF2005 [ ]

To change the colors click on the boxes

<input type="checkbox"/>	Ready to Start	<input type="checkbox"/>	Not Ready	<input type="checkbox"/>	Signed Off	<input type="checkbox"/>	Rejected Step	<input type="checkbox"/>	Terminated Step
--------------------------	----------------	--------------------------	-----------	--------------------------	------------	--------------------------	---------------	--------------------------	-----------------

Fields... | Previous | Next | Close

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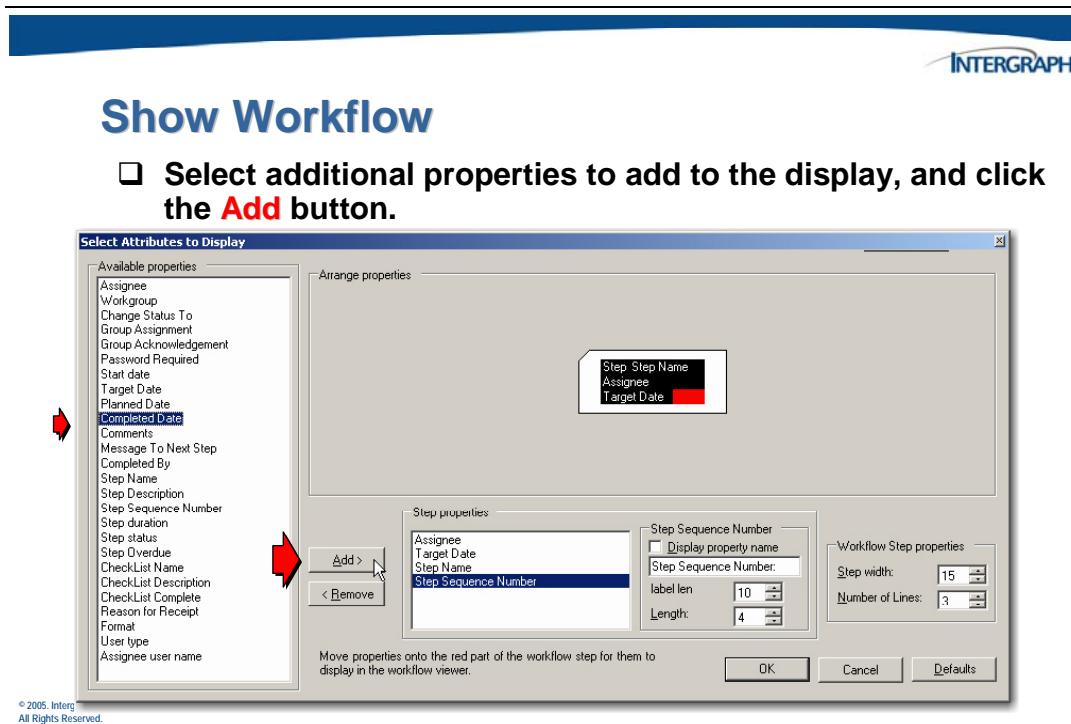
If this document has been submitted to multiple workflows, you can use the *Previous* and *Next* buttons to move through the attached workflows. To make changes or view details for steps, right-click the step in the *Show Workflow* dialog box.

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

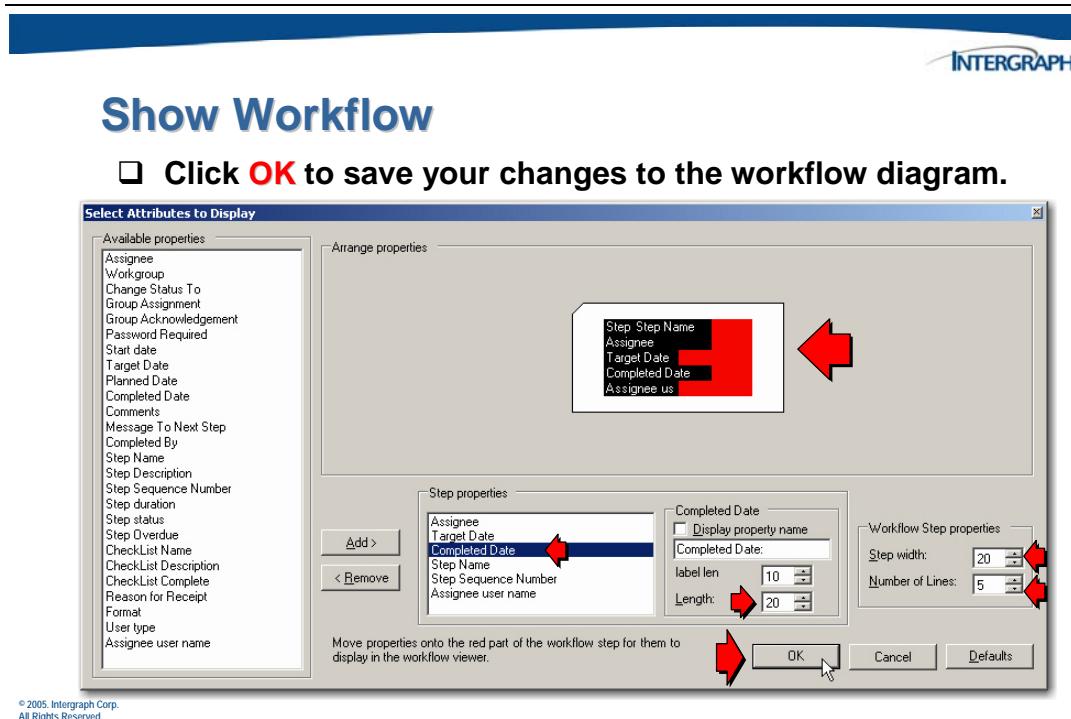
- **Yellow** - The workflow step is ready to begin.
- **White** - The workflow step is not ready to begin yet.
- **Green** - The step has been signed off.
- **Pink** - The step has been rejected.
- **Blue** - The step has been terminated.

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 also be changed the same way.

Clicking the *Fields* button opens the *Select Attributes to Display* dialog.



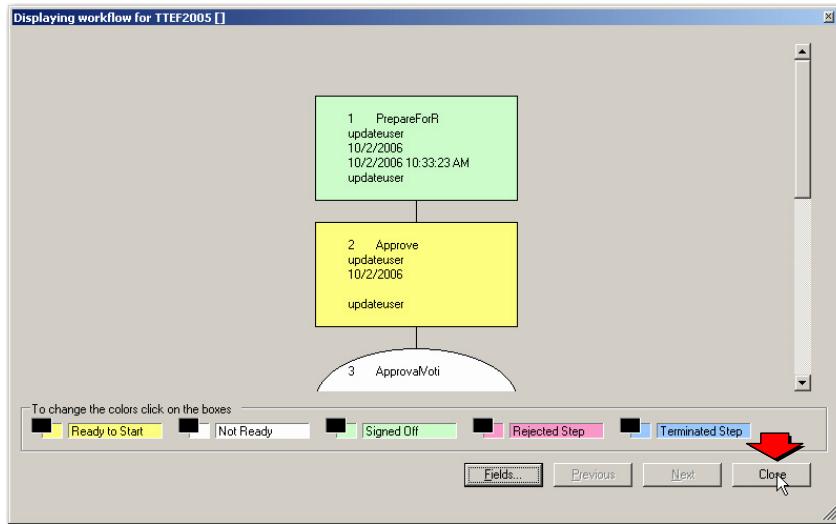
Drag the new property onto the red part of the workflow step to add it to the display.





## Show Workflow

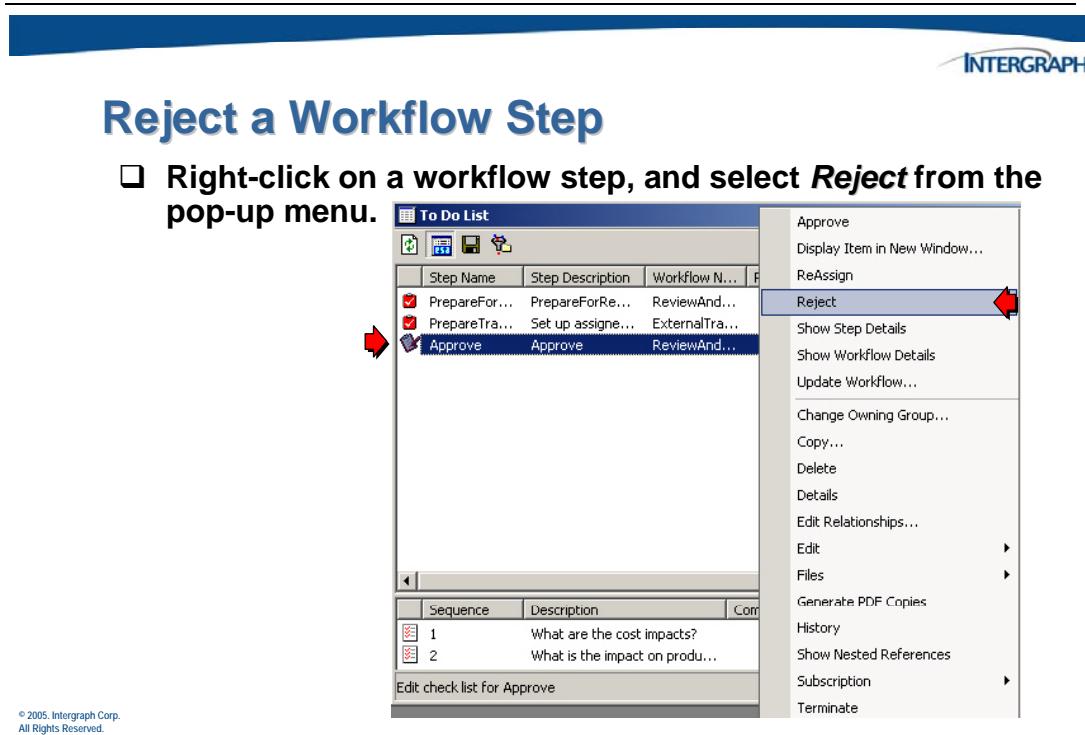
- Click the **Close** button to close the graphical display.



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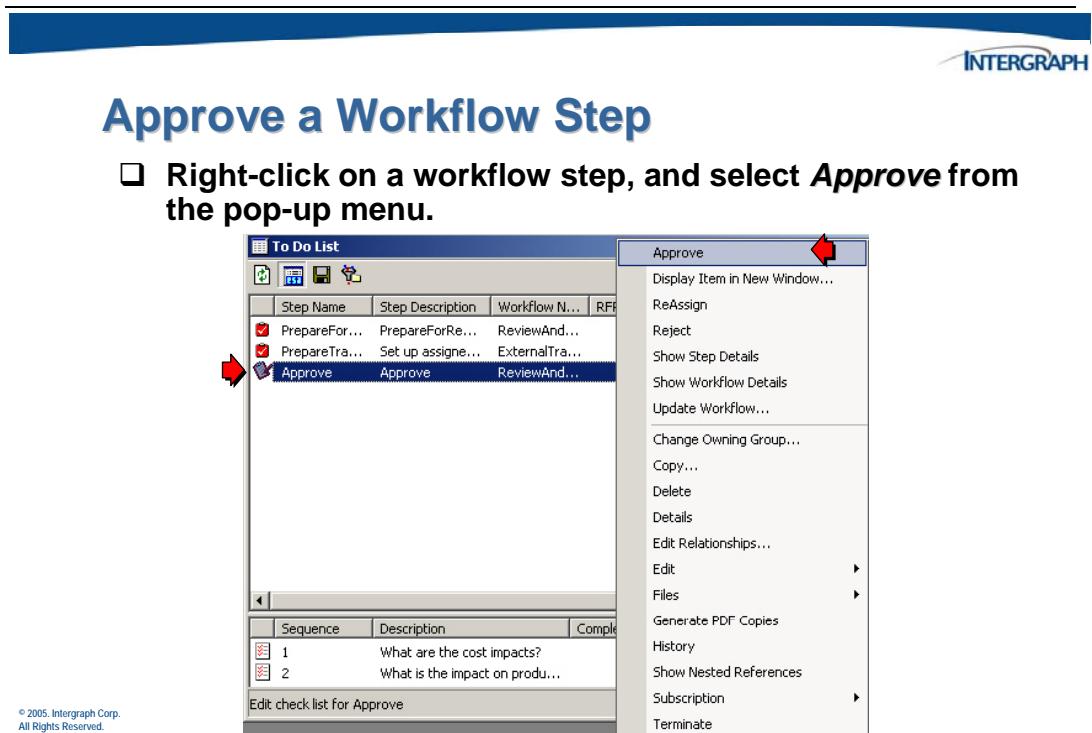
## 4.1.7 Reject/Approve

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**.

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



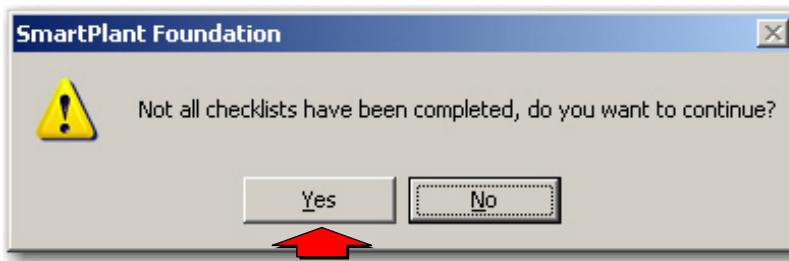
This **Approve** step also has a check list associated with it. The recipient can elect to not complete the checklist tasks. If a checklist associated with the step has not been completed, the software asks you if you want to complete the checklist before approving the step.

A warning message is displayed, but you can choose to continue with the step sign off.

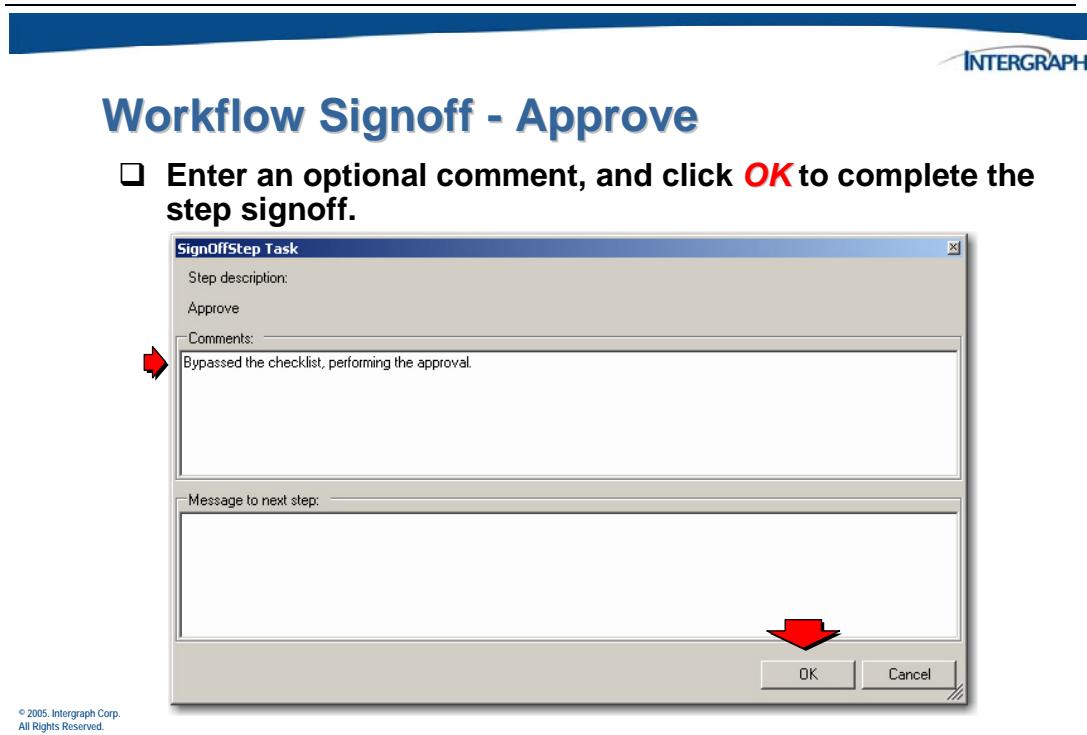
---

## Approve a Workflow Step

- Click **Yes** to process the step without completing the checklist.

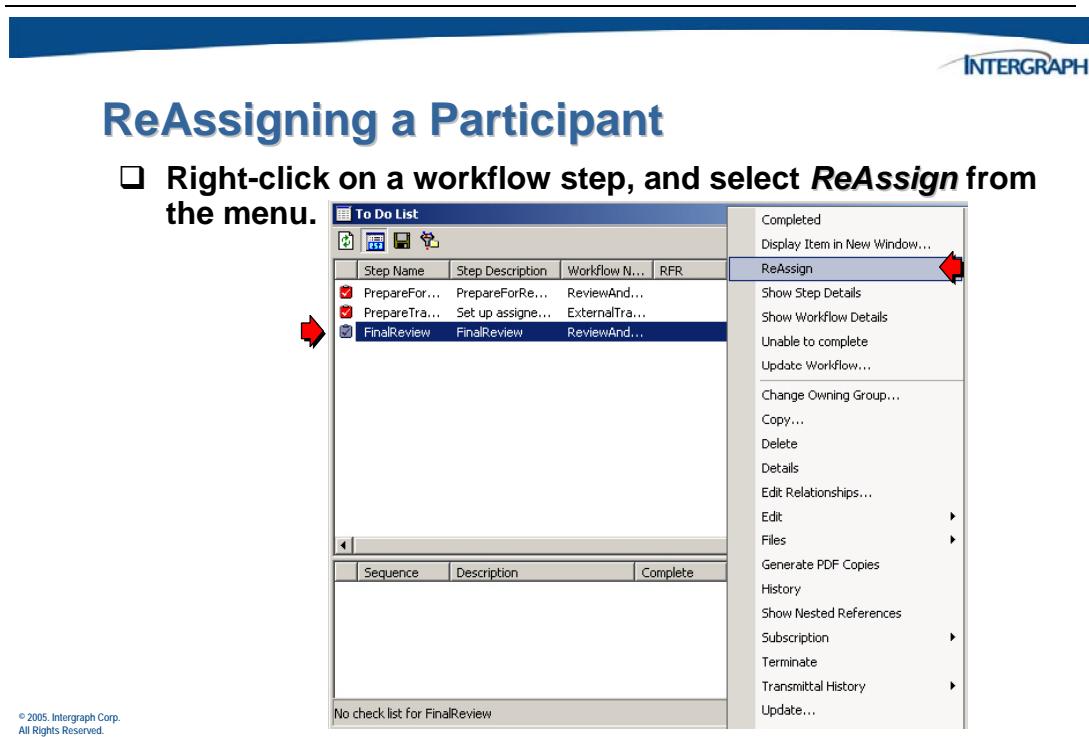


A *SignoffStep Task* dialog will appear so that this step can be *Approved* by the recipient.



## 4.1.8 Reassigning a Workflow Participant

The **Reassign** command allows you to assign the selected workflow step to a different user or user group.

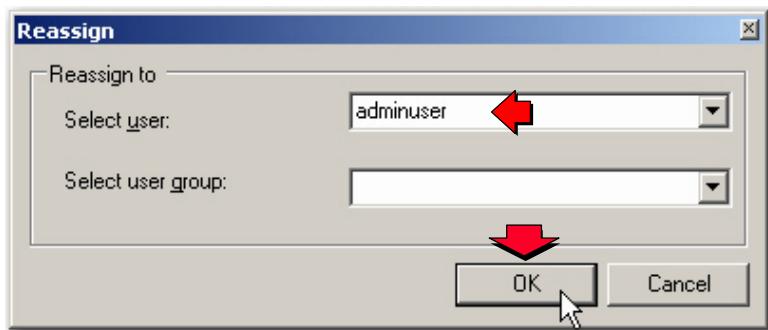


In the *Reassign* dialog box, select the user or user group to whom you want to reassign the step.



## ReAssigning a Participant

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



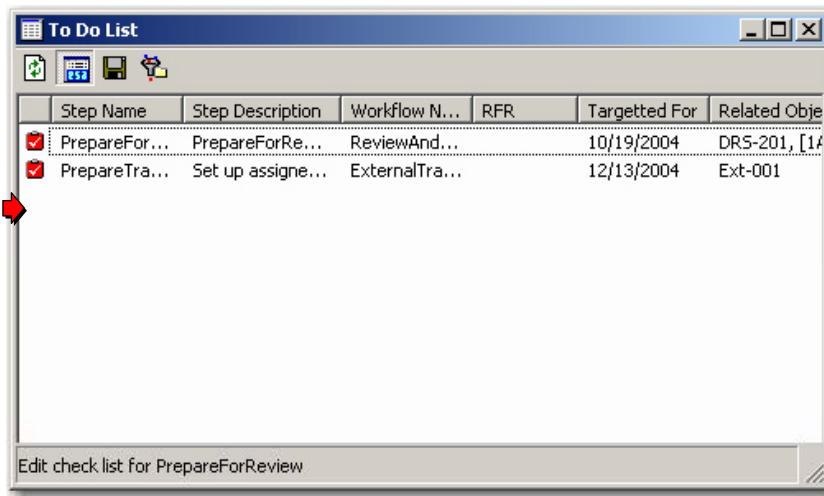
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The software removes the reassigned step from the *To Do List*, and the step appears in the *To Do List* of the user or users to whom the step was assigned.



## ReAssigning a Participant

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

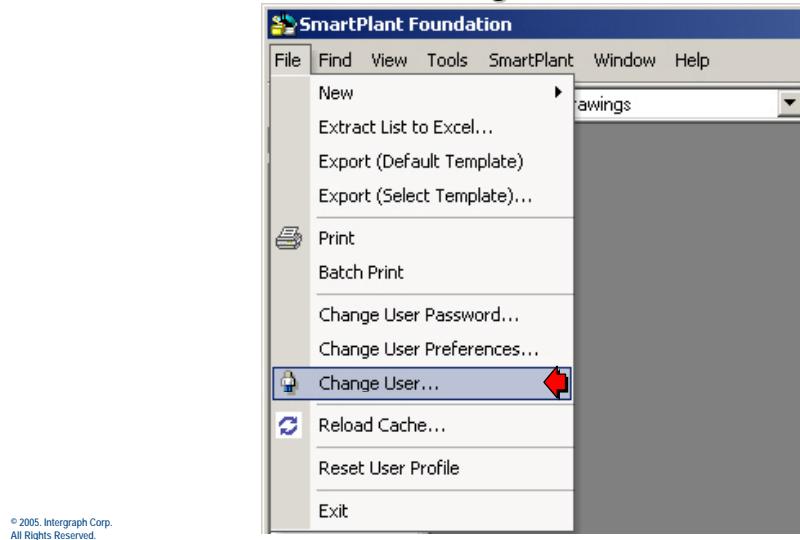


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## ReAssigning a Participant

- Select the **File > Change User** command.

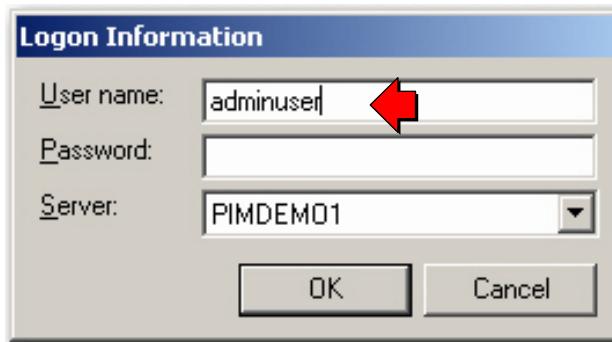


The *Logon Information* dialog will appear.



## ReAssigning a Participant

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

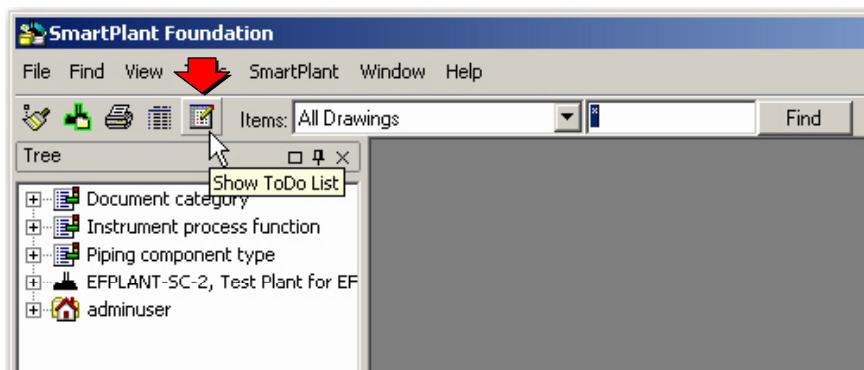


The reassigned user will log in and open their *To Do List*.



## ReAssigning a Participant

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



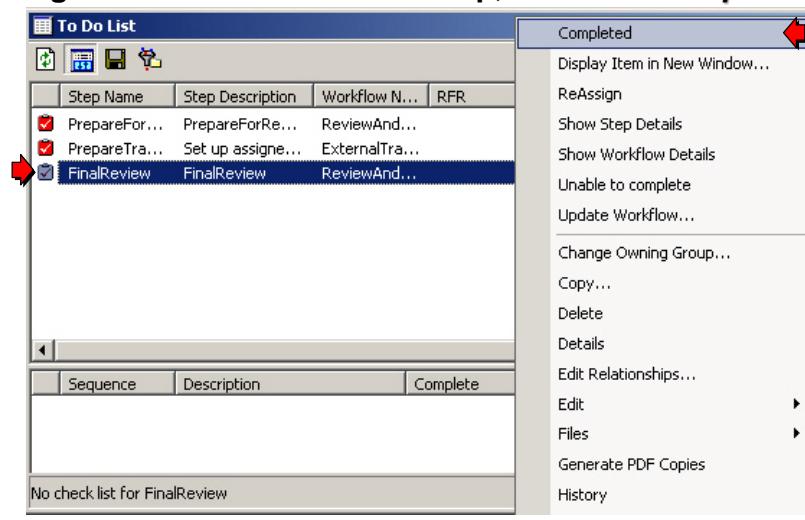
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Again, the Completed command allows you to mark the selected workflow step as completed.



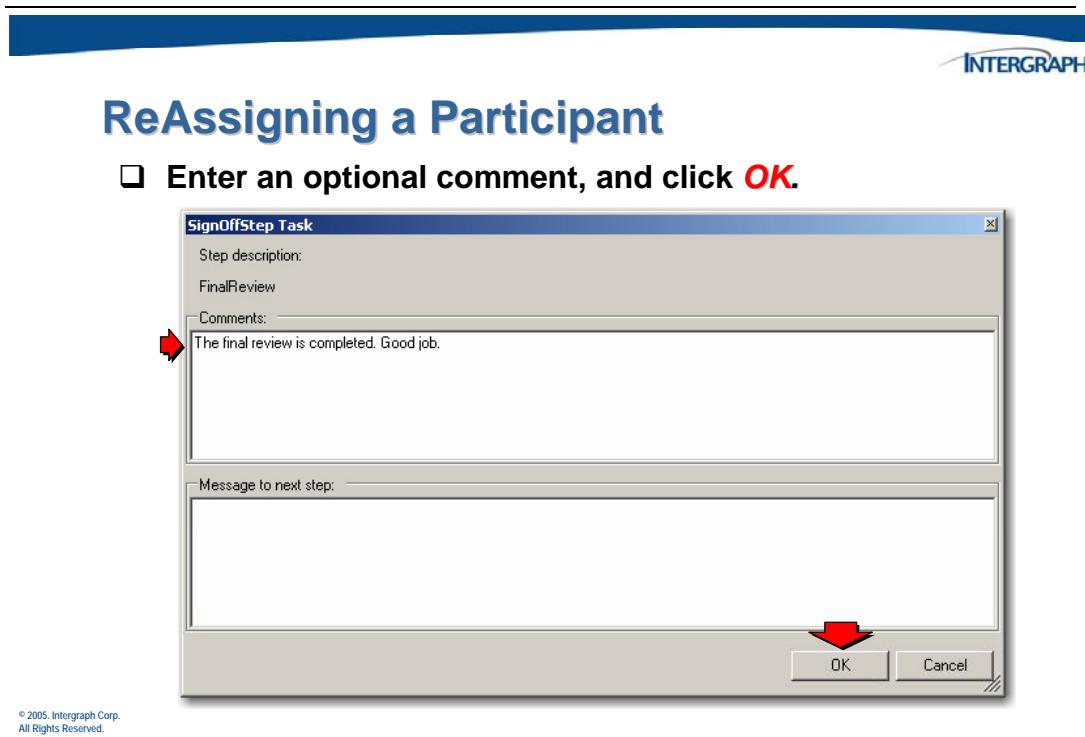
## ReAssigning a Participant

- Right-click on the workflow step, and click **Completed**.



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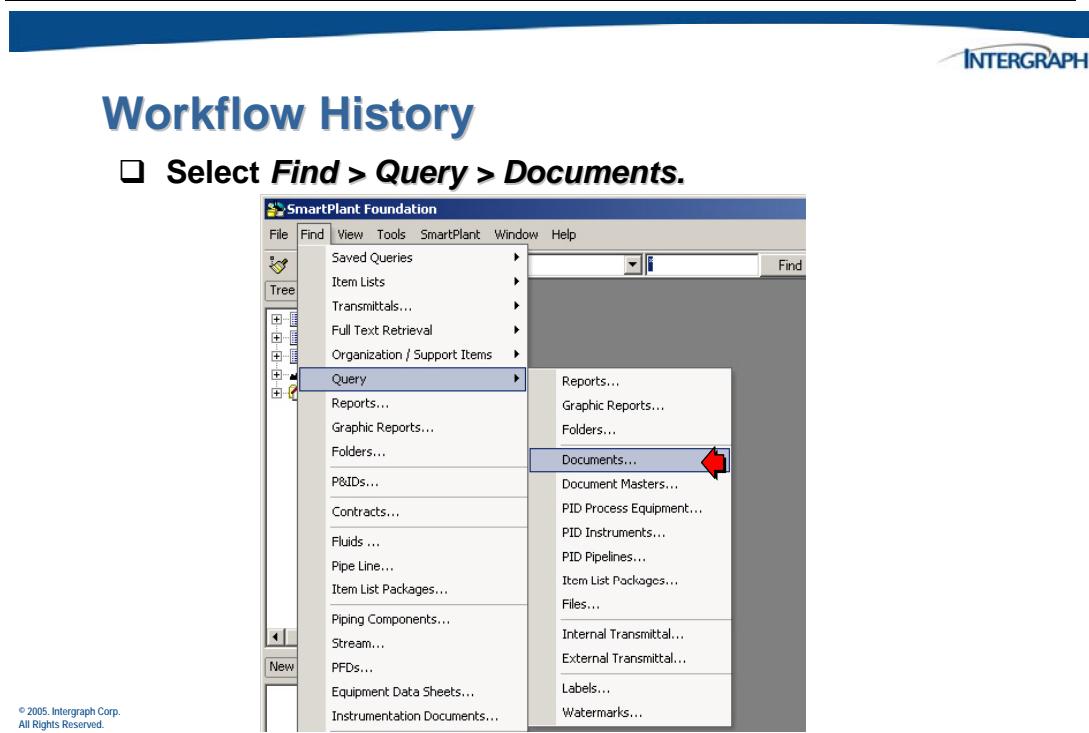
A *SignoffStep Task* dialog will appear so that this step can be *Completed*.



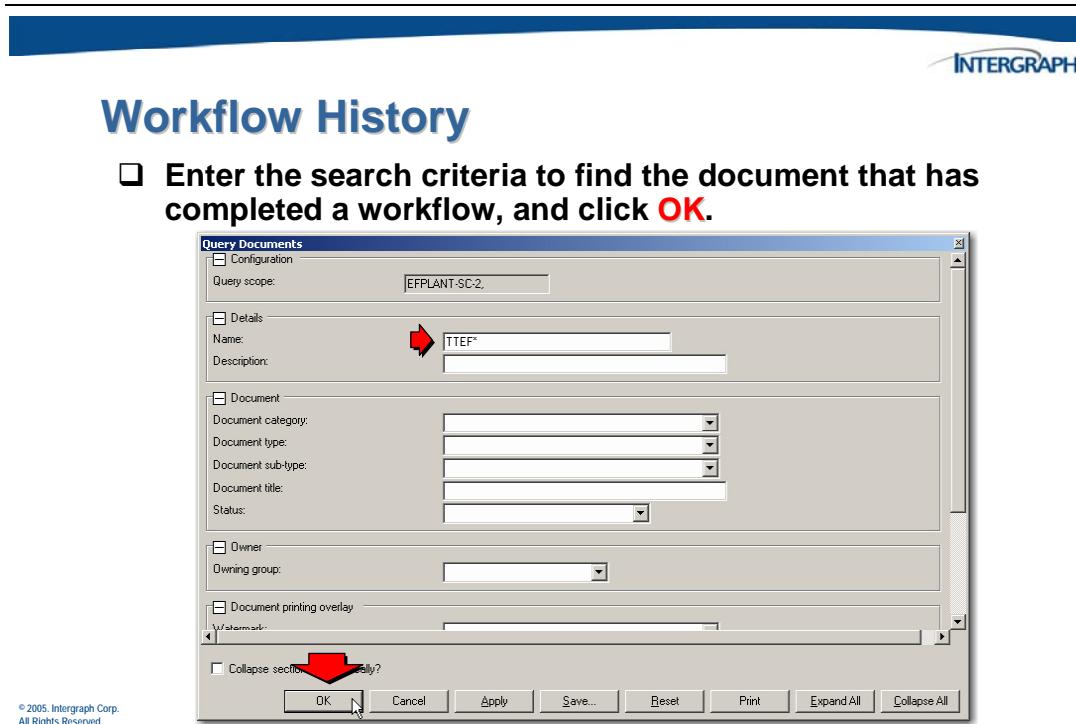
Since this is the last step in this workflow example, there are no more steps to be processed. The workflow is now completed.

## 4.2 Workflow History

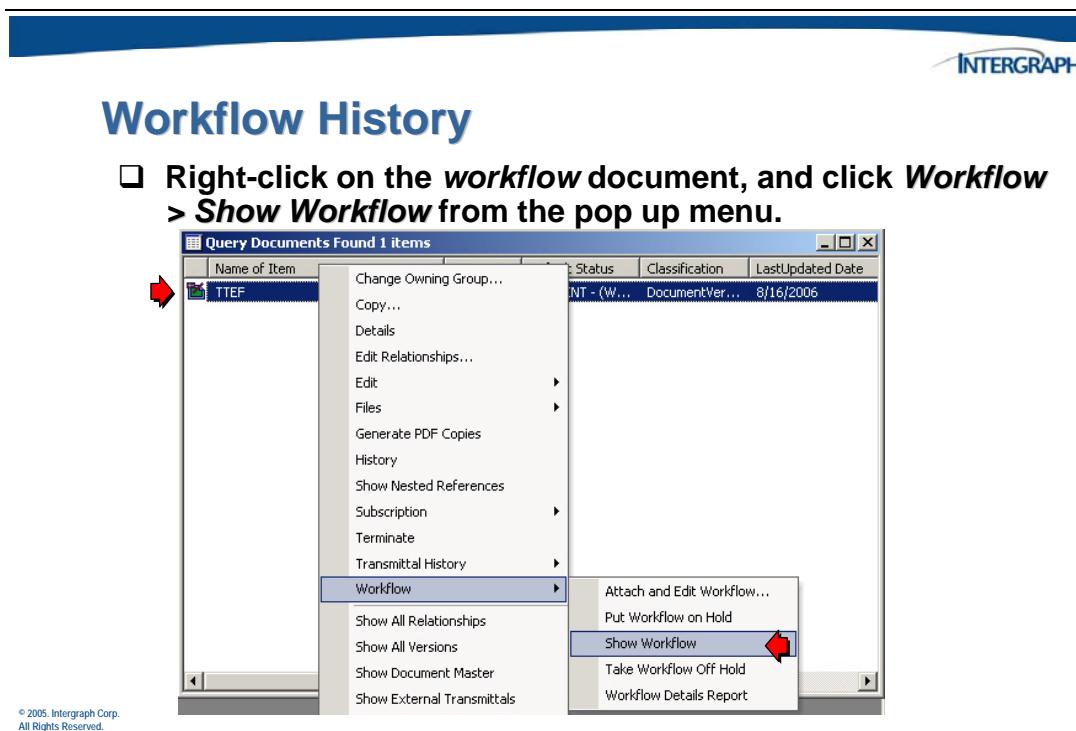
A *Workflow Details Report* can be generated to display the history of the workflow processing. First, perform a Query to locate a document that has completed a workflow.



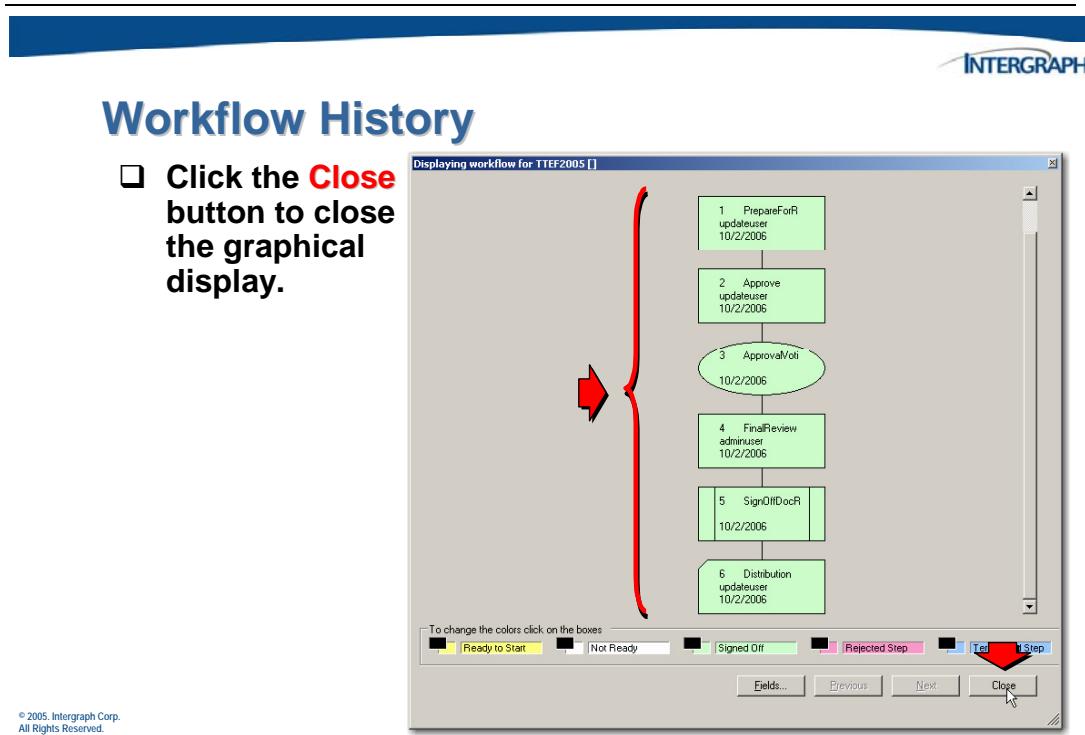
A *Query Documents* dialog will appear.



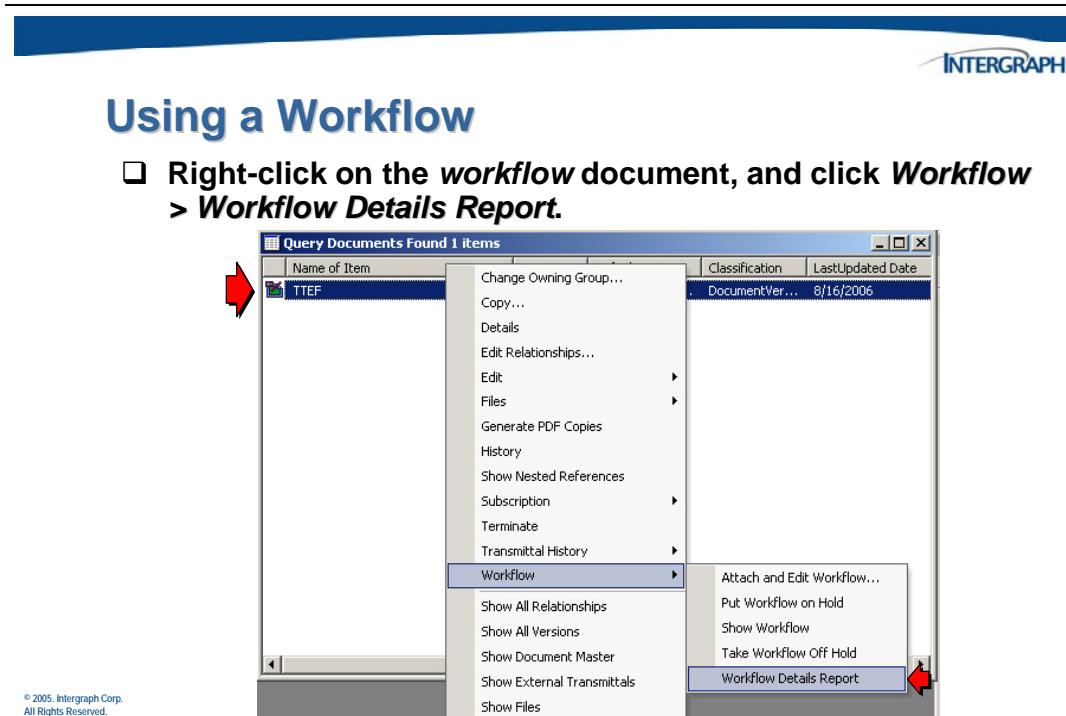
A *Query Results* list view window will appear.



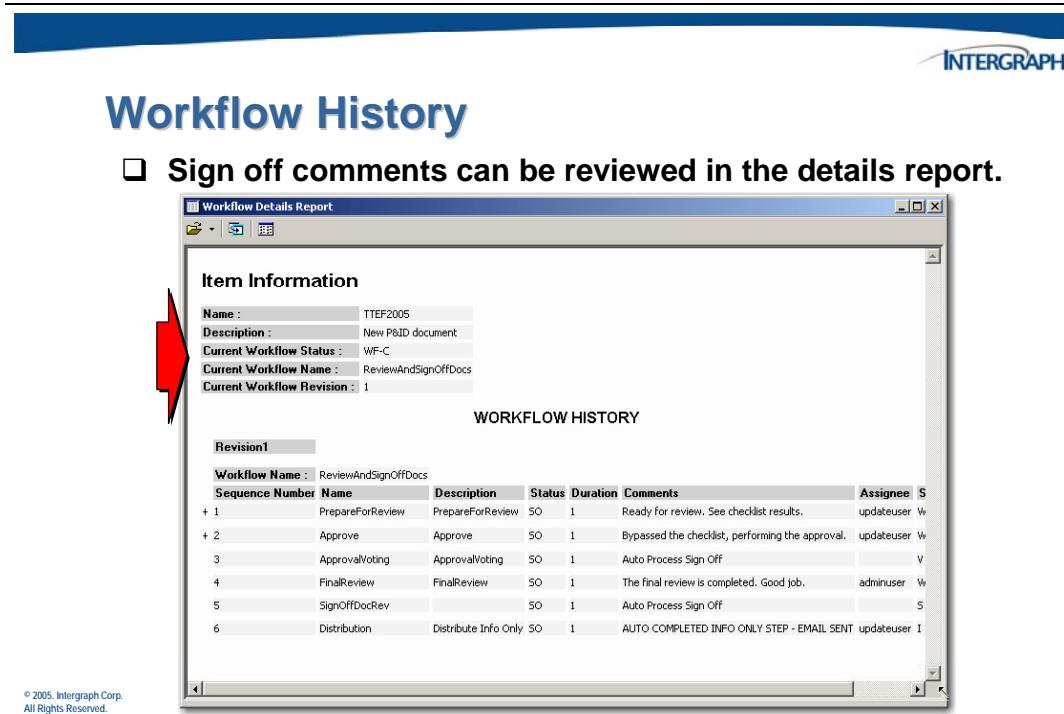
The graphical results will show all of the completed workflow steps.



Next, the user can generate a details report.



This report will display details about the finished workflow, such as the *Name*, *Workflow Status* (at completion), *Step Names*, and *Assignees*.

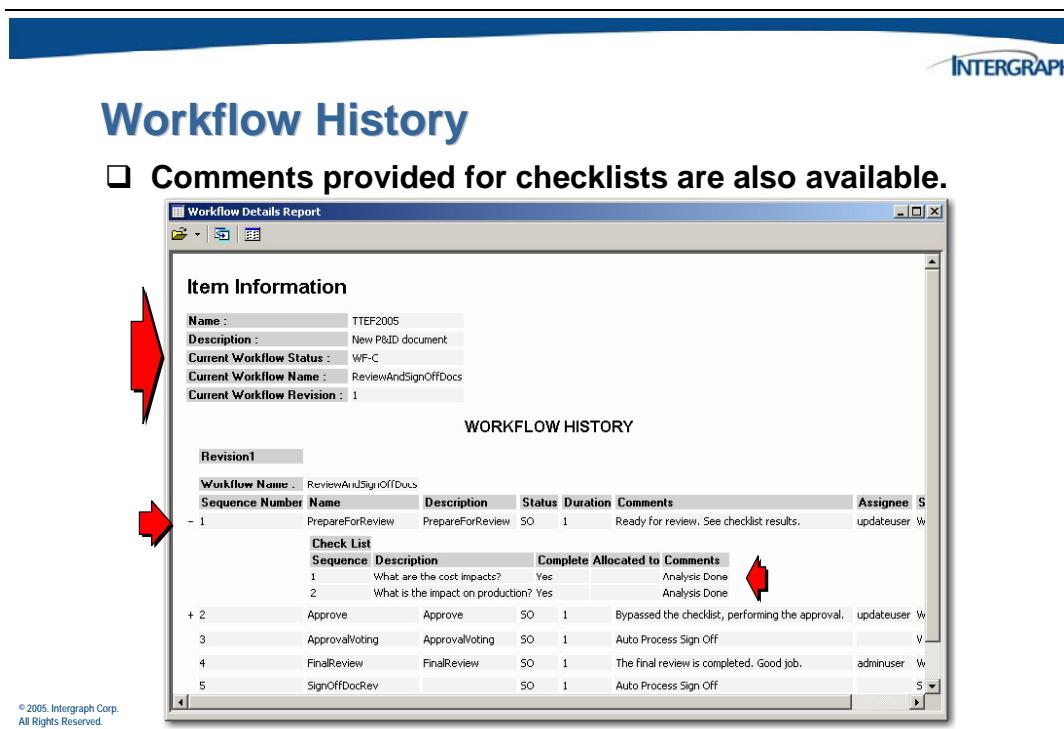


**Workflow History**

Sign off comments can be reviewed in the details report.

The screenshot shows the 'Workflow Details Report' window. At the top, there's a 'Item Information' section with fields for Name (TTEF2005), Description (New P&ID document), Current Workflow Status (WF-C), Current Workflow Name (ReviewAndSignOffDocs), and Current Workflow Revision (1). Below this is a 'WORKFLOW HISTORY' section titled 'Revision1'. It contains a table with columns: Sequence Number, Name, Description, Status, Duration, Comments, and Assignee. The table rows show steps like 'PrepareForReview', 'Approve', 'ApprovalVoting', etc., with their respective details. A red arrow points from the left margin to the 'Comments' column of the history table.

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



**Workflow History**

Comments provided for checklists are also available.

The screenshot shows the same 'Workflow Details Report' window. The 'Item Information' section is identical. In the 'WORKFLOW HISTORY' section, the 'Check List' table is highlighted with a red box and a red arrow pointing to it. This table has columns: Sequence, Description, Complete, Allocated, and Comments. It lists items like 'What are the cost impacts?' and 'What is the impact on production?'. The 'Comments' column shows 'Analysis Done' for both items. The rest of the history table below follows the same structure as the previous screenshot.

## 4.3 Submitting an Existing Document to a Workflow

If you are not ready to submit an object to a workflow when it is first created in the application, you can also submit it to a workflow at a later time. Here are the steps for submitting a document to a workflow after the initial installation process:

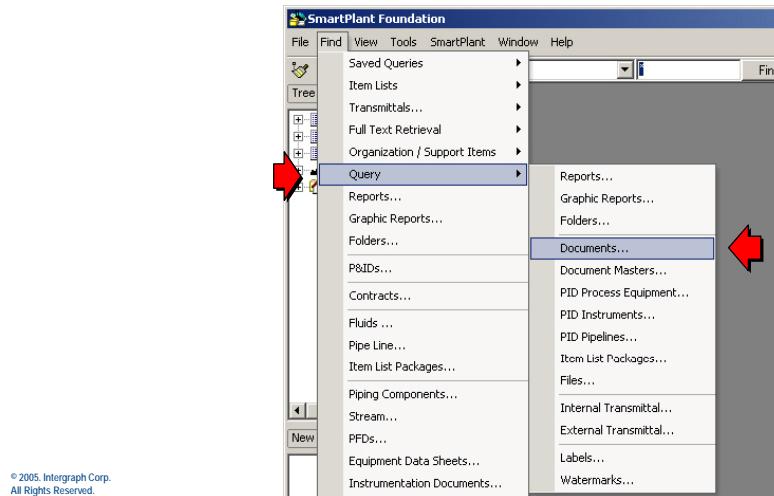
Open a *Query Form* to search for the document that you want to submit to a workflow.

---

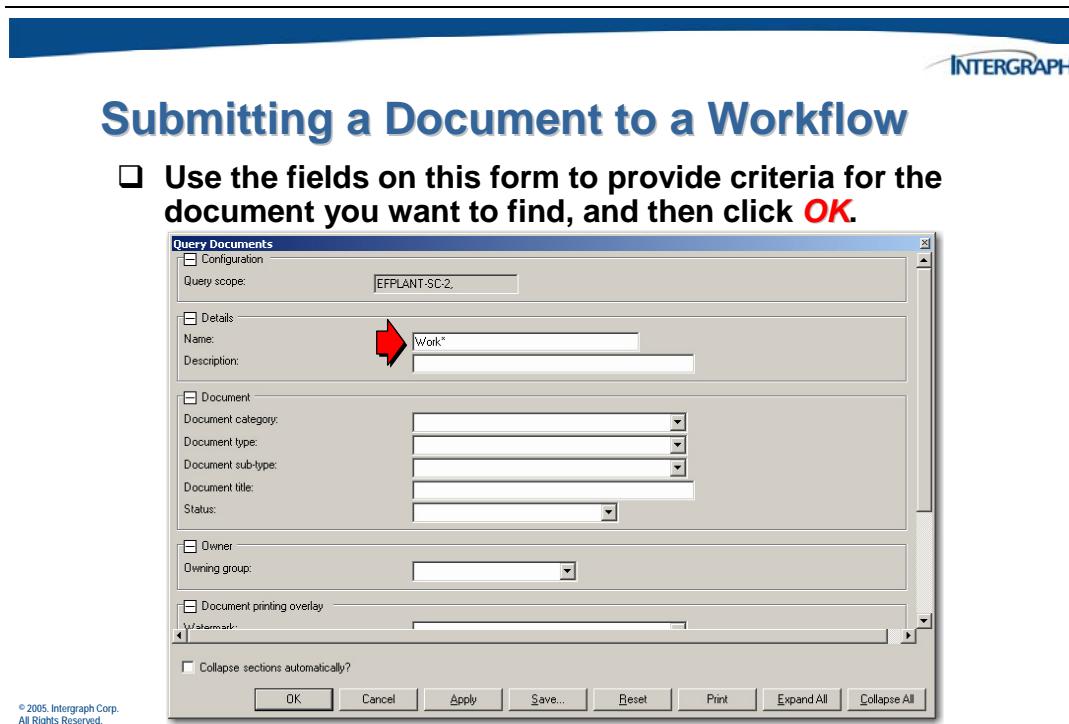


### Submitting a Document to a Workflow

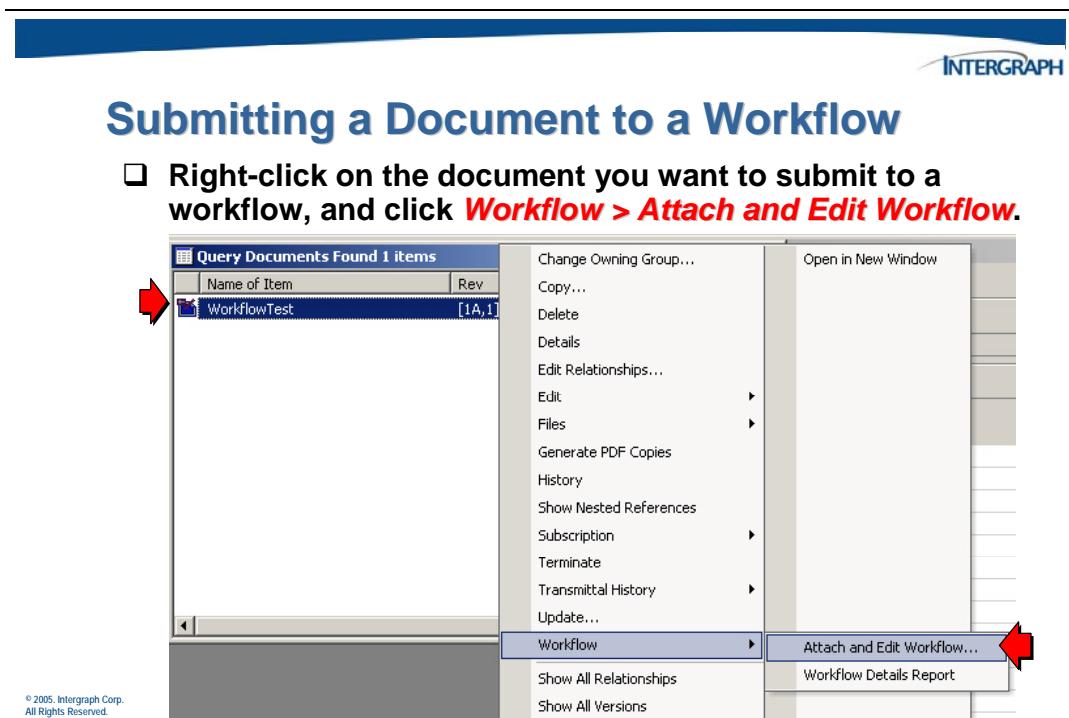
- To find an existing document that you want to submit to a workflow, use the Find > Query > Documents command.



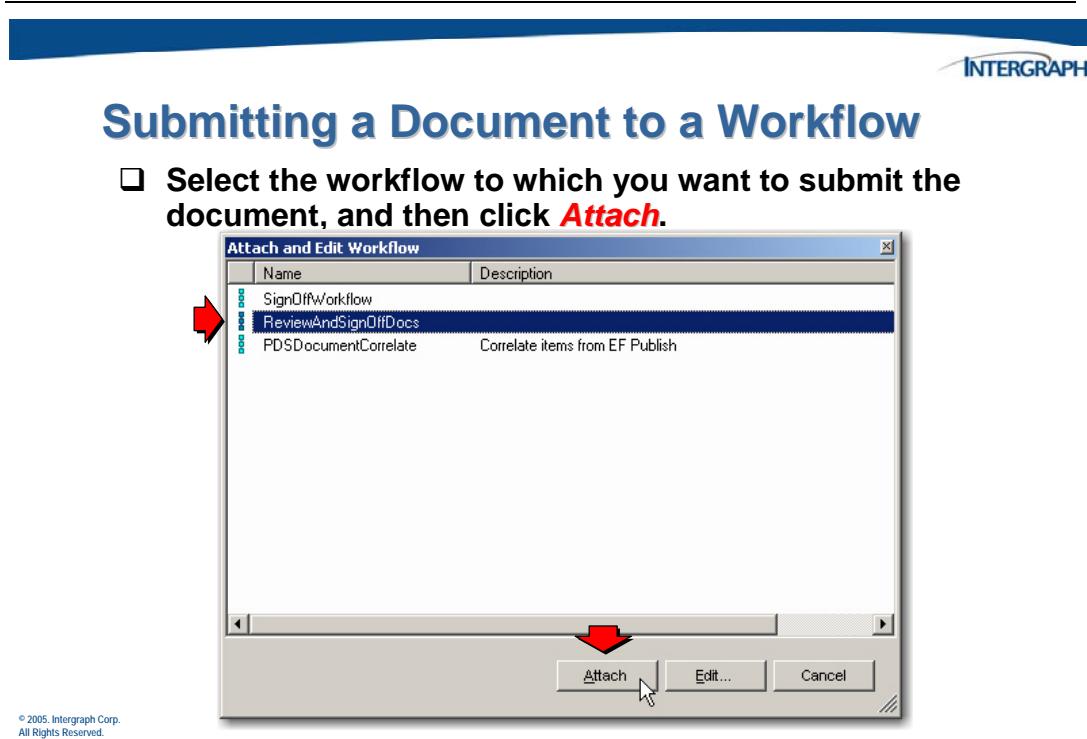
Provide the necessary criteria to find the document you want.



Click **OK** to run the query. From the results, find the document to you want to submit. Right-click on that document, and click **Workflow > Attach and Edit Workflow**.



The *Attach and Edit Workflow* dialog will appear. From the list that appears on this dialog box, you can select the workflow to which you want to submit the document.



## 4.4 Activity – Using a Workflow in SmartPlant Foundation

In this activity you will be creating a new document object with an attached file and submitting it to a workflow. You will use the To Do List to perform the necessary signoff steps to move the object through the steps of the workflow.

1. If you are not already logged in, log on to your operating system (not SmartPlant Foundation) as *spfuser* with no password.
2. Use the *Start > All Programs > Intergraph SmartPlant Foundation > SmartPlant Foundation Desktop Client* command to start the SmartPlant Foundation *Desktop Client*. Log in as **updateuser**.
3. Create a new document object. Use the *Document category* path **P&ID Documents > P&ID > Utility P&ID**. Enter the necessary information in the new object form. Give the document the name **TTEF2005**, but use your own choices for the rest of the required values. Click **Next** to continue to the next screen of the document creation wizard.
4. Attach the file **Process Design Workflow.igr** file to this new document. This file can be found in the folder **d:\spf\_training**. Click **Next** when the file has been attached.
5. Select the workflow **ReviewAndSignOffDocs** from the *Attach Workflow* screen, and click **OK**.
6. Verify that the file was attached to the new **TTEF2005** document.
7. Start the *Outlook Express* email client, and switch the identity to **updateuser**. Open the email message, and review the contents.
8. Minimize *Outlook Express* so you can use it again later.
9. In the Desktop Client, open the *To Do List* for **updateuser**.

10. Locate the **PrepareForReview** step for the TTEF2005 document.
11. Display the *Checklist Preview Pane* (if it is not already displayed).
12. Complete the attached checklist, and **Save** the results.
13. Use the shortcut menu to **Complete** this workflow step.
14. In the *SignOffStep Task* dialog, enter some comments of your choice. Also enter an email message in the **Message to next step** field at the bottom of the dialog. Click **OK** when you are ready to finish the sign off.
15. Use Outlook Express to view the new message and verify that the additional message has been added and sent from the sign-off task.
16. Back in the Desktop Client, right-click on the **TTEF2005** document and view the graphical workflow (**Show Workflow**).
17. Use the *Fields* button to make changes to the displayed step information. Select some additional properties, change the size of the displayed step boxes, and arrange the new properties in the step box on the *Select Attributes to Display* dialog. Click **OK** when you have finished your changes. **Close** the graphical workflow display.
18. Locate the **Approve** step for the TTEF2005 document in the *To Do List* for **updateuser**.
19. Use the shortcut menu to **Approve** this workflow step.
20. Continue the approval without completing the associated checklist.
21. In the *SignOffStep Task* dialog, enter some comments of your choice. Click **OK** when you are ready to finish the sign-off.

22. Display the workflow details associated with this step (**Show Workflow Details**).
23. Use Outlook Express to view the new sign off message.
24. Use the **ReAssign** command to reassign the *FinalReview* step to the user **adminuser**.
25. Use the **File > Change User** command to change the Desktop Client user to **adminuser**.
26. Open the *To Do List* for adminuser, and verify that the *FinalReview* step is displayed.
27. Use the shortcut menu to **Completed** this workflow step.
28. In the *SignOffStep Task* dialog, enter some comments of your choice. Click **OK** when you are ready to finish the sign-off.
29. Perform a search for the document **TTEF2005**. Right-click on the document, and view the graphical workflow (**Show Workflow**). Verify that all of the steps are now **green** indicating that the workflow has been completed. **Close** the graphical workflow display.
30. Right-click again on the TTEF2005 document object, and view the details report that contains the history information for that document's process through the workflow (**Workflow Details Report**). Close the report.
31. Find the existing document object named WorkflowTest, and submit it to the ReviewandSignOffDocs workflow. Open the ToDo List to verify that the document was submitted to the workflow. Open Outlook Express and ensure that the adminuser received an email announcing that the document was submitted to a workflow.
32. Log out of the Desktop Client and take a short break until all of the other students have finished this activity.



C H A P T E R

# 5

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## 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.
- **FTR Searches.** Using a third-party software, the Full Text Retrieval functionality allows you to search files in the database by either property values (attributes) or by object/file textual content.
- **AdHoc Reporting.** The SPF reporting functionality allows you to create a 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.
- **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.
- **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.
- **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.
- **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.
- **Committing Projects.** When doing work in a project/as built environment, you will eventually need to commit completed project information to the as-built environment. This chapter shows you how to migrate that information from one configuration to another.

## 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 revisions 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 revision, you can select the specific file/files that you want to view.

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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 Foundation 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 SmartPlant model, you can only view files associated with document revisions.

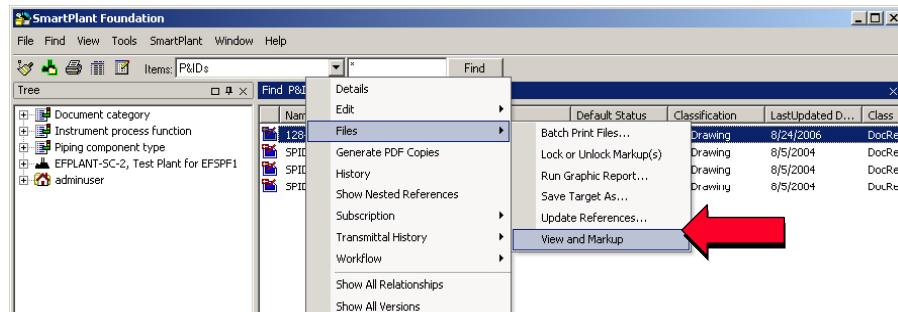
**Important:**

- You must have SmartPlant Markup installed on your computer to use the View and Markup command to add annotations in the Desktop Client.
- 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.



## Viewing and Marking Up Files

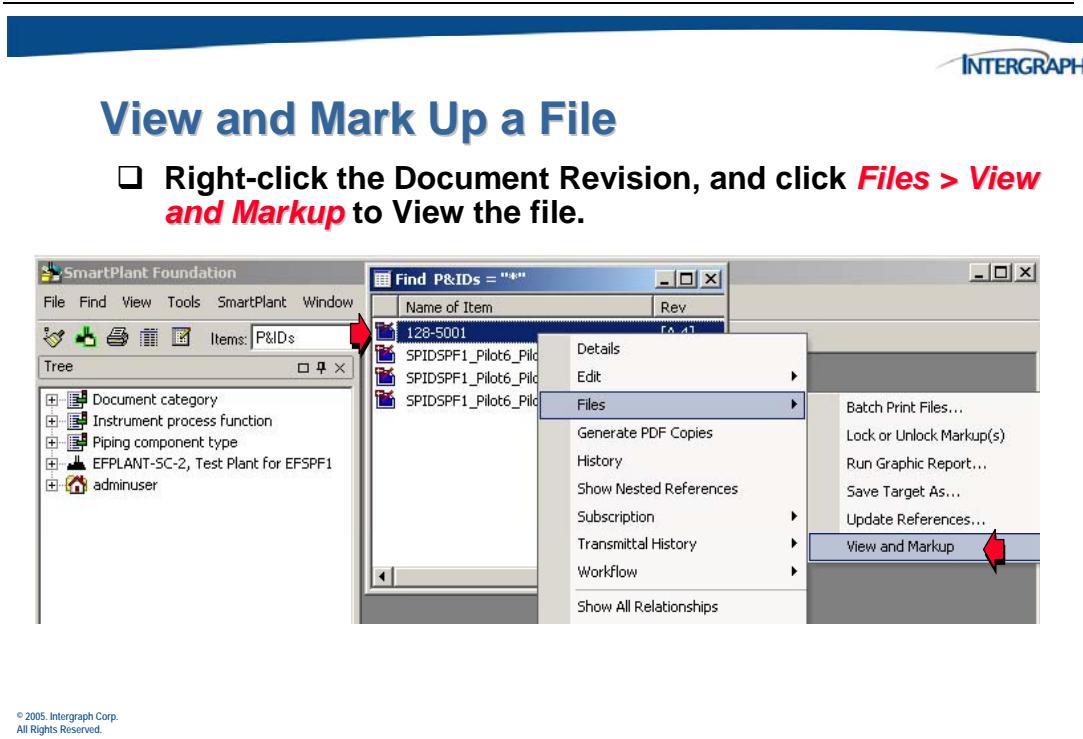
- ❑ You must have SmartPlant Markup installed on your computer to use the View and Markup command to annotate a file or view property information.
- ❑ You need to set both Internet and Local intranet security options (Active X ...) in Internet Explorer to prompt or enable.



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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 to mark up, 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:

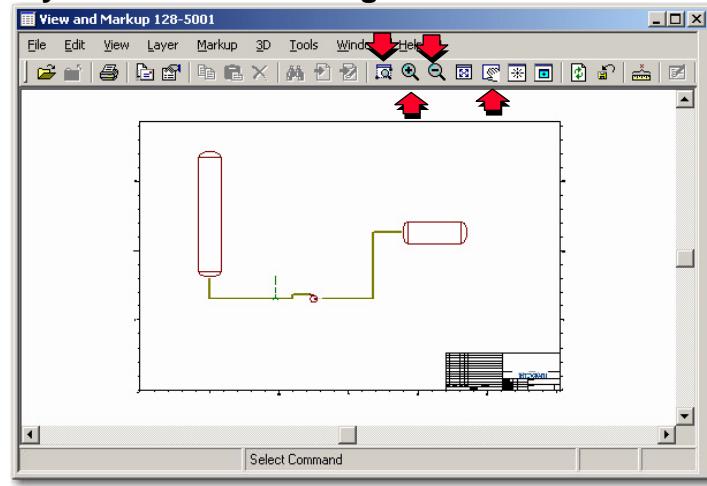
- AutoCad 2004 files require the CSI viewer in order to view correctly. The CSI view is included with SmartPlant Markup Plus. To view this file type, you must select to install the CSI viewer when installing SmartPlant Markup.

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.



## View and Markup Window

The drawing view controls can be used to zoom, fit, pan and magnify areas of the drawing.



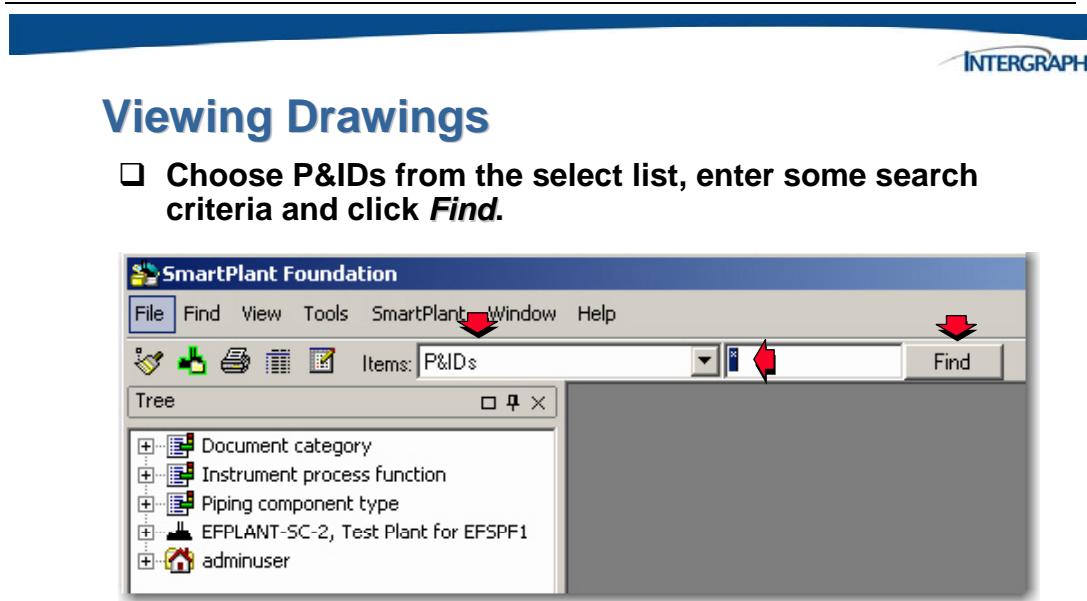
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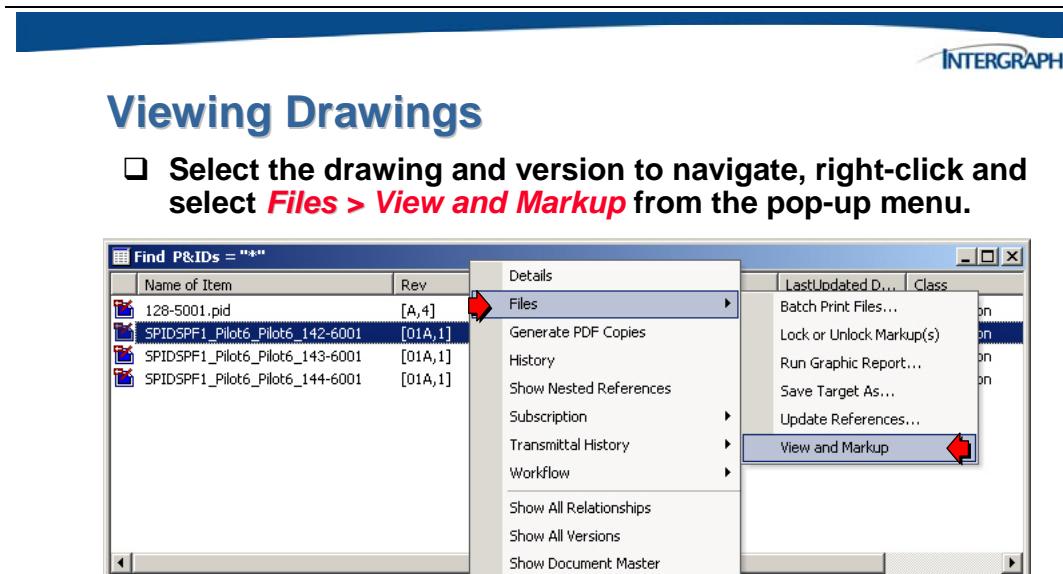
## 5.1.1 Viewing Object Properties

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.

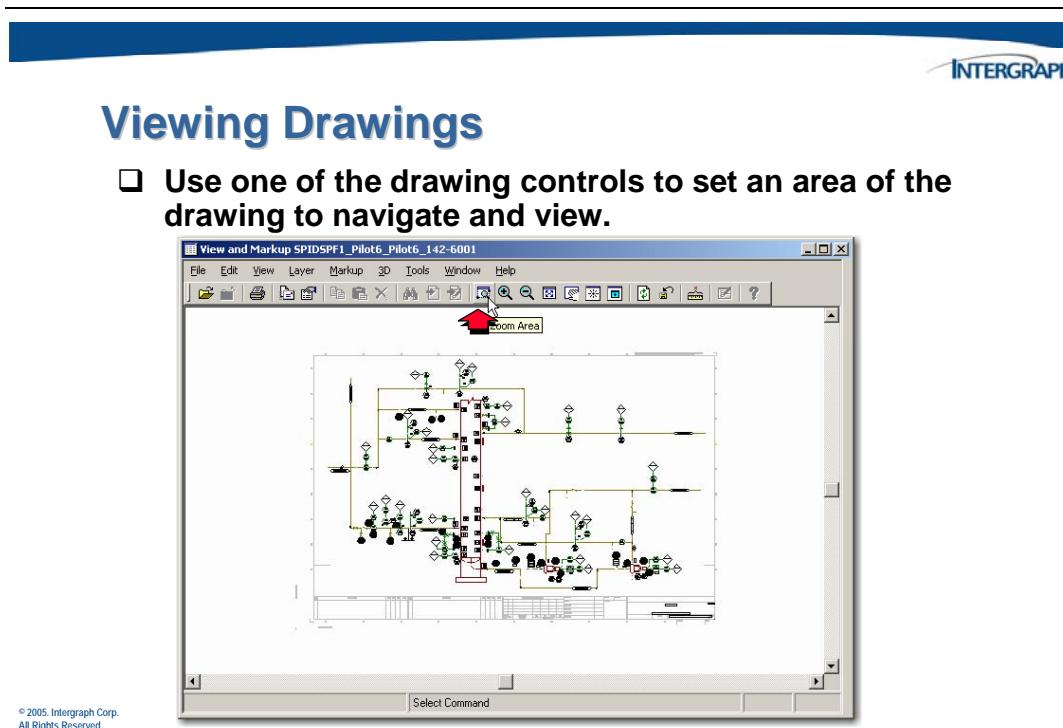


A *Find* list view window will appear with the results of the search.

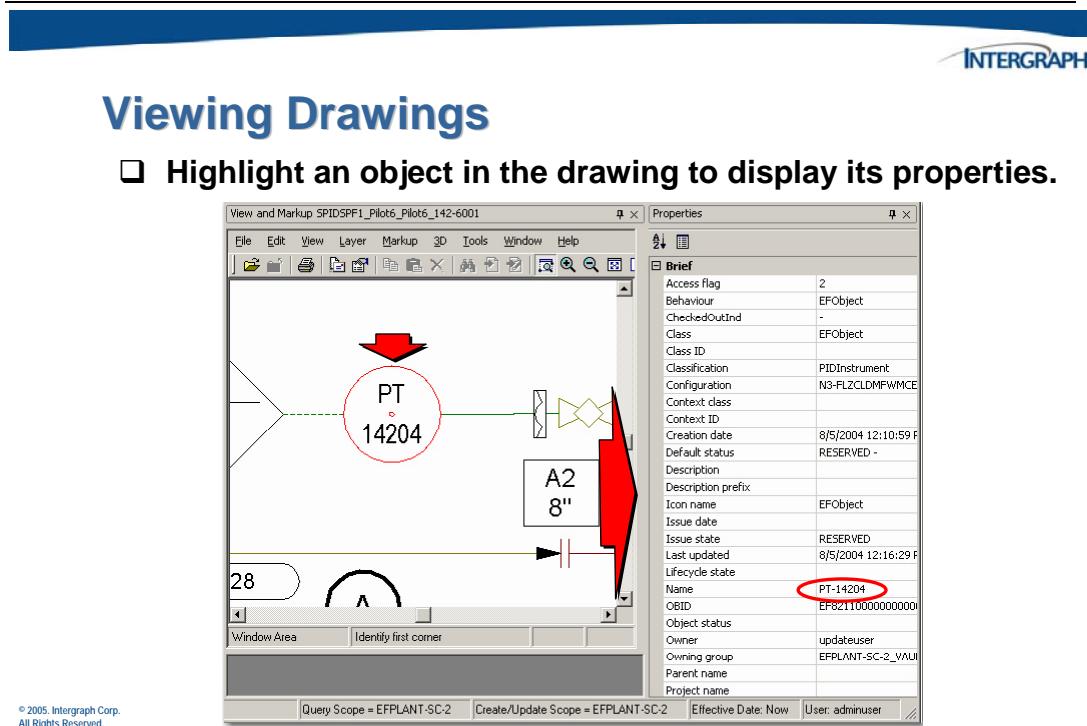


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The drawing will appear within a *View and Markup* window.

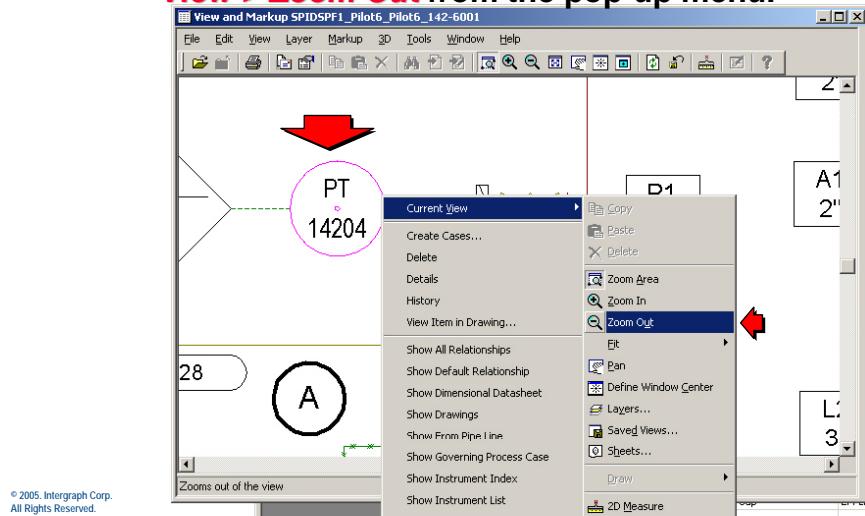


To get more information about an object in a drawing, you can click the object in the drawing to display properties for the object in the *Properties* window. The Properties window must be displayed to view the properties of the object.



## Viewing Drawings

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

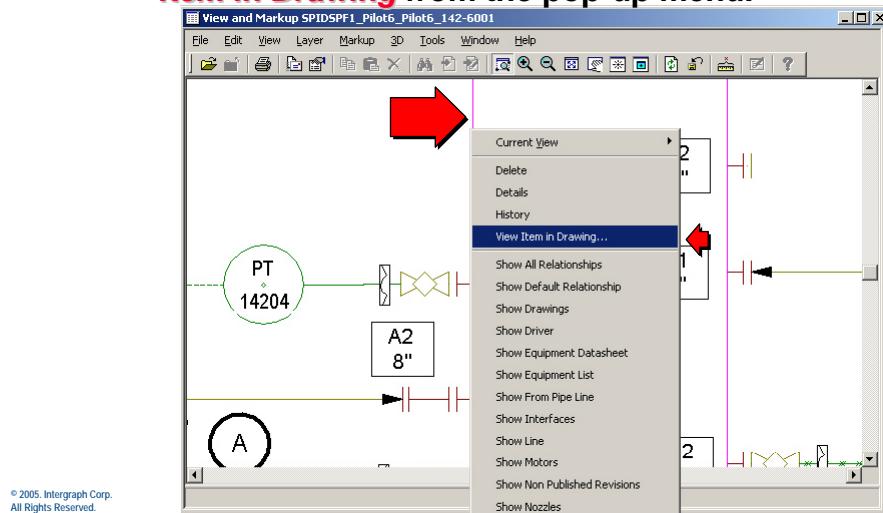


To view relationships and invoke methods on the object, right-click the object in the drawing, and then click the appropriate command on the shortcut menu. The shortcut menu commands for each object contain most of the same commands that you see when you right-click the object in a tree or list view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



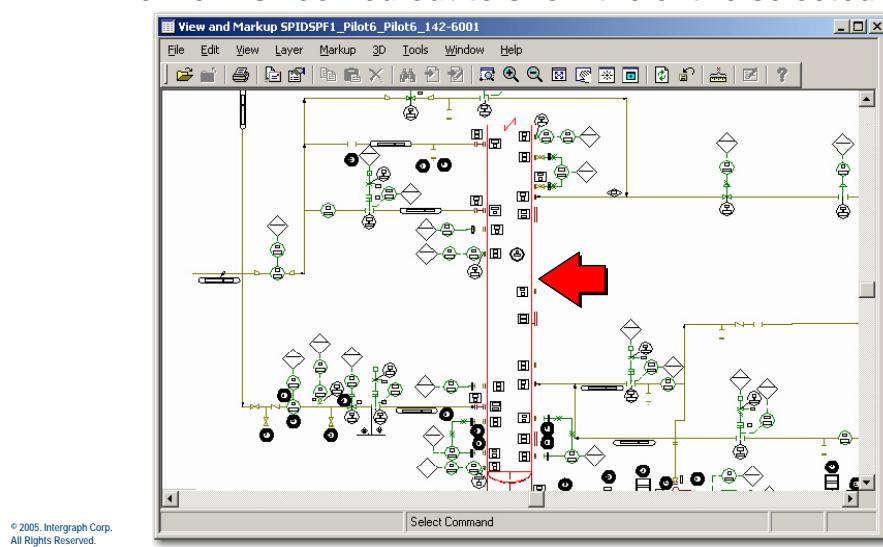
## View an Item in a Drawing

- 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

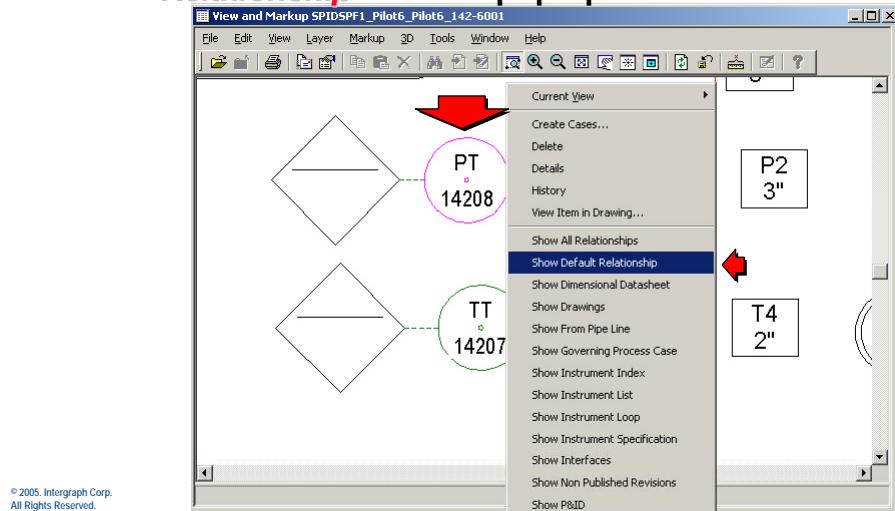
The view is zoomed out to show the entire selected object.





## Viewing Drawings

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

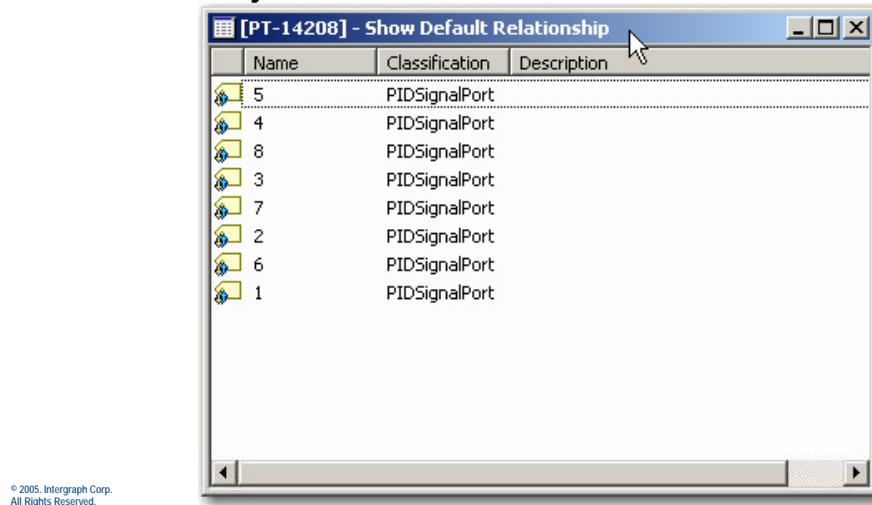


To expand relationships and invoke methods associated with an object, right-click the object in the drawing, and then click the appropriate command on the shortcut menu.



## Viewing Drawings

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



## 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.

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## Markup Toolbar

**Click**      **To** (cont.)



Create an ellipse.



Create a filled ellipse.



Create a free sided shape.



Create a filled free sided shape.

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## 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.

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## Markup Toolbar

**Click**    **To** (cont.)



Allows you to place a saved symbol into the layer.



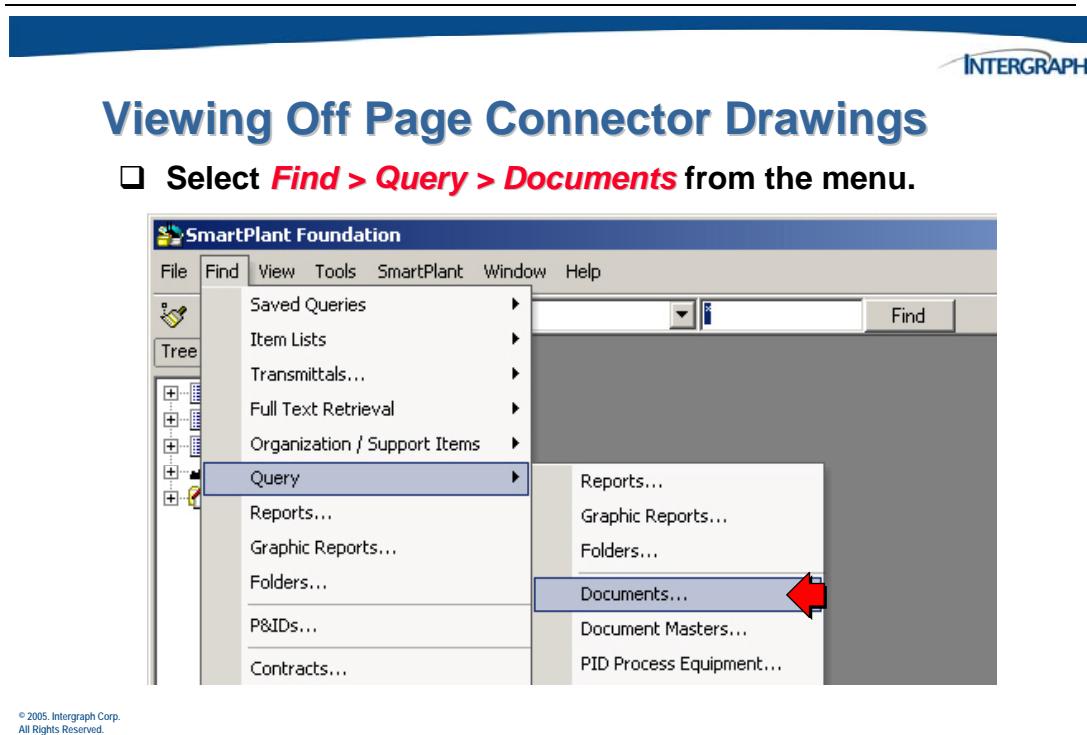
Allows you to select elements in the markup layer.

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### 5.1.3 Viewing Off Page Connector Drawings

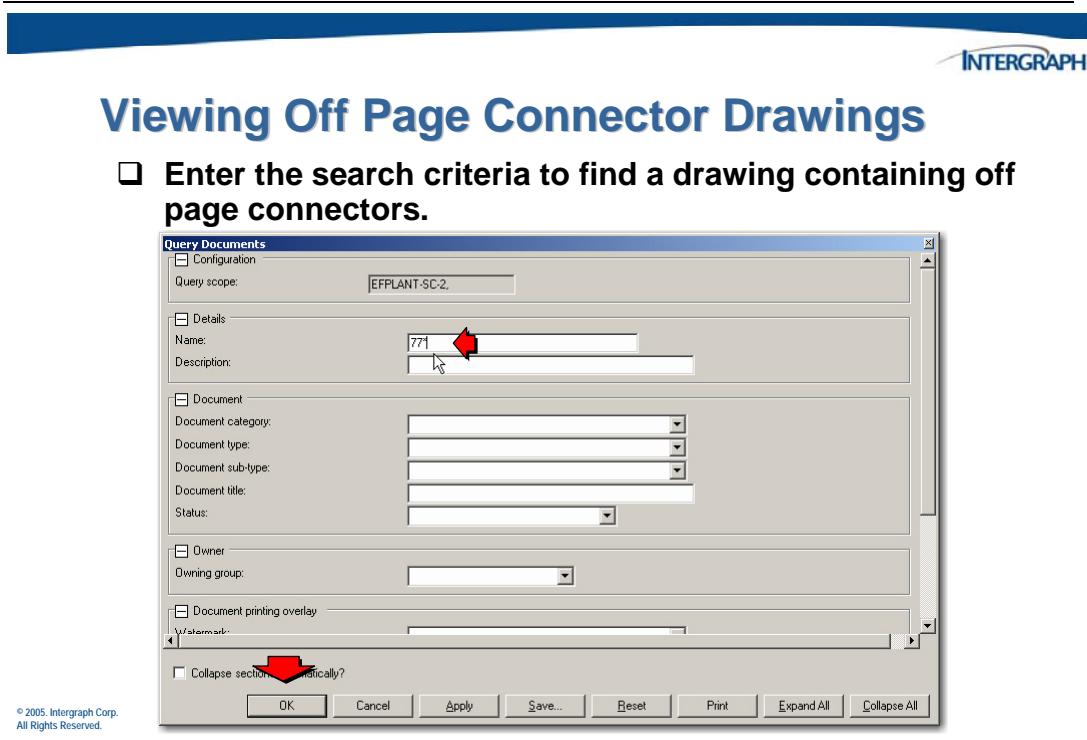
Some drawings, P&IDs for example, are split into multiple drawings. SmartPlant Foundation allows you to view a different drawing that is connected to the drawing currently in the drawing view. In the following example, being able to query and navigate a drawing that has off page connectors will be demonstrated. (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.

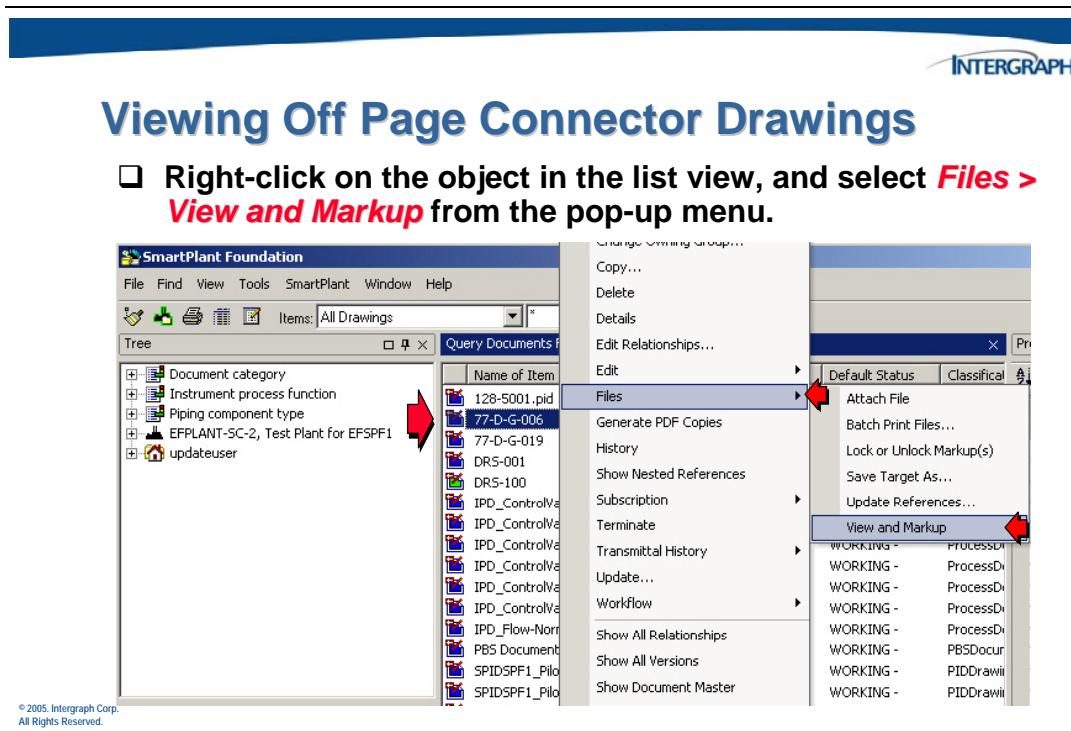


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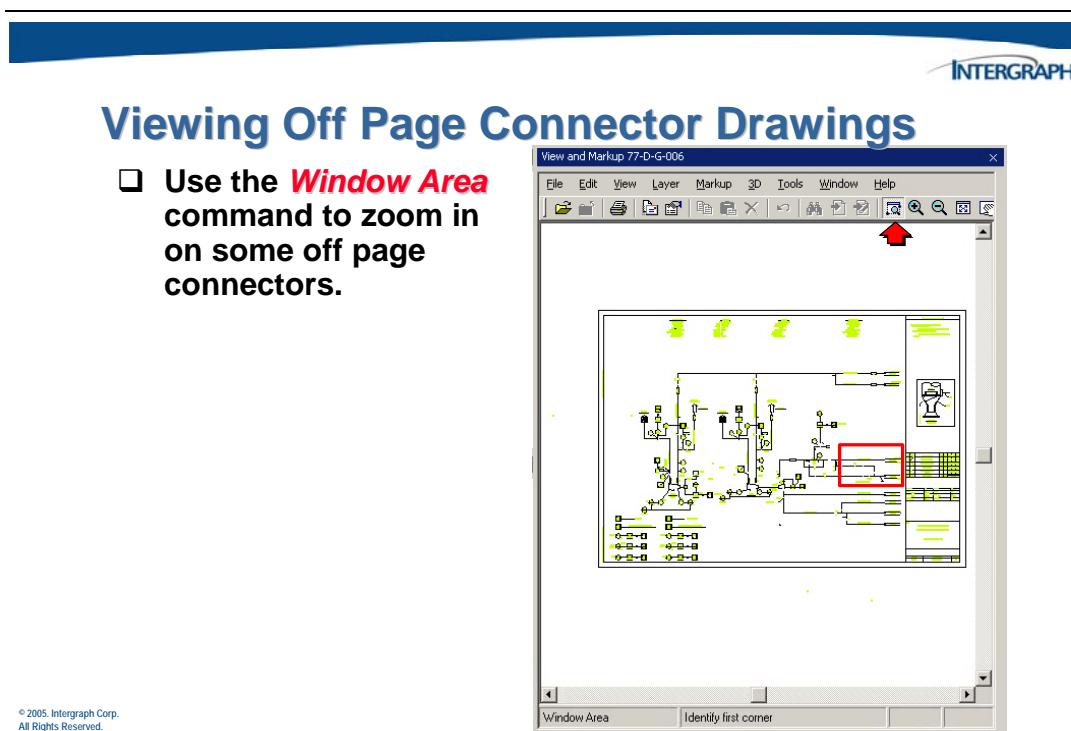
The *Query Documents* form will appear where you can enter the appropriate search criteria.



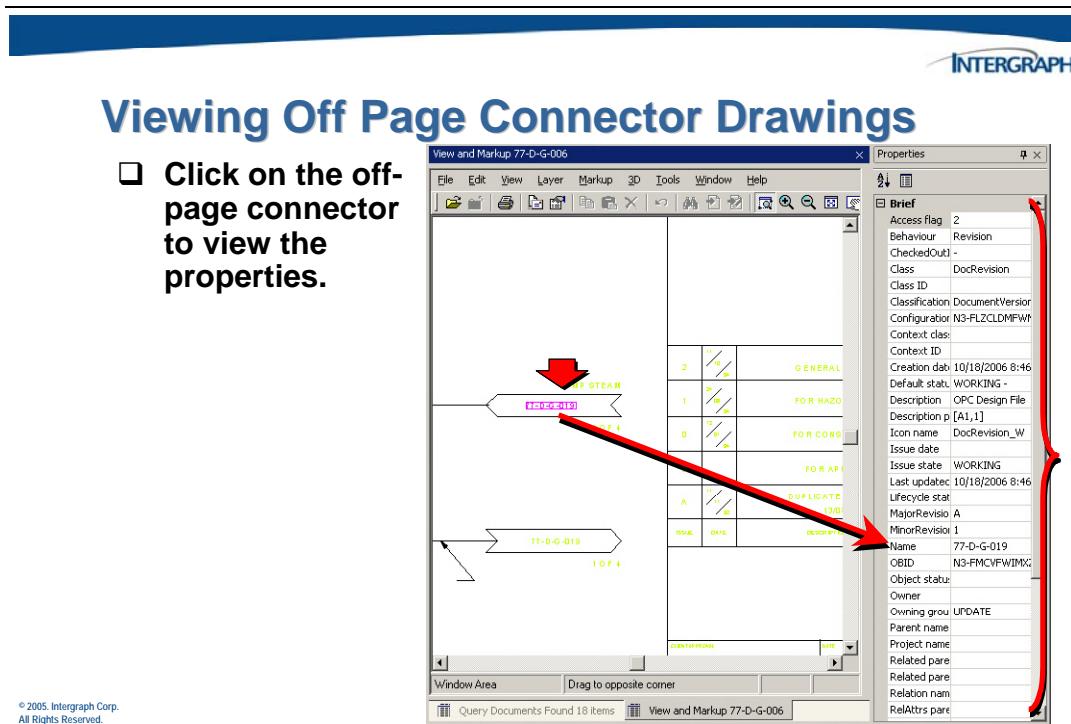
A list view window will display the query results.



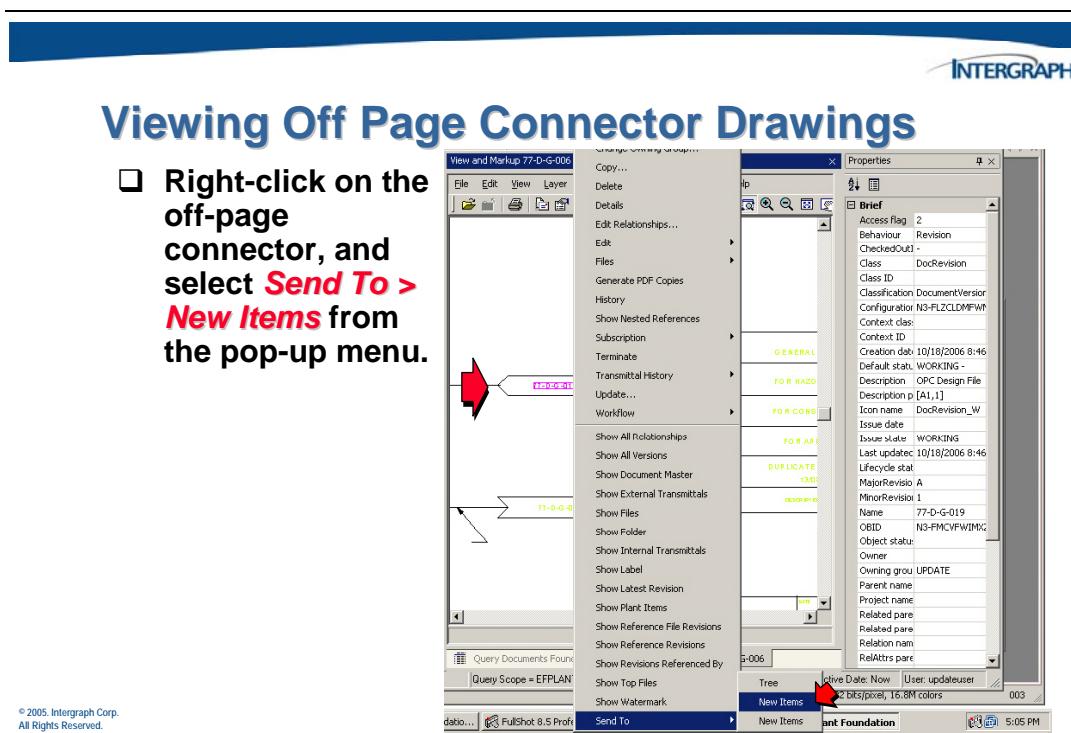
Locate some off page connectors (in the lower right corner) in this drawing view.



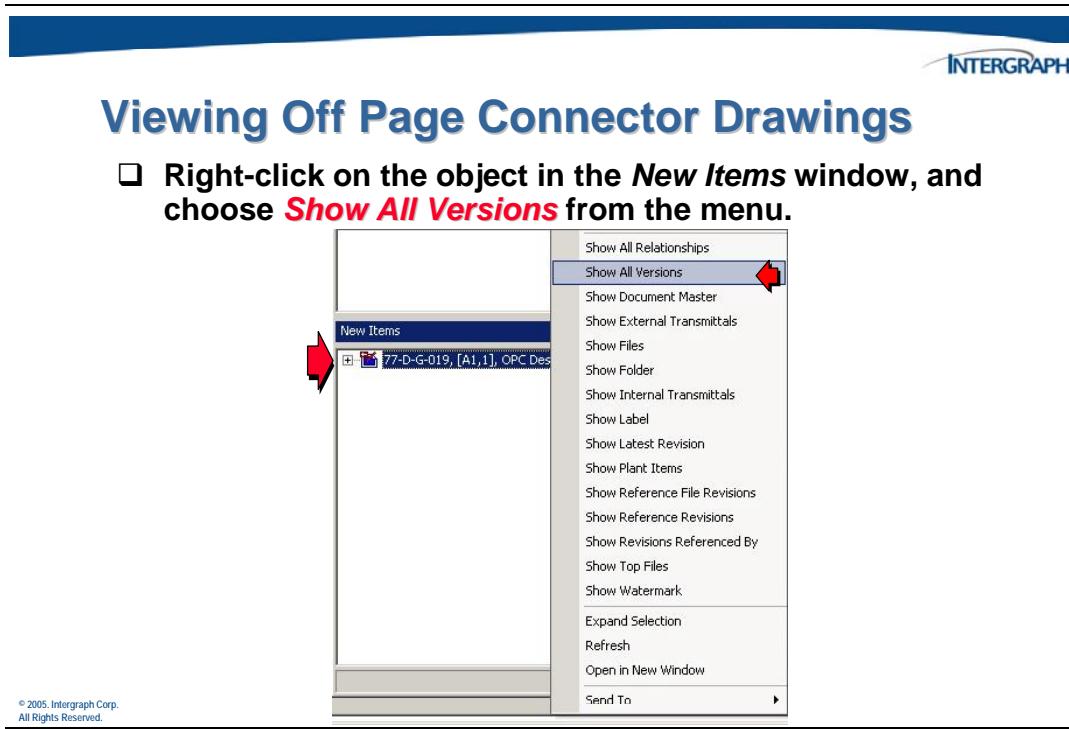
The properties associated with the connector object can be displayed.



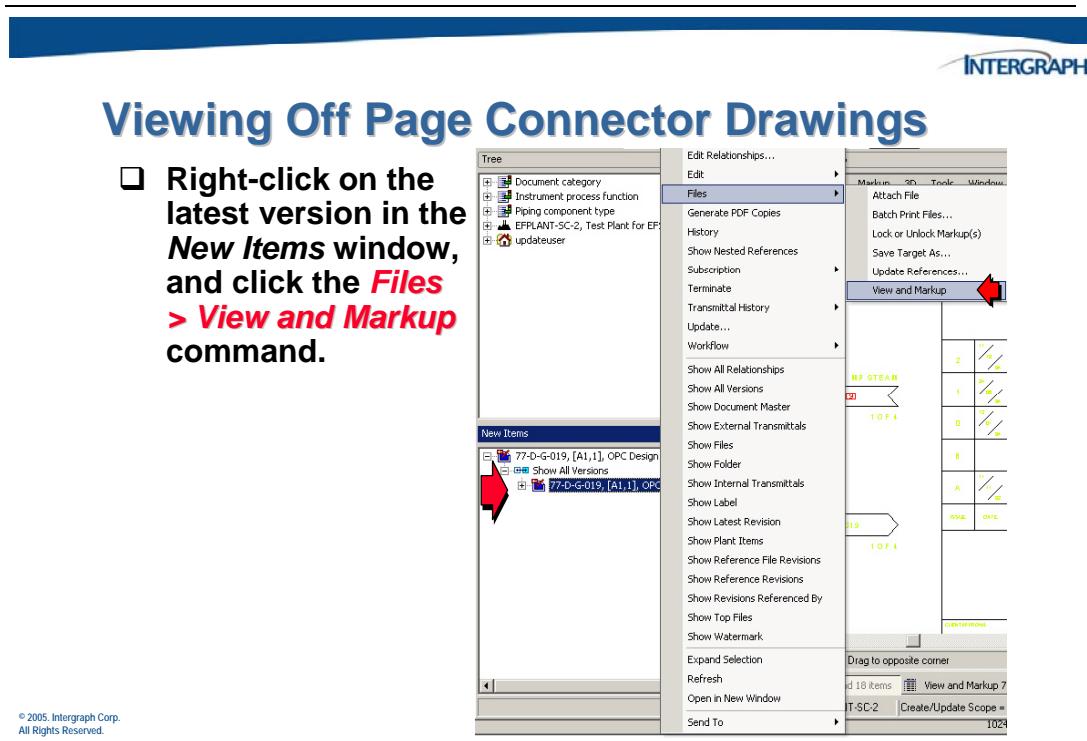
Next, view the object associated with the selected off page connector.



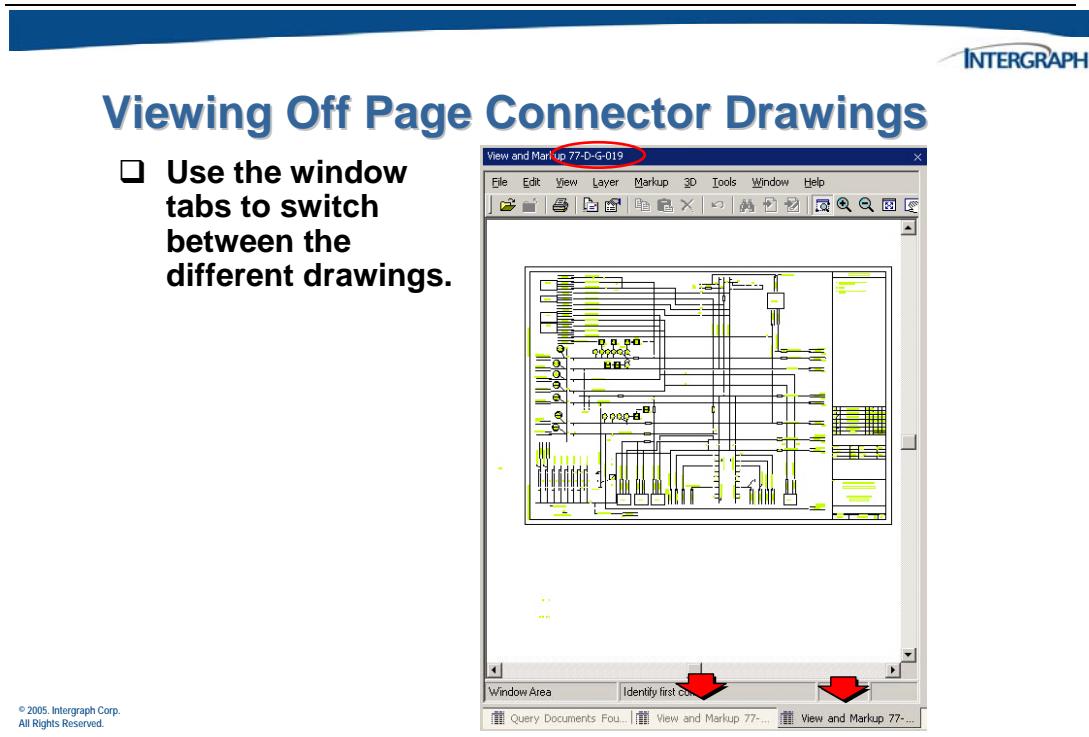
The **Document Master** will be displayed in the *New Items* window.



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

The objective of this activity is to acquaint you with the viewing and markup topics from this chapter.

### Viewing Files

1. Login to the SPF Desktop Client as **updateuser**.
2. Perform a find on PID document, and click **OK** in the search dialog.
3. Highlight the PID document object **128-5001**.
  - a. Perform a **View and Markup** to review the file in the viewer.
  - b. From the menu bar, select **View > Fit > File** to fit the file in the window.
  - c. Use the other commands (**Zoom In, Zoom Out, Window Area**) to become familiar with viewing the file.
  - d. From the Markup menu bar, select **Layer > Create**.
  - e. Before drawing your first markup layer, use the *Markup Ribbon* to set your markup parameters. Set a **color**, a **line width**, **font**, and **text size**.
  - f. Create a few redline objects within the working window in Markup. Use the Markup commands (or the Markup toolbar) to create your first markup layer. Use any of the following tools to do your markups:
    - Line
    - Arc
    - Circle
    - Rectangle
    - Shape
    - Leader
    - Freehand
    - Ellipse
  - g. Place some descriptive *Text* on your layer. Size and rotate your text using the Shift/arrow keys as you place it.

4. When you have finished with your markups, save the markup layer to SPF.
  - From the menu bar, select **Layer > Save**.
  - The *Save Layer* dialog displays.
  - Key in a description for your layer.
  - Click on **OK** to save the layer.
5. Use the **Layer** commands to create a second layer, using a different color.
  - a. Select the **Layer > Create** command and begin the markup session.
  - b. Place a **Leader**.
  - c. Place a **Text Annotation**.
  - d. **Zoom In** toward the *Text Annotation*. Notice it does not resize.
  - e. When you have finished with your markups, save the markup layer to SPF.
    - From the menu bar, select **Layer > Save**.
    - The *Save Layer* dialog displays.
    - Key in a description for your layer.
    - Click on **OK** to save the layer.
  - f. Close the Markup window.
6. Highlight the **128-5001** PID document object.
7. Right-click the object, and select **Show Files**.
8. Highlight the 128-5001 PID file, right-click the object, and select **Show Markups**.
9. Perform a quick **Find** on all *P&IDs*.
10. Select one of the *P&IDs* and use the **View and Markup** command to view the graphics.
11. Click on several of the objects (one at a time) and view the properties in the *Properties* window. If the properties window is not displayed, turn it on.

12. Highlight, lines, pumps, etc. within the drawing and select some of the right mouse button options, such as show lines, details, history, etc.
13. Use the dynamic (right mouse button) menu to display the viewing commands to *Zoom*, *Window*, and *Fit* the drawing.
14. Use the dynamic (right mouse button) menu to show the *Default Relationships* to one of the objects that you select in the displayed view.
15. Perform a document query to locate a document that attaches an off page connector drawing. Use the value **77\*** in the *Name* field. (Open file **77-D-G-006**.)
16. Use the **Files > View and Markup** command to view the off page connector drawing.
17. Locate the off page connectors (in the lower right corner of the drawing) by using the **Window Area** command. (See section 5.1.3 to see an example.)
18. Click on object **77-D-G-019**, and view its properties in the *Property* window.
19. Right-click on object **77-D-G-019**, and select the **Send To > New Items** command from the pop-up menu.
20. In the New Items window, **Show All Versions** of the displayed document master.
21. Right-click on object **77-D-G-019** and select the **Files > View and Markup** command from the pop-up menu.
22. Use the tabs at the bottom of the View and Markup window to switch between the two drawings.
23. Repeat the procedure to view the off page connector **77-D-G-006**.
24. When you have finished with this activity, take a short break until everyone else has finished.



## 5.3 FTR Searches

Full Text Retrieval (FTR) allows users to index and search for files or attributes or document content (including text) in files. FTR can be used as a standalone product or configured with SmartPlant Foundation (SPF).

An Administrator installs and configures FTR. Then users index the objects (files) in a vault or project. Users search for indexed files or information. This information might be files in a project, text in a file, or a project name in various files.



### FTR Overview

- Full Text Retrieval (FTR) allows users to index and search for files or attributes or document content (including text) in files.**
- Users index the objects (files) in a vault or project and then can search for indexed files or information within the files or database.**
- There are two search utilities delivered with SPF.**
- Attribute search executes a general search based on the search criteria provided.**
- Content search executes a more detailed search using thesaurus files and proximity control.**

There are two search utilities delivered with SPF. The Attribute search executes a general search based on the search criteria provided. The Content search executes a more detailed search using thesaurus files and proximity control.

### 5.3.1 FTR Setup

The following sections will describe the different FTR setups.



#### ODBC Setup Directories

- Collection Creation Directory (FULCREATE) specifies the local directory where new collections are created.**
- Collection Search Path (FULSEARCH) specifies the directory or directories in which FTR looks for collections.**
- Temporary directory (FULTEMP) specifies a directory where temporary files are created during indexing and searching operations.**
- Network Search Path (FTNPATH) specifies the remote nodes where FTR looks for collections.**
- These settings are stored in the ODBC configuration under both User and System DSN's.**

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The Collection Creation Directory (FULCREATE) specifies the local directory where new collections are created. The Collection Search Path (FULSEARCH) specifies the directory or directories in which FTR looks for collections. The temporary directory (FULTEMP) specifies a directory where temporary files are created during indexing and searching operations. The Network Search Path (FTNPATH) specifies the remote nodes where FTR looks for collections.

To change the values you specified during installation for the FULCREATE, FULSEARCH, FULTEMP, or FTNPATH, perform the following steps for both User DSN and System DSN.

1. Click *Start > Settings > Control Panel > Administrative Tools > ODBC Data Sources*. Then, click *User DSN > SearchServer\_5.3 > Configure*.
2. On the SearchServer Setup dialog box, type the path of the directory where you want collections to be created into the FULCREATE text box.

3. Set the value of the FULSEARCH to the directory or list of directories where you want FTR to look for collections. The directories must be separated by semicolons (;).

**Note:**

- The Collection Search Path must contain the Collection Creation Directory and the fulltext subdirectory of the FTR product directory (example: C:\Program Files\Intergraph\FTR\fulltext).
4. Set the value of FULTEMP to a directory where temporary files can be created. Be sure that there is at least two or three times as much space available as the size of your data (the space requirement varies depending on the indexing options you use).
  5. Set the value of FTNPATH to the node or list of nodes where you want FTR to look for remote collections. Each node name must be followed by the /tcp2048 suffix and the nodes must be separated by semicolons(;).
  6. Click OK to close the SearchServer Setup dialog box.
  7. Click OK to close the ODBC Data Source Administrator dialog box.

**If an FTR Interface server is running on another machine, perform the following steps to change the connector parameter values.**

1. Click *Start > Intergraph FTR > Hummingbird Server Manager*.
2. In the Hummingbird Server Manager dialog box, click *Setup*.
3. Hummingbird tcp2048 is the default client connector and is automatically in the list. Click the *Setup* button to change parameters for a listed connector. Click the *Add* button to add a new connector.
4. To change the parameters for an existing connector in the Hummingbird Server Services Setup dialog box, select the tcp2048 client connector, and click *Stop*.
5. Click *Setup*.
6. In the Setup Client Connector dialog box, change the values of the *Collection Creation Directory* field to the directory where you want collections to be created.
7. Change the value of the Collection Search Path to the directory or list of directories where you want FTR to look for collections. Separate the directories with semicolons (;).

**Note:**

- The Collection Search Path must contain the Collection Creation Directory (Fulcreate) and the fulltext subdirectory of the FTR product directory (example: C:\Program Files\Intergraph\FTR\fulltext).
8. Click OK to close the Setup Client Connector dialog box.

9. Restart the tcp2048 client connector by selecting the tcp2048 client connector, and clicking Start.
10. Click Close to close the Hummingbird Server Service Setup dialog box.
11. Click Close to close the Hummingbird Server Manager.

**To add a connector, perform the following steps:**

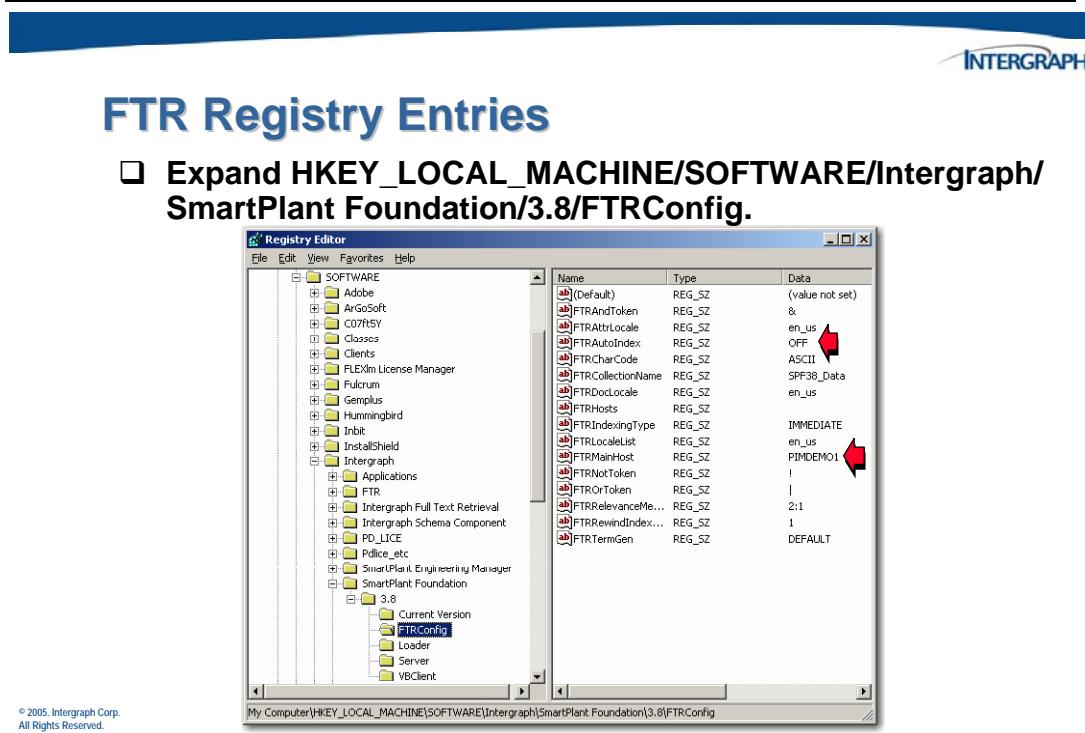
1. Click *Start > Intergraph FTR > Hummingbird Server Manager*.
2. In the Hummingbird Server Manager dialog box, click *Add*.
3. In the Setup Client Connector dialog box, change the values of the Collection Creation Directory field to the directory where you want collections to be created.
4. Change the value of the Collection Search Path to the directory of list of directories where you want FTR to look for collections. Separate the directories with semicolons (:).

**Note:**

- The Collection Search Path must contain the Collection Creation Directory (Fulcreate) and the fulltext subdirectory of the FTR product directory (example: C:\Program Files\Intergraph\FTR\fulltext).
5. Click OK to close the Add Client Connector dialog box.
  6. Restart the new client connector by selecting it and clicking Start.
  7. Click Close to close the Hummingbird Server Service Setup dialog box.
  8. Click Close to close the Hummingbird Server Manager.

## 5.3.2 SmartPlant Foundation Registry Entries

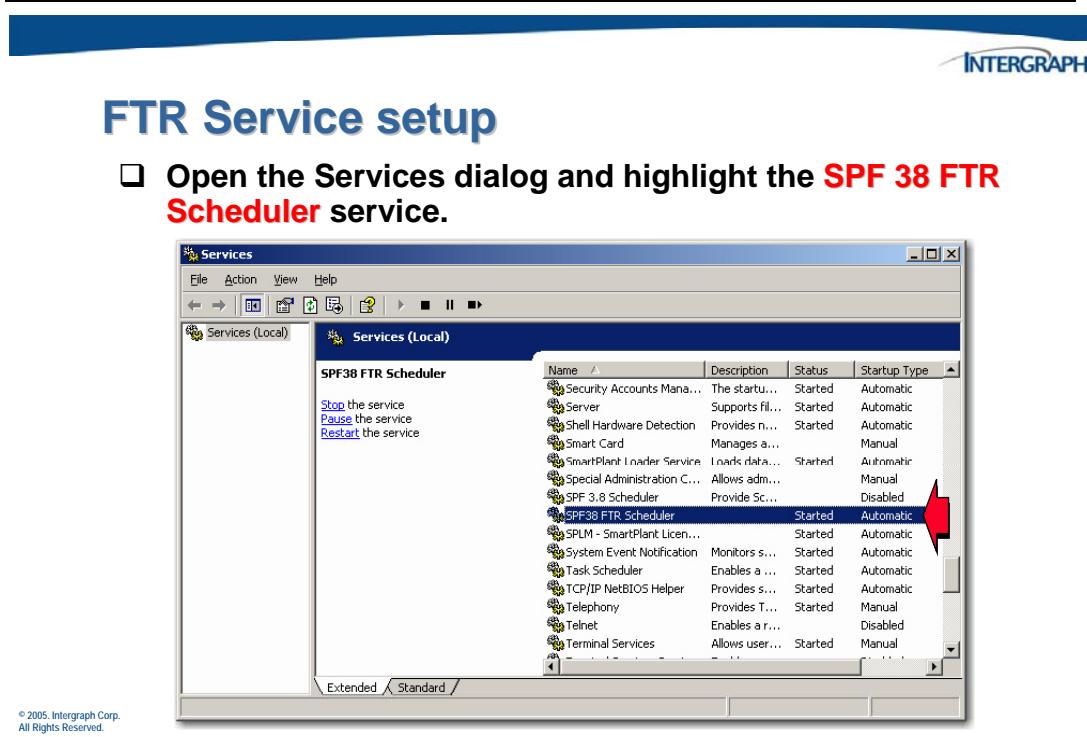
Within the SmartPlant Foundation registry entries, there is FTR Config that should be checked after installation. These entries are found under HKEY\_LOCAL\_MACHINE/SOFTWARE/Intergraph/SmartPlant Foundation/3.8/FTRConfig.



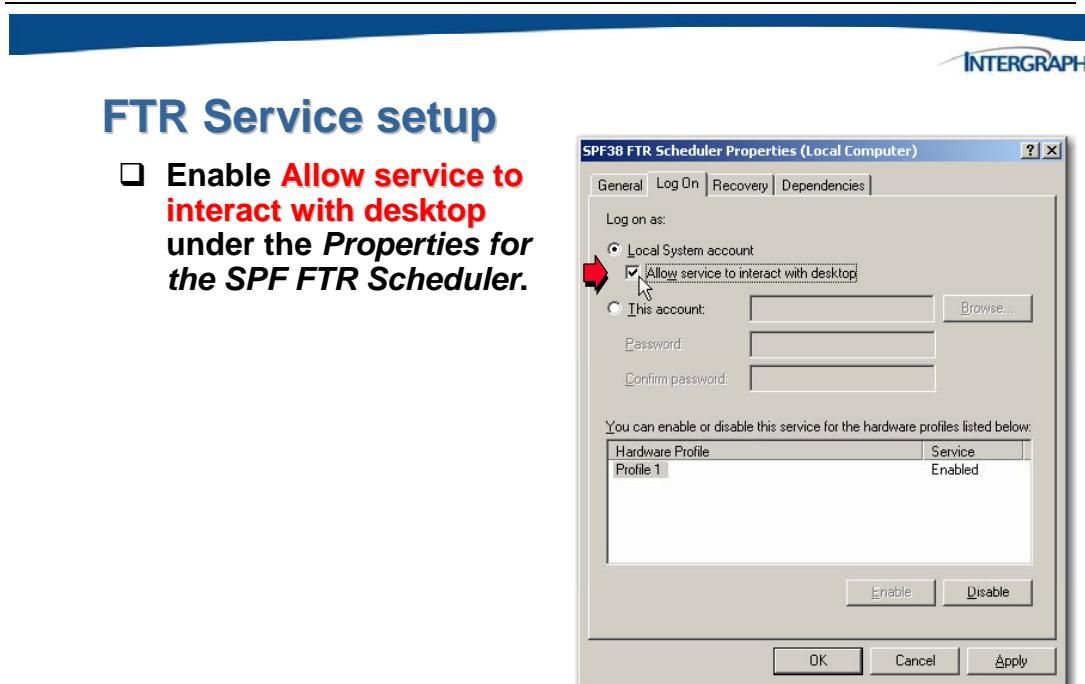
Verify that *FTR AutoIndex* is **ON**, *FTRHosts* has the FTR server name, and *FTRMainHost* has the FTR Server Name.

### 5.3.3 Service Setup

The FTR Index program runs as a background service by default. To configure an icon on the lower right side of the screen that allows you to view the FTR queue, perform the following steps:

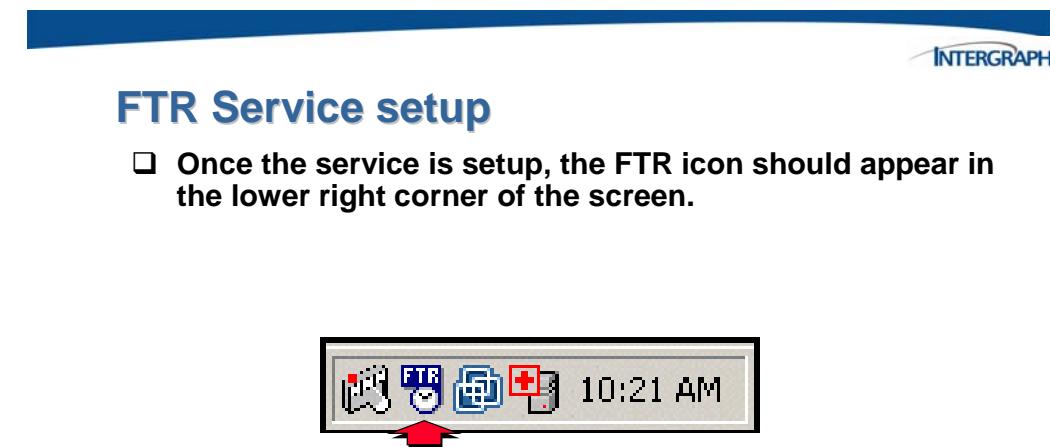


- 
- Right click the service and select **Properties**.
  - Select the **Log on** tab.



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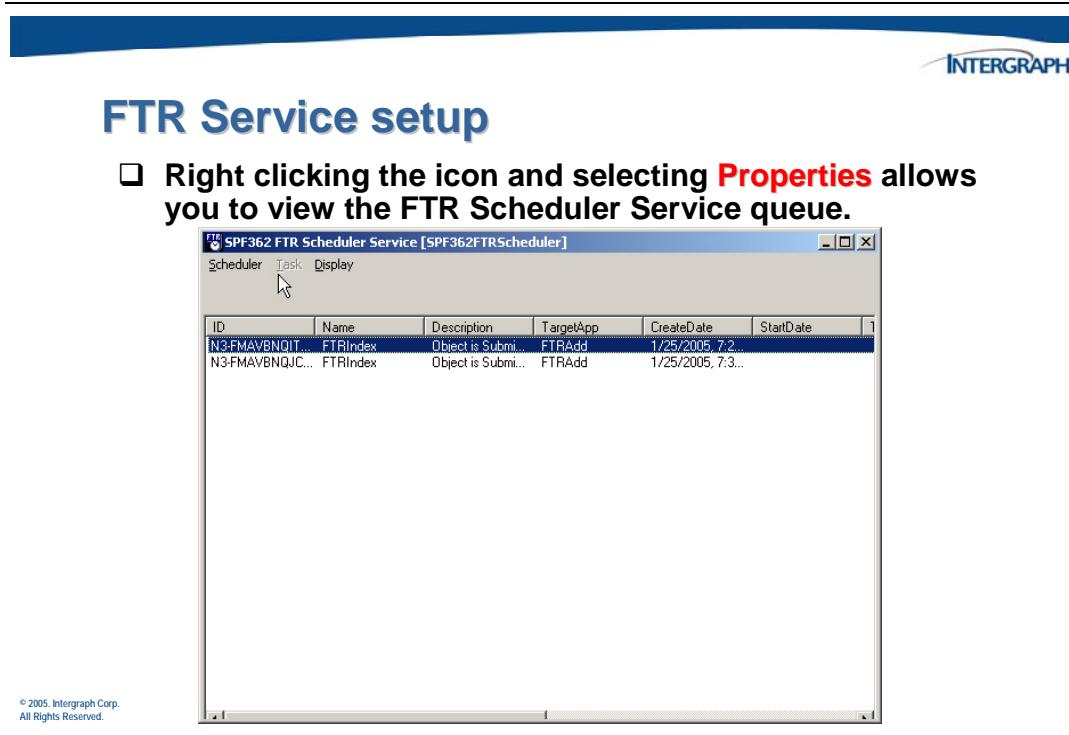
- ❑ Click **OK**, and close the services dialog box.



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The FTR icon should appear in the lower right corner of the screen.

Right click the icon, and select *Properties* to view the FTR queue.



## 5.3.4 Attribute Searching

SmartPlant Foundation provides two methods for FTR searches: Attribute and Content.



### FTR Attribute Search

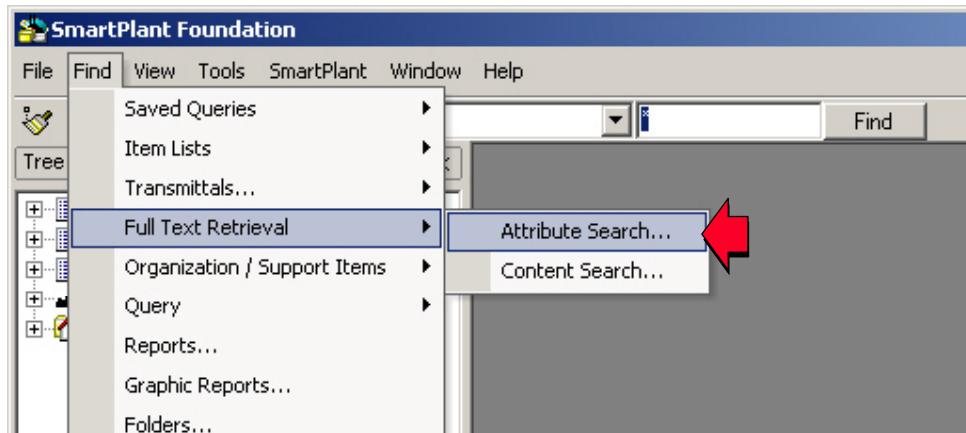
**The Attribute search executes a general search based on the search criteria provided. Use the dialog box to create a search based on the following search criteria. You can specify information for all appropriate fields to construct the most efficient search.**

- Name** - Search for an object by this name.
- Description** - Search for an object with this description.
- Text Search** - Search for these words or phrases in the specified object.



## FTR Attribute Search

- From the menu, select **Find > Full Text Retrieval > Attribute Search** to perform an FTR attribute search.

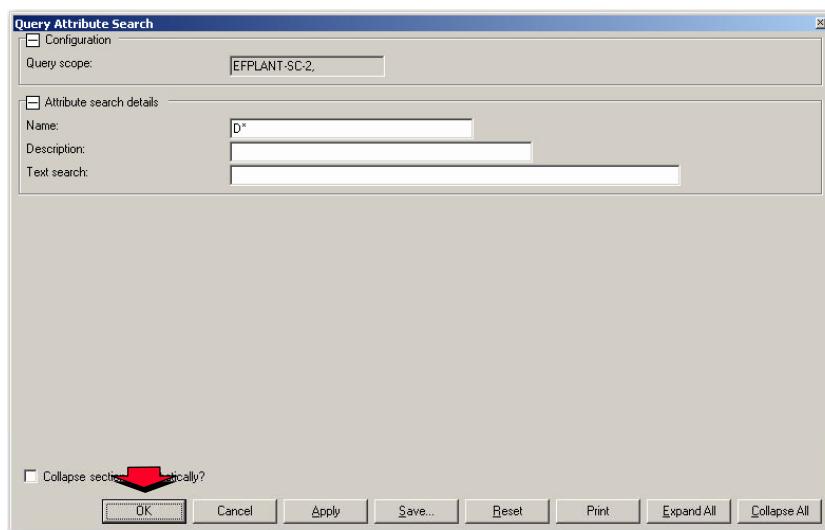


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## FTR Attribute Search

- Enter the necessary search criteria, and click **OK**.



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The following are the search fields found on the Query Attribute Search dialog:

- Name - Search for an object by this name.
- Description - Search for an object fitting this description.
- Text Search - Search for these words or phrases in the specified object.

Although an asterisk (\*) can be used by itself or as the leading character when performing a search using FTR, it is recommended to use a character to the left of this operator to enhance performance.

The available options are to **OK** to perform the search, **Cancel**, **Apply** which searches and does not close the dialog, **Save** the search, **Reset** the dialog and **Print** the object.

Click OK. The results display in a window in SPF Desktop Client.

## FTR Attribute Search

A list view window is created to display the results of the FTR search.

Name of Item	Rev	Default Status	Classification	LastUpdated D...	Class
D-128-5001	[1A,1]	WORKING -	NPD	2/3/2005	DocRevis
D-128-5001		RESERVED -	NPD	2/3/2005	DocMaste

### 5.3.5 Content Search

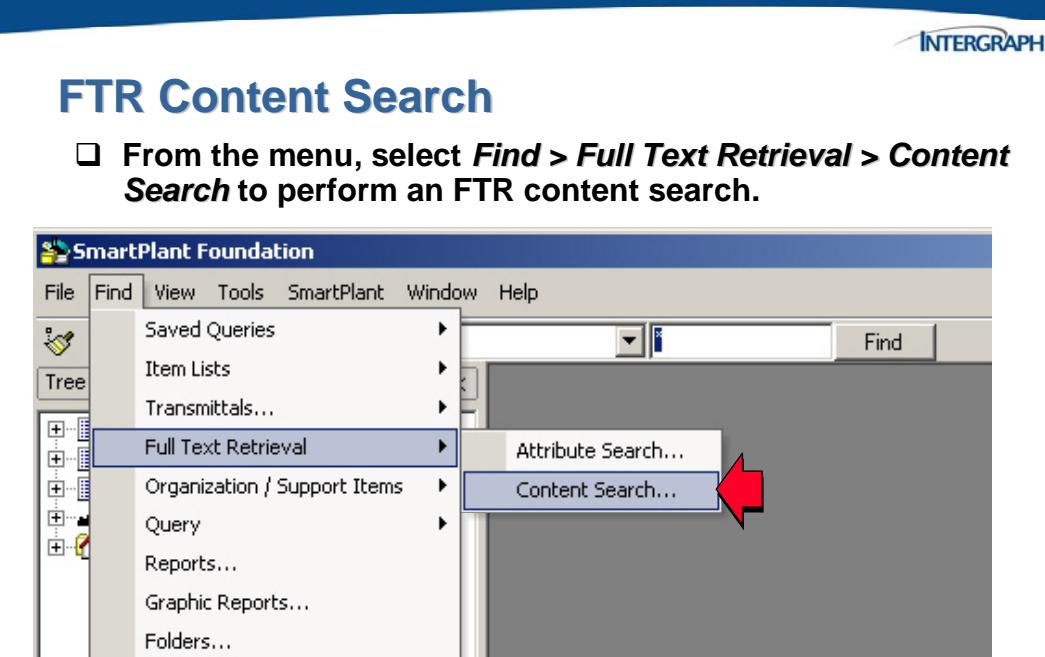
The Content search executes a more detailed search using thesaurus files, proximity control.



#### FTR Content Search

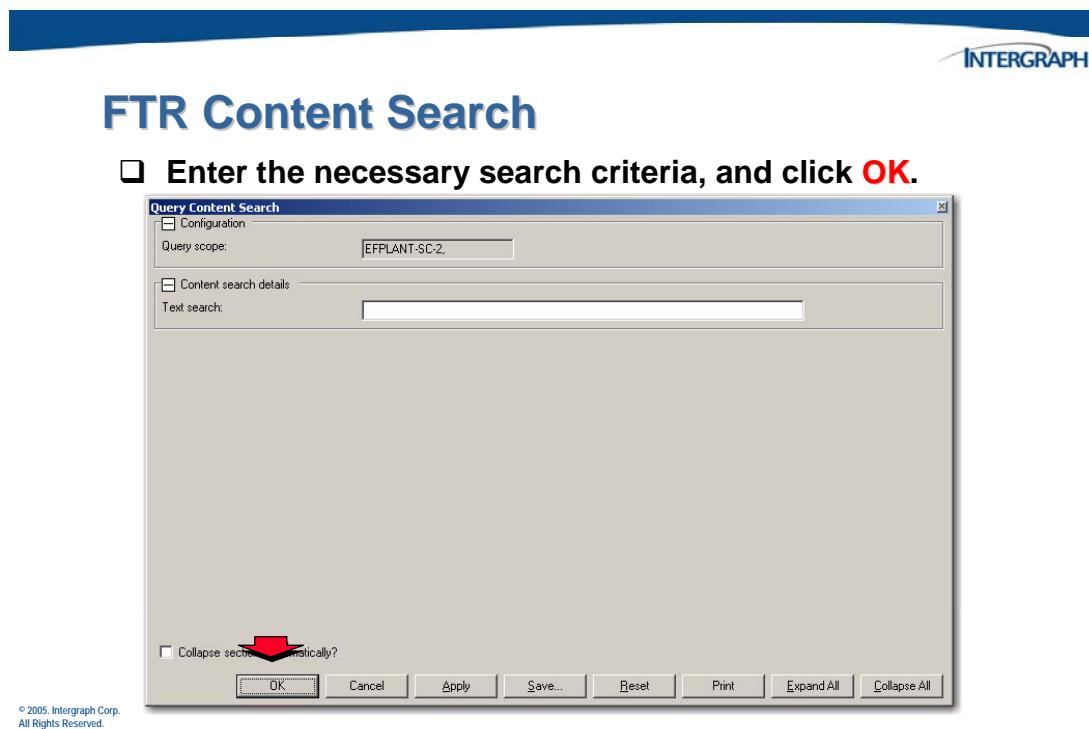
- The Content search executes a more detailed search, using thesaurus files and proximity control.**
- Use the dialog to create a search based on the following search criteria. You can specify information for all appropriate fields to construct the most efficient search.**
- SmartPlant Foundation does not include a Word Wheel.**
- Text Search - Search for these words or phrases in the specified object.**

You can specify information for the *Text Search* field to construct the most efficient search. SmartPlant Foundation does not include a Word Wheel.



Use the dialog box to create a search based on the following search criteria:

- ❑ Text Search - Search for these words or phrases in the specified object.
- 



## 5.3.6 Search String Specification

The follow list defines the different search string operators available in SPF.



### Search String Specification

- FTR search strings can be complex combinations of search terms and various operators.**
- The order of operations is left to right, but '&' (And) has a higher precedence than '|' (Or), unless it is grouped in parentheses.**
- Unary operators operate on the search term that follows them.**
- You must separate each term or operator (including parenthesis) by a blank space. Otherwise, the operator (or parenthesis) will be considered part of a search term.**
- Example, "!owner & (cat | dog)" is not in a proper syntax. It should be entered as: "! owner & ( cat | dog )".**



## Search String Specification

*	Wildcard	Expands a single word to all words starting with the preceding characters
?	Character Replacement	Expands a single word to all words that exactly match the specified letters and have any letter in the location designated by the ?
&	And	Joins two search terms together and requires both to be found in a document for the search to be successful
	Or	Joins two search terms together and requires at least one of them to be found in a document for the search to be successful
!	Not	Negates a single search term and requires that it not exist in a document for a search to be successful
()	Group	Associates one or more sequences of search terms and operators

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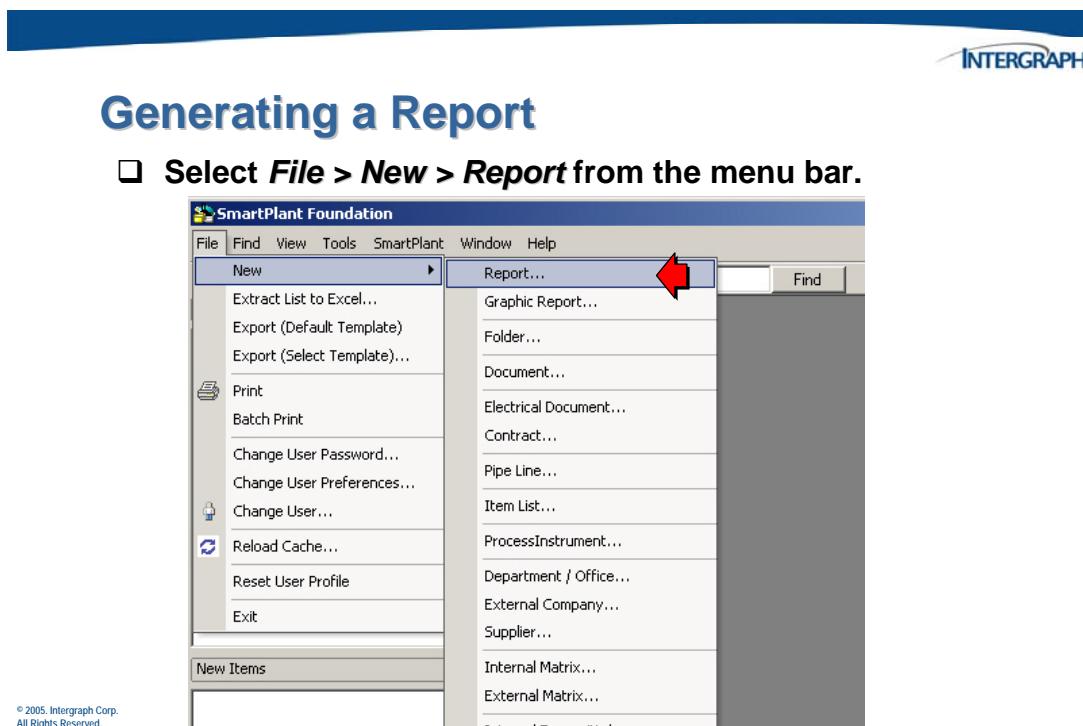
## 5.4 Activity – FTR Searches

In this activity, you will familiarize yourself with the ability to perform both FTR Attribute and Content searches.

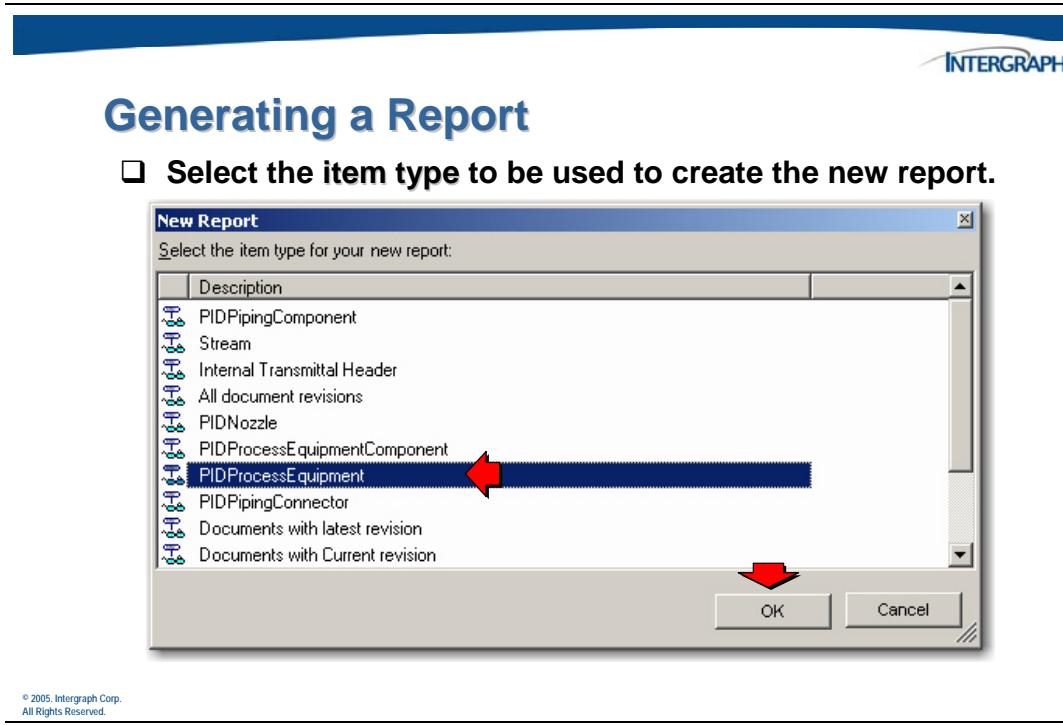
1. Login to the SPF Desktop Client as **updateuser**.
2. Create 3 new files that have unique words or names in them. Add each to the database with its own document object.
3. Perform Content and Attribute searches in FTR to find the objects created.
4. Logout of the SPF Desktop Client and take a short break.

## 5.5 Creating a Report

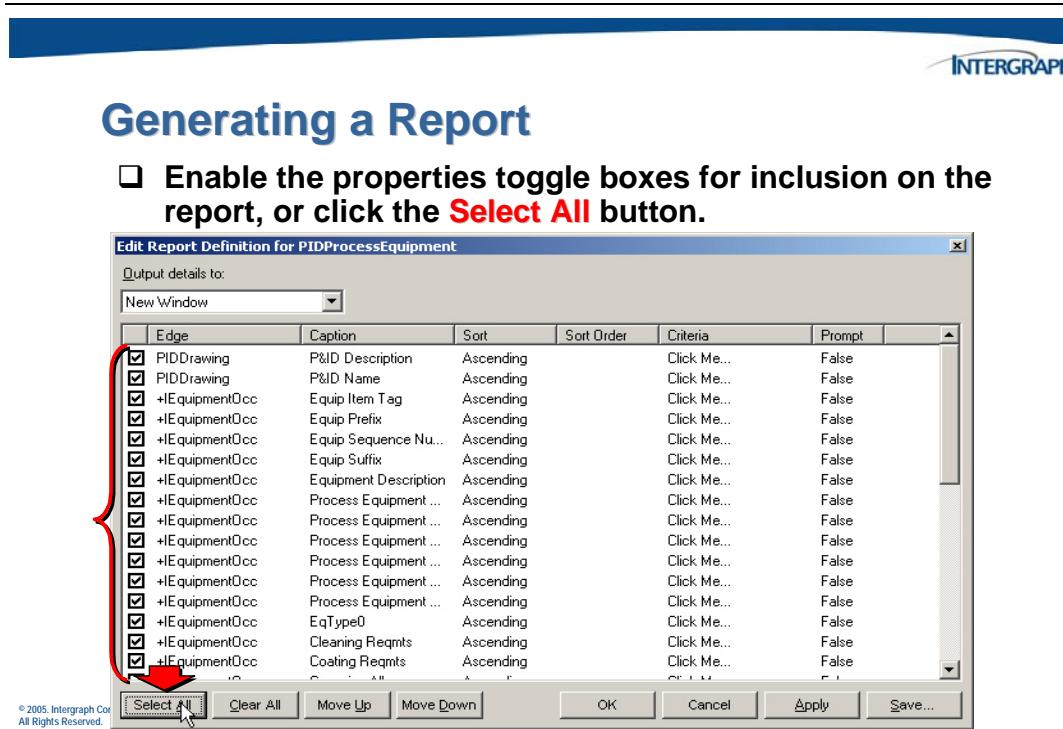
Once the system administrator has set up the necessary definitions, the user can login to the Desktop client to generate a report. The available properties to be reported on can't be changed, but the user can choose a subset of the properties from the definition types to be included in each iteration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



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



Select **PIDProcessEquipment**, 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.

**Move Up** – Moves the highlighted selection up in the list. The order in which properties appear in the list is the order in which they will appear in the report.

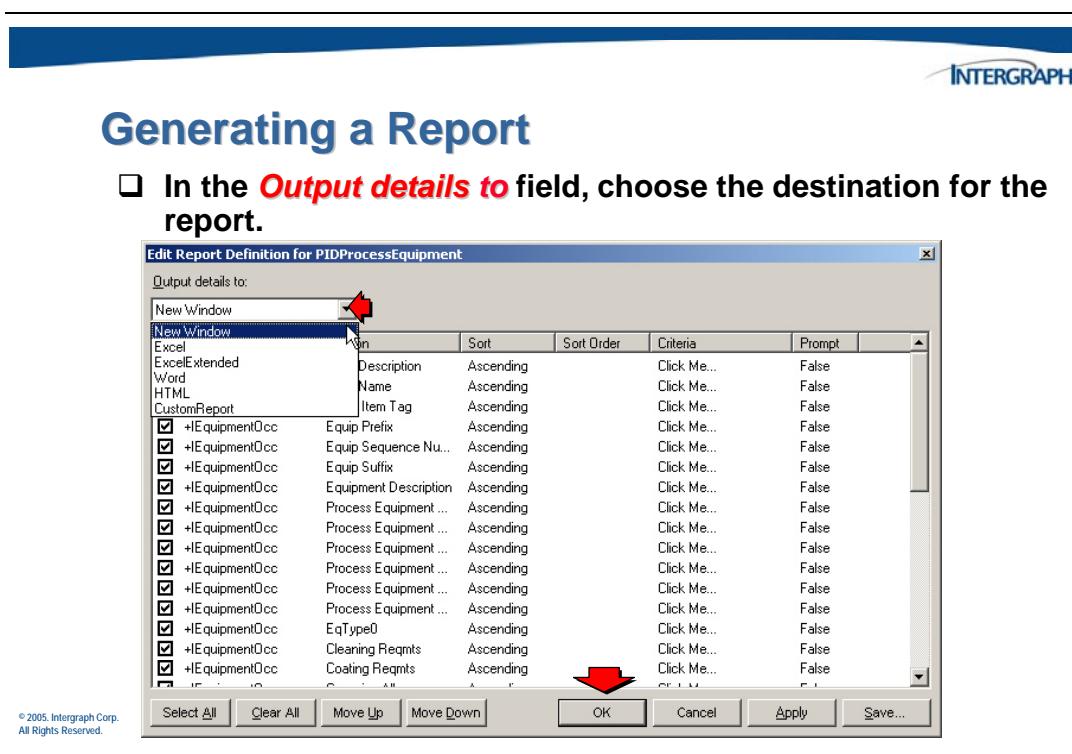
**Move Down** – Moves the highlighted selection down in the list. The order in which properties appear in the list is the order in which they will appear in the report.

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

**Cancel** – Cancels the report.

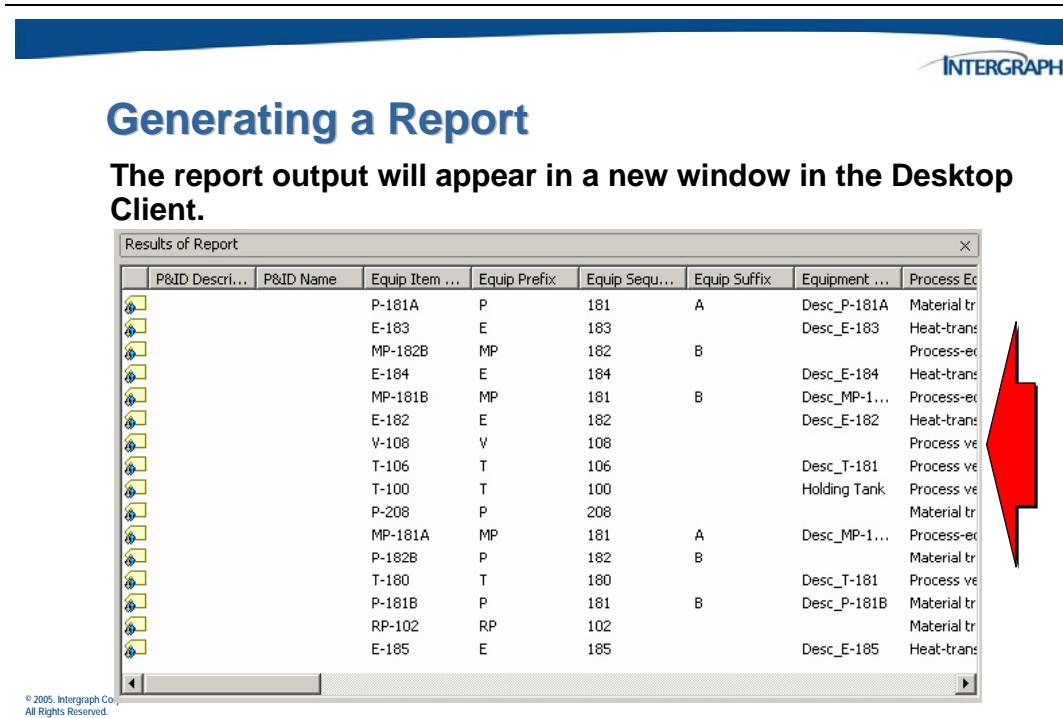
**Apply** – Runs the report and does not close the dialog.

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



The **Output details to 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 options 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.



The report output will appear in a new window in the Desktop Client.

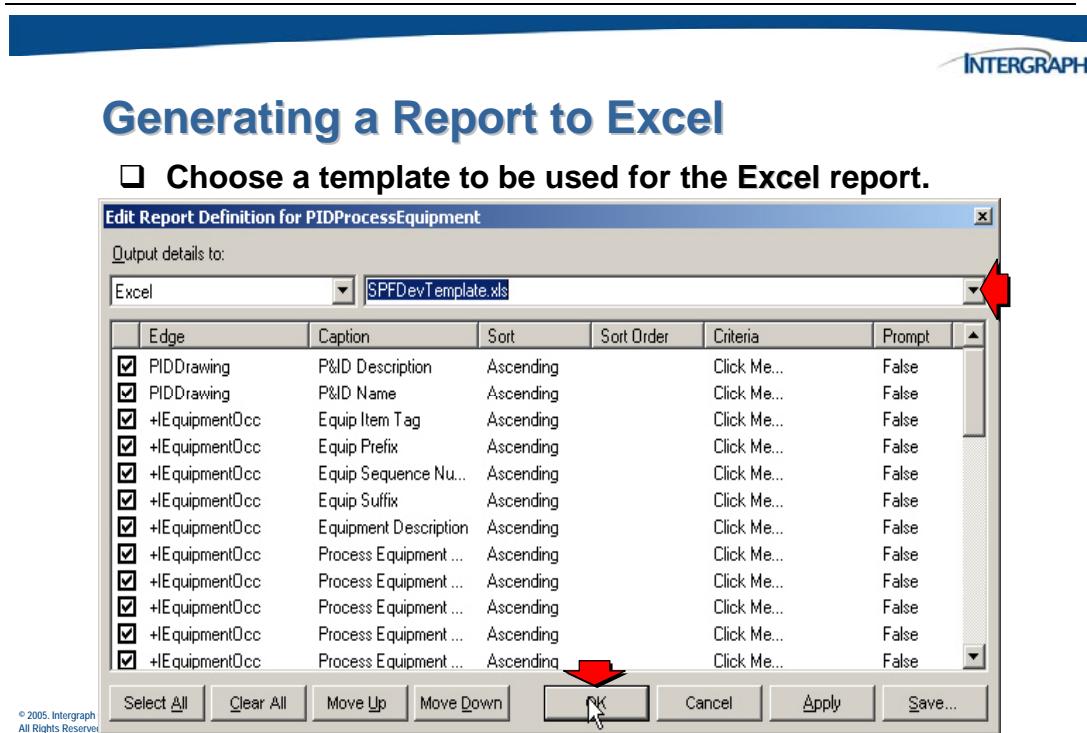
P&ID Descri...	P&ID Name	Equip Item ...	Equip Prefix	Equip Sequen...	Equip Suffix	Equipment ...	Process Ec...
E-181A	P	181	A		Desc_P-181A	Material tr...	
E-183	E	183			Desc_E-183	Heat-trans...	
MP-182B	MP	182	B		Desc_MP-1...	Process-eq...	
E-184	E	184			Desc_E-184	Heat-trans...	
MP-181B	MP	181	B		Desc_MP-1...	Process-eq...	
E-182	E	182			Desc_E-182	Heat-trans...	
V-108	V	108				Process ve...	
T-106	T	106			Desc_T-181	Process ve...	
T-100	T	100			Holding Tank	Process ve...	
P-208	P	208				Material tr...	
MP-181A	MP	181	A		Desc_MP-1...	Process-eq...	
P-182B	P	182	B			Material tr...	
T-180	T	180			Desc_T-181	Process ve...	
P-181B	P	181	B		Desc_P-181B	Material tr...	
RP-102	RP	102				Material tr...	
E-185	E	185			Desc_E-185	Heat-trans...	

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**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 output will look like this:

The screenshot shows a Microsoft Excel window titled "SPFDevTemplate.xls". The window contains a table with data from rows 1 to 18. The columns are labeled A through G. The data includes P&ID descriptions, P&ID names, equipment item tags, prefixes, sequence numbers, suffixes, and descriptions. Row 10 contains a cell with the value "Holding Tank". The Excel interface includes a toolbar, menu bar, and status bar at the bottom.

A	B	C	D	E	F	G
P&ID Description	P&ID Name	Equip Item Tag	Equip Prefix	Equip Sequence Num	Equip Suffix	Equipment Descri
1	P-181A	P		181	A	Desc_P-181A
2	E-183	E		183		Desc_E-183
3	MP-182B	MP		182	B	
4	E-184	E		184		Desc_E-184
5	MP-181B	MP		181	B	Desc_MP-181B
6	E-182	E		182		Desc_E-182
7	V-108	V		108		
8	T-106	T		106		Desc_T-181
9	T-100	T		100		
10	P-208	P		208		Holding Tank
11	MP-181A	MP		181	A	Desc_MP-181A
12	P-182B	P		182	B	
13	T-180	T		180		Desc_T-181
14	P-181B	P		181	B	Desc_P-181B
15	RP-102	RP		10200.00%		
16	E-185	E		185		Desc_E-185
17						
18						

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**Excel Extended** – This option works in exactly the same way as the Excel option.

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

The screenshot shows a Microsoft Word window displaying a report generated from the AdHocReportResults.asp page. The report consists of a table with the following data:

P&ID Description	P&ID Name	Equip Item Tag	Equip Prefix	Equip Sequence Number	Equip Suffix	Equipment Description	Process Equipment Type 1	Process Equipment Type 2	Process Equipment Type 3	Process Equipment Type 4	Process Equipment Type 5	Process Equipment Type 6
	P-181A	P	181	A	Desc_P-181A	Material transfer equipment	Fluid-transfer machine	Pump	Centrifugal pump	Horizontal centrifugal pump		Process equipment
	E-183	E	183		Desc_E-183	Heat-transfer equipment	Plate heat-exchanger					Process equipment
	MP-182B	MP	182	B		Process-equipment driver	Electric motor					Process equipment
	E-184	E	184		Desc_E-184	Heat-transfer equipment	Plate heat-exchanger					Process equipment
	MP-181B	MP	181	B	Desc_MP-181B	Process-equipment driver	Electric motor					Process equipment

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

The screenshot shows a Microsoft Internet Explorer window displaying a report generated from the AdHocReportResults.asp page. The report consists of a table with the following data:

P&ID Description	P&ID Name	Equip Item Tag	Equip Prefix	Equip Sequence Number	Equip Suffix	Equipment Description	Process Equipment Type 1	Process Equipment Type 2	Process Equipment Type 3	Process Equipment Type 4	Process Equipment Type 5	Process Equipment Type 6	Clean Req'd
	P-181A	P	181	A	Desc_P-181A	Material transfer equipment	Fluid-transfer machine	Pump	Centrifugal pump	Horizontal centrifugal pump		Process equipment	
	E-183	E	183		Desc_E-183	Heat-transfer equipment	Plate heat-exchanger					Process equipment	
	P-262	P	262			Material transfer equipment	Fluid-transfer machine	Pump	Centrifugal pump	Horizontal centrifugal pump		Process equipment	
	MP-182B	MP	182	B		Process-equipment driver	Electric motor					Process equipment	
	E-184	E	184		Desc_E-184	Heat-transfer equipment	Plate heat-exchanger					Process equipment	
	MP-181B	MP	181	B	Desc_MP-181B	Process-equipment driver	Electric motor					Process equipment	
	E-182	E	182		Desc_E-182	Heat-transfer equipment	Shell & tube heat-exchanger					Process equipment	
	T-106	T	106		Desc_T-181	Process vessel	Pressure vessel	Column				Process equipment	
	MP-181A	MP	181	A	Desc_MP-181A	Process-equipment driver	Electric motor					Process equipment	
	P-182B	P	182	B		Material transfer	Fluid-transfer	Pump	Centrifugal pump	Horizontal centrifugal		Process equipment	

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## 5.5.1 Report Options

Users running reports can change any of the column captions, 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

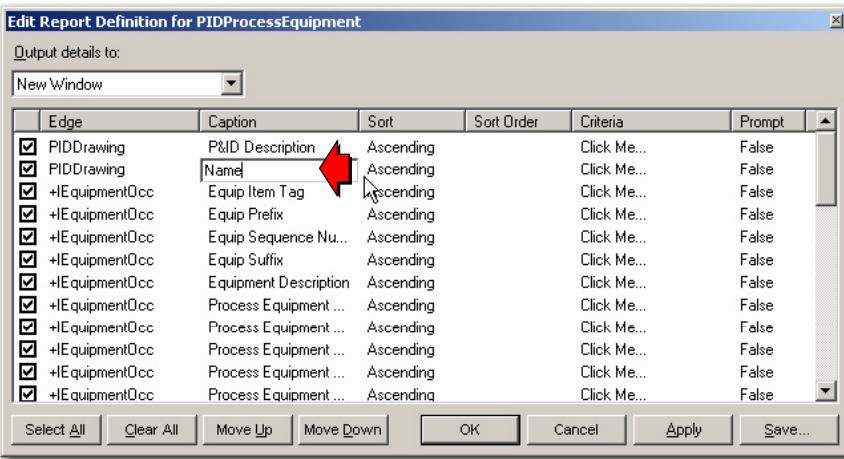
**Filter options on the Edit Report dialog are *Caption*, *Sort*, *Sort Order*, *Criteria*, and *Prompt*.**

- 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.



Edge	Caption	Sort	Sort Order	Criteria	Prompt
<input checked="" type="checkbox"/> Pt&ID Drawing	Pt&ID Description	Ascending		Click Me...	False
<input checked="" type="checkbox"/> Pt&ID Drawing	Name	Ascending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equip Item Tag	Descending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equip Prefix	Ascending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equip Sequence Nu...	Ascending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equip Suffix	Ascending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equipment Description	Ascending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending		Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending		Click Me...	False

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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 P&ID Description will be the first field listed in the report, but the items in the report are sorted alphabetically by their names.

**Report Options**

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

**Edit Report Definition for PIDProcessEquipment**

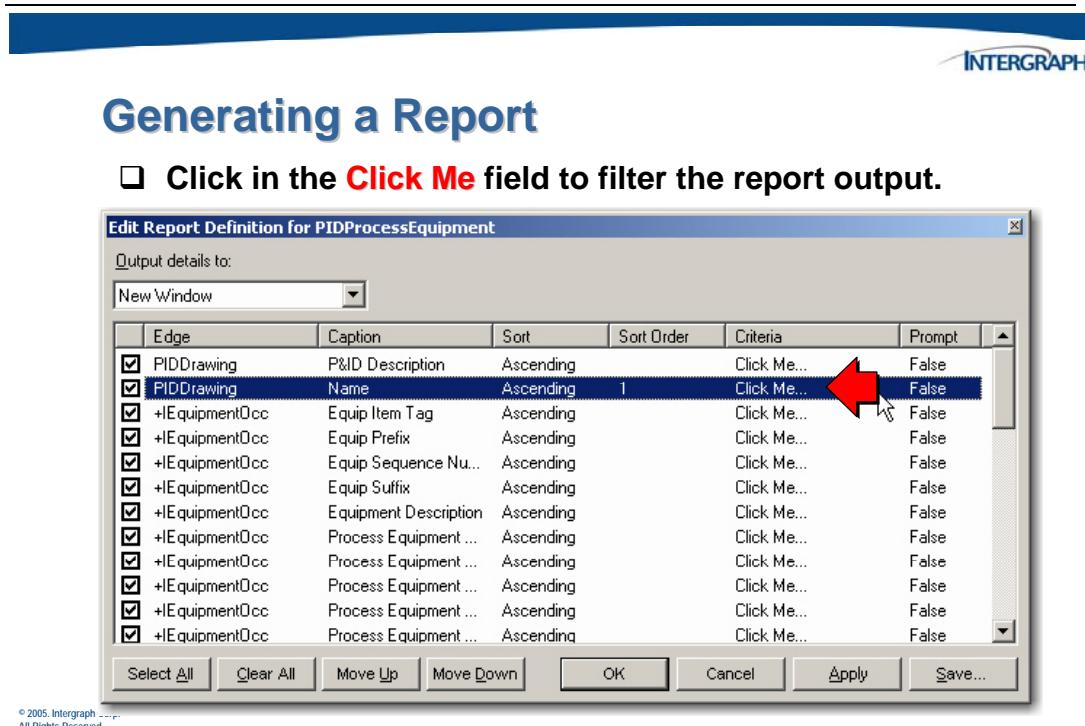
Output details to:  
New Window

Edge	Caption	Sort	Sort Order	Criteria	Prompt
<input checked="" type="checkbox"/> PIDDrawing	P&ID Description	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> PIDDrawing	Name	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equip Item Tag	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equip Prefix	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equip Sequence Nu...	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equip Suffix	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Equipment Description	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending	<input type="button" value=" "/>	Click Me...	False
<input checked="" type="checkbox"/> +IEquipmentOcc	Process Equipment ...	Ascending	<input type="button" value=" "/>	Click Me...	False

Select All Clear All Move Up Move Down OK Cancel Apply Save...

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The Criteria Window 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.

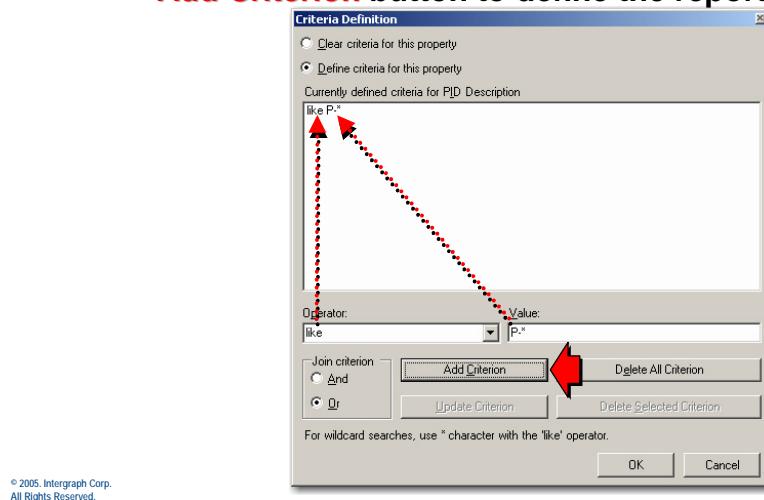


The *Criteria Definition* dialog box appear. On this dialog box, you can provide the criteria that must be met for an item to be returned by the report. Choose an operator and provide a value, and then click the *Add Criterion* button.



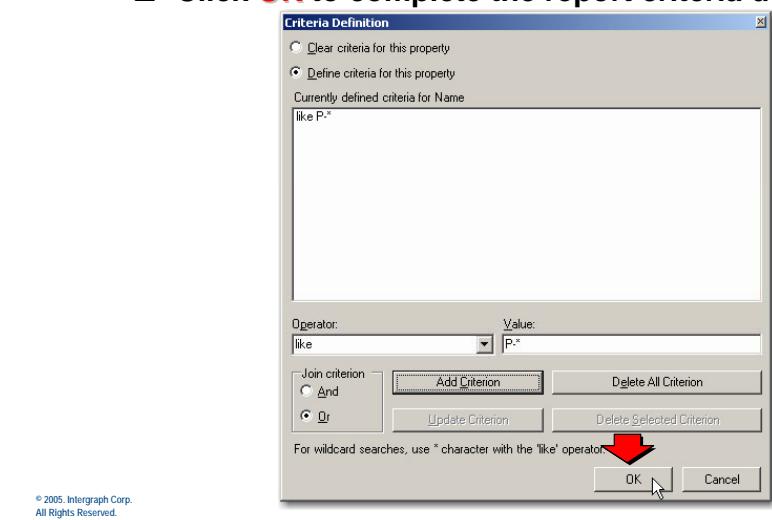
## Report Options

- Choose an operator and provide a value, and then click the **Add Criterion** button to define the report criteria.



## Report Options

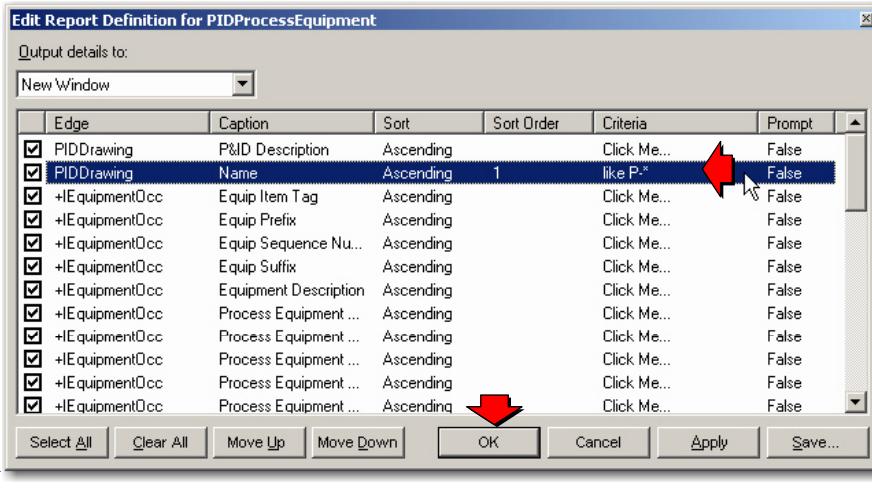
- Click **OK** to complete the report criteria definition.





## Report Options

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

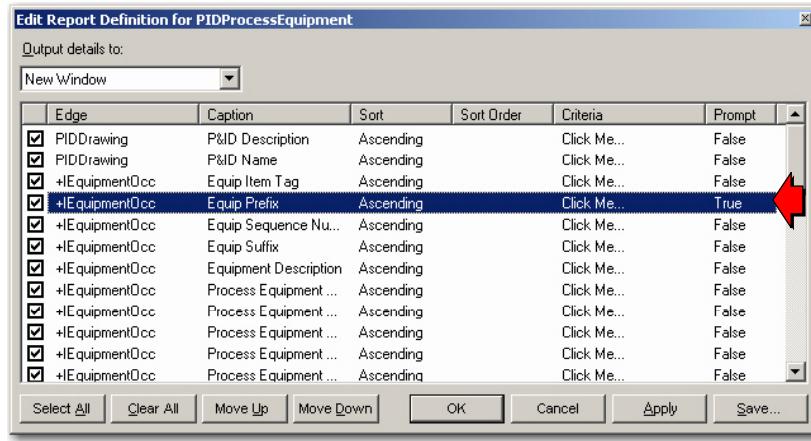


Use the Prompt option when you save a report to create an adhoc report for only the information with a specific value for a property, specified at runtime.



## Generating a Report

- To specify a criteria at run time, click in the **Prompt** field to change the value from **False** to **True** for the value on which you want to filter.

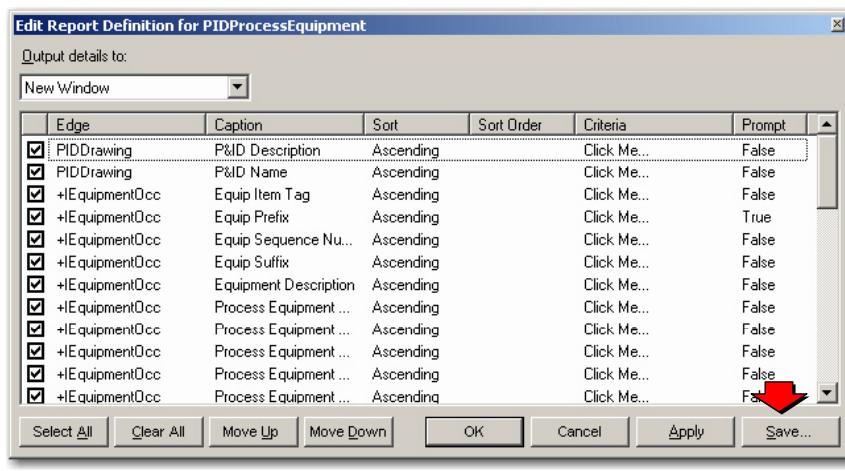


## 5.5.2 Saving a Report

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.

### Saving a Report

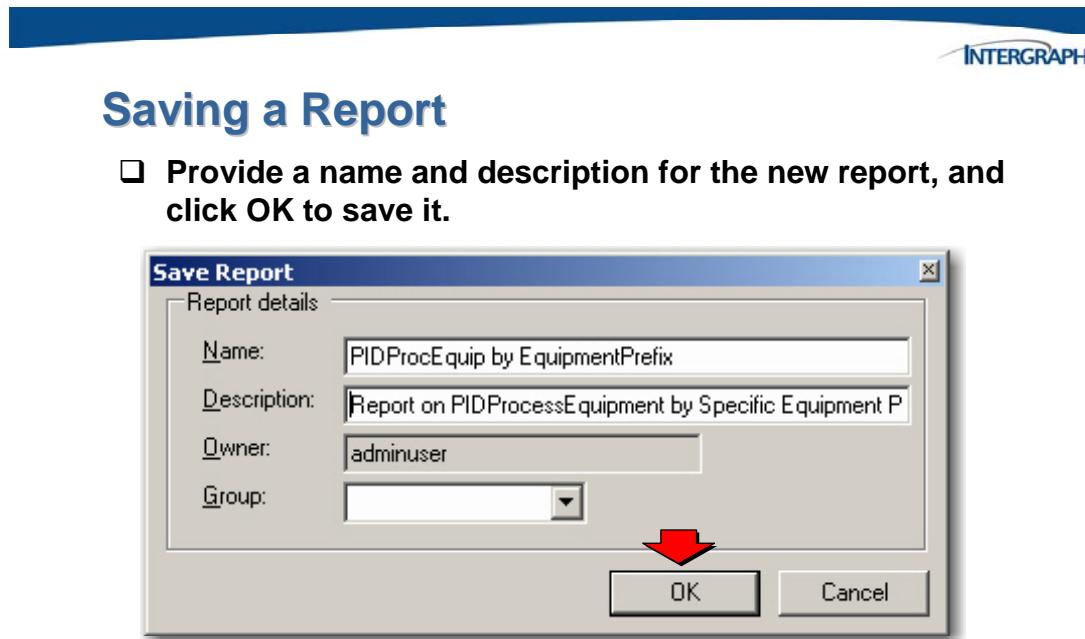
- Once you have defined a report you want to save, click the Save button at the bottom of the Edit Report dialog box.



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

---

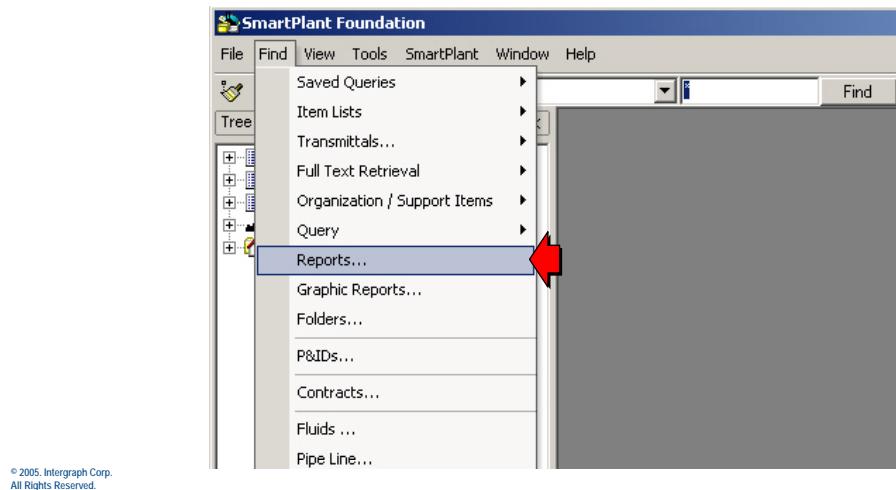


When you click OK, the new report is saved to the database. It will be placed in the New Items windows temporarily, but you can find it again later. Use the *Find > Reports* command to search for saved reports.



## Running a Saved a Report

- To run a saved report, use the *Find > Reports* command to find the report you want to execute.

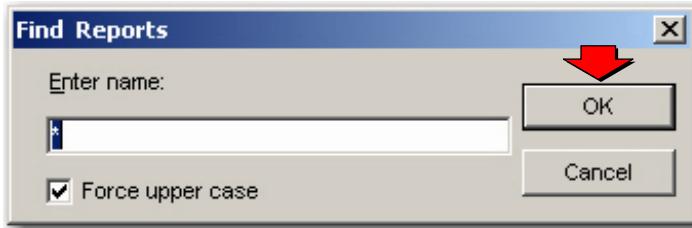


In the *Find Reports* dialog box, provide any necessary criteria to search for the report.



## 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.



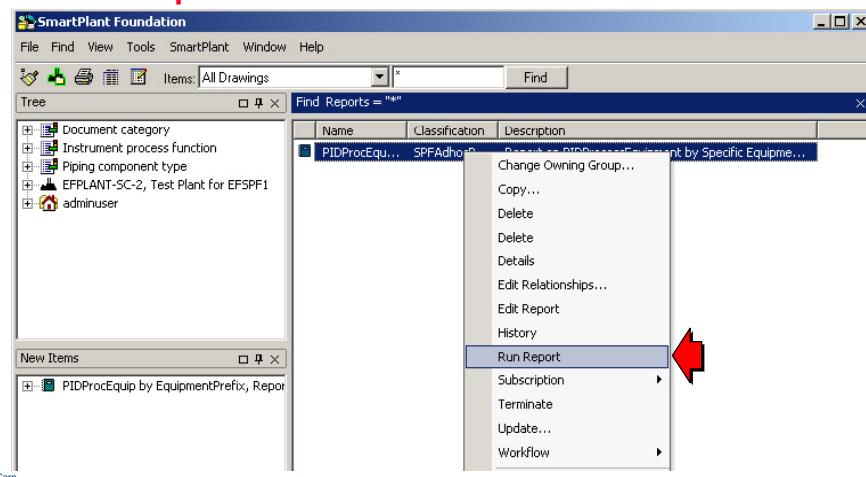
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All reports that meet the specified criteria will be returned in the list.



## Running a Saved a Report

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



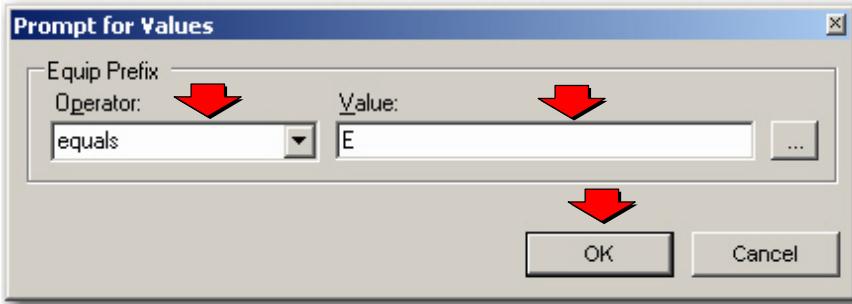
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Click Run Report on the report's short cut menu to run the saved report.

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

## Running a Saved a Report

- Since we activated the **Prompt** feature for the Equipment Prefix property, we are asked to provide a criteria for that field.
- Choose an operator and a value to be used to return results, and then click OK to run the report.



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



## Running a Saved a Report

- The results that meet our specified criteria appear in a new window, as our saved reported indicated.

Results of Report

P&ID Descri...	P&ID Name	Equip Item ...	Equip Prefix	Equip Sequ...	Equip Suffix
	E-183	E	183		
	E-184	E	184		
	E-182	E	182		
	E-185	E	185		

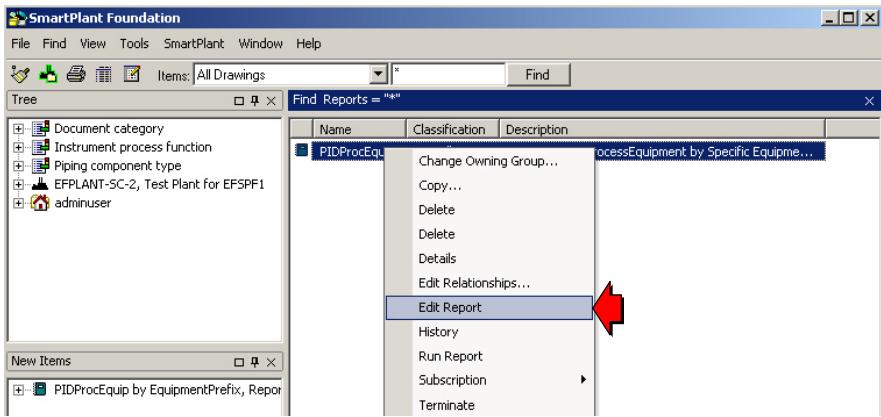
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If you need to make changes to a report that you have saved, find the report, and use the Edit Report command from the short cut menu.



## Editing a Saved a Report

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



SmartPlant Foundation

File Find View Tools SmartPlant Window Help

Items: All Drawings Find

Tree

Find Reports = \*.\*

Name	Classification	Description
PIDProcEqu	Change Owning Group...	ProcessEquipment by Specific Equipment Prefix

New Items

PIDProcEqu by EquipmentPrefix, Report

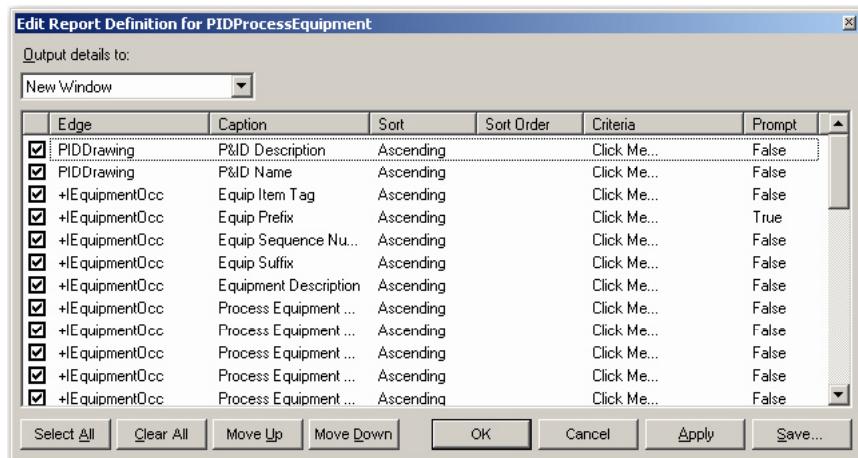
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The *Edit Report Definition* dialog box appears. From there, you can modify the saved report.



## Editing a Saved a Report

- The *Edit Report dialog* appears with the saved selections that you can edit as you need.



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## 5.6 Activity – Creating Reports

The objective of this activity is to be able to create and run a report.

1. Login to the SPF Desktop Client as **updateuser**.
2. Create a Report - Click **File > New > Report**.
3. Select PID Process Equipment.
4. Choose the **Select All** button, and then **OK** to run a report to a *New Window*.
5. Rerun the report several times performing the following tasks.
  - Change a caption of a property.
  - Sort 2 columns one Ascending the other Descending.
  - Use the *Criteria* of the Equip Prefix and search for E\* objects.
6. Activate the *Prompt* option for the Equipment Item Tag property.
7. Save the report.
8. Find the report you just saved, and run it using the short cut menu. Use the value MP when prompted for a value for Equipment Item Tag.
9. Logout of SPF Desktop Client and take a short break.

## 5.7 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.**

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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 copies 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.**

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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 in the User Preferences.

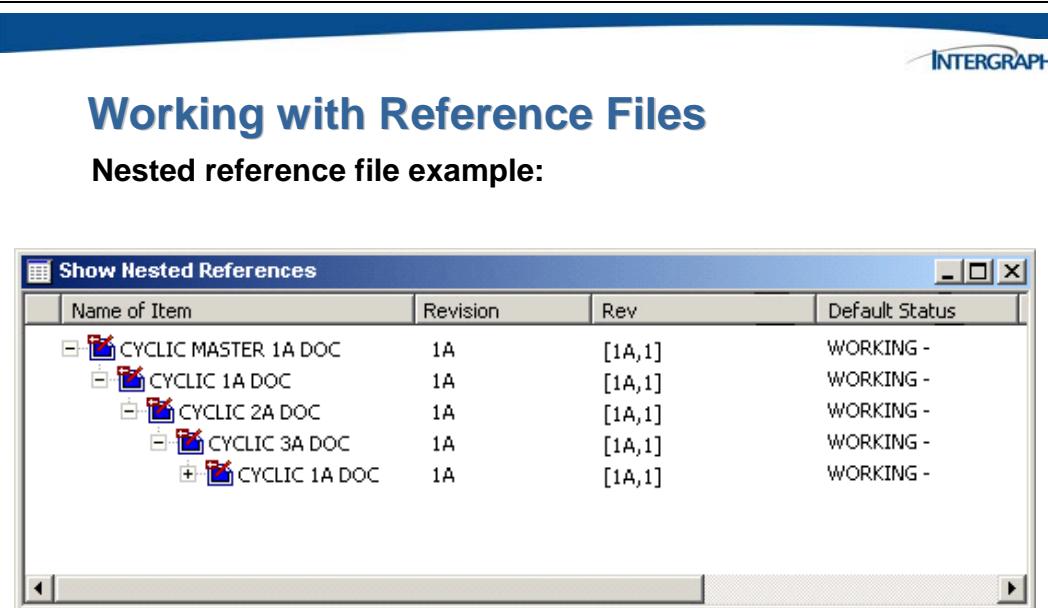
The system administrator may also configure SmartPlant Foundation to allow files to reference themselves, or to reference each other in a cyclical relationship. In other words, document B may be referenced by document A, and document A may be referenced by document B. These relationships can be created in SmartPlant Foundation by dragging and dropping reference files onto the files they reference.



## 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.

**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.

## 5.7.1 Reference Files Dialog

The *Reference Files* dialog displays a list of the reference files used to update the currently active document or drawing. You can indicate which reference files are used to display and plot the active file. Different fields are active on this dialog box depending on whether you select design or raster reference files.



### Reference Files Dialog

This dialog displays a list of the reference files used to update the currently active document or drawing.

- Reference file type** - Select the type of reference files for which you want to view and/or modify information. Choose from design and raster files. In the case of AutoCAD files, choose between drawing and raster files.
- File Name** - Contains a list of all the reference files associated with the active file.
- Description** - Provides a brief description of each reference file, if applicable.
- Logical Name** - Provides a name to distinguish between multiple applications of the same reference files. A reference file can be applied more than once, if necessary.

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The following are additional sections/fields on the *Reference Files* dialog:

- Display** - Specifies whether the information in the reference file is used to create the active image.
- Plot** - Indicates whether information in the reference file is used when plotting the active file.
- File full path** - Displays the location and file name of the selected reference file.
- Display** - When selected, indicates that the information in the selected reference file should be used to create the image of the active file.
- Plot** - When selected, indicates that information in the selected reference file should be used when plotting the active file.
- Transparent** - This option initially displays the value defined in the selected monochrome reference file. When checked, no background color is processed. You can check or uncheck this option as necessary to affect the background color.

- Foreground Color** - Select the appropriate foreground color to be used for the information in the monochrome reference file.
- Background Color** - Select the appropriate background color to be used for the monochrome reference file. No background color is processed if the Transparent field is checked.
- Raster file information** - When raster files are selected in the table, information specific to that file appears at the bottom of the dialog box. This information includes such items as the dimensions of the image, foreground color, and the format type.

## 5.7.2 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

### 5.7.3 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.

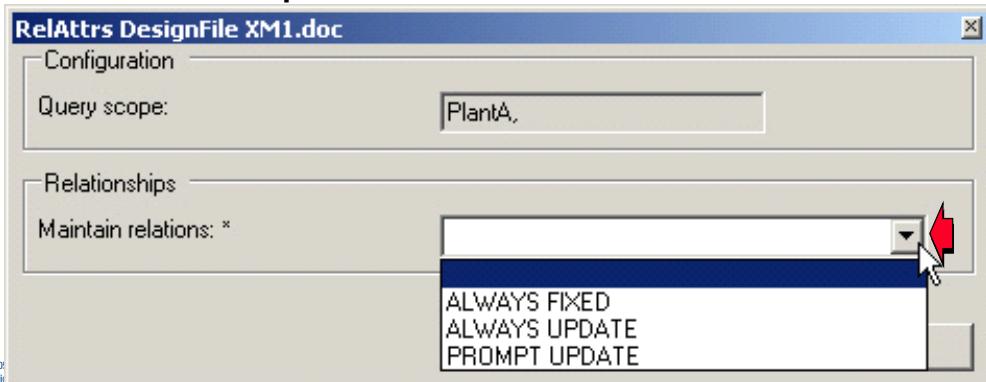
The procedure to maintain reference file relationships is as follows:

- ❑ 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 Reference Files** from the pop-up menu.
- ❑ Right-click the reference file for which you want to update the maintain relations attribute, and choose **Update 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. Master design files are those that have reference files associated with them.
- ❑ Select the action that you want to occur to the relationship between the revision and its reference files.



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

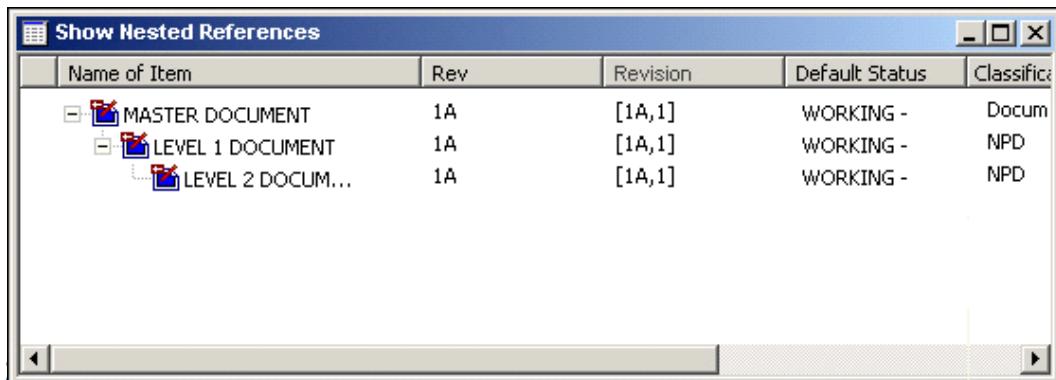


## Update Maintain Relations Attribute

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

## 5.7.4 Show Nested Reference Files

The Show Nested Reference Files command allows you view a list of all the nested reference files associated with an object. This command is available when you right-click on a document 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. For example, in the following graphic, the document Level 2 Document is a reference file for Level 1 Document, which, in turn is a reference file of Master Document. In this case, Level 2 Document has a direct relationship with Level 1 Document, but not Master Document.

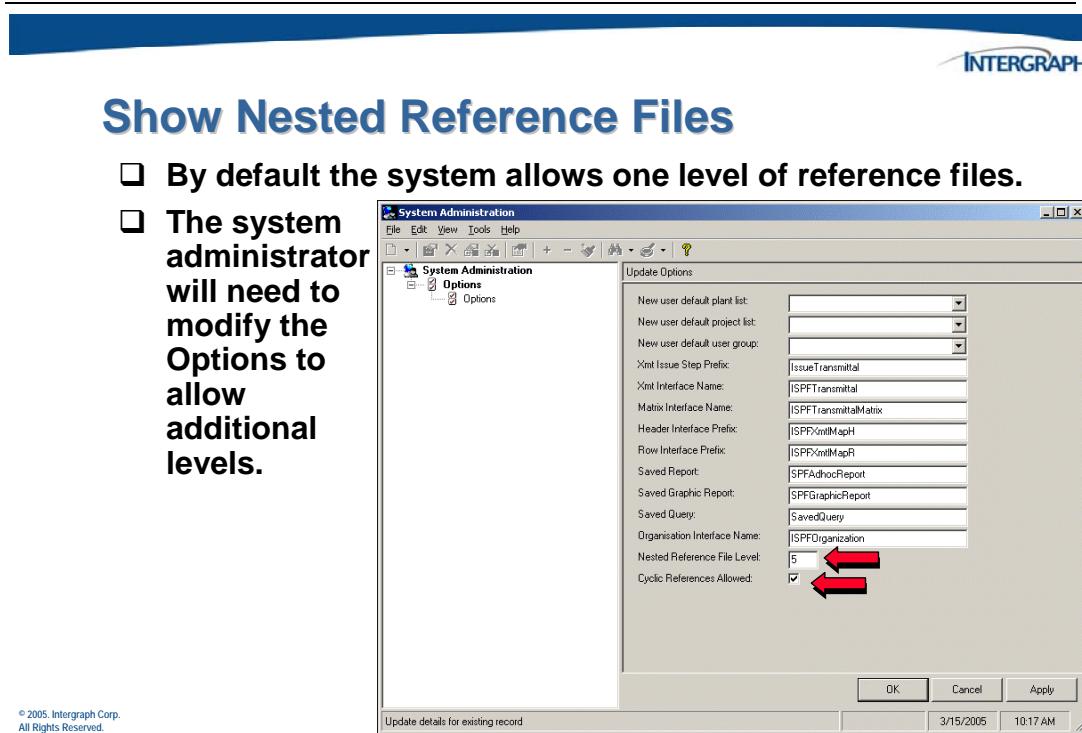


The screenshot shows a Windows-style dialog box titled "Show Nested References". The dialog has a standard title bar with minimize, maximize, and close buttons. The main area is a table with columns: "Name of Item", "Rev", "Revision", "Default Status", and "Classification". The data is organized into three rows:

Name of Item	Rev	Revision	Default Status	Classification
MASTER DOCUMENT	1A	[1A,1]	WORKING -	Docum
LEVEL 1 DOCUMENT	1A	[1A,1]	WORKING -	NPD
LEVEL 2 DOCUMENT	1A	[1A,1]	WORKING -	NPD

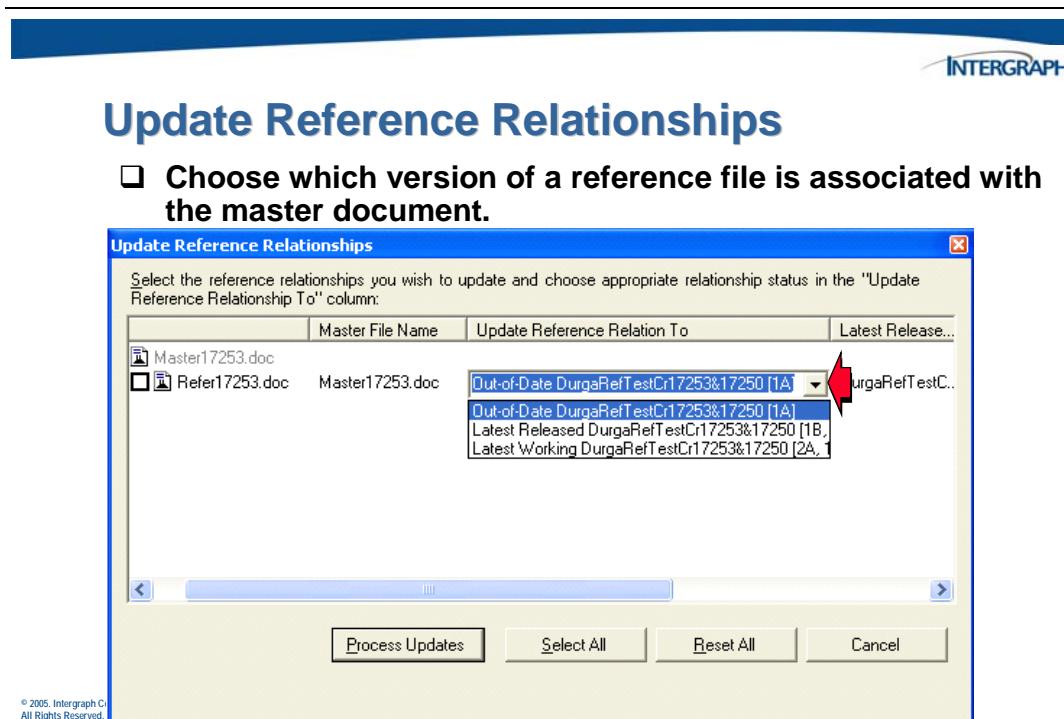
The "LEVEL 1 DOCUMENT" and "LEVEL 2 DOCUMENT" rows are collapsed, indicated by a minus sign icon before their names. The "MASTER DOCUMENT" row is expanded, showing its direct reference to the "LEVEL 1 DOCUMENT".

By default the system is setup with 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 Options object in the System Administration application.



## 5.7.5 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.



## 5.8 Activity – Working with Reference Files

The objective of this activity is to allow you to create and manipulate reference file relationships.

1. Login to SPF Desktop Client as **updateuser**.
2. Create a document for P&ID Documents – P&ID – Utility P&ID.
3. Fill in a name (Ref\_File\_Doc) and title (Reference Files) of the document, and click **Next**.
4. Attach the following files to the document (located in the D:\spf\_training\ref\_files folder):
  - a. **lad\_dia.dgn**
  - b. **lad\_ele.dgn**
  - c. **lad\_els.dgn**
  - d. **lad\_elw.dgn**
  - e. **lad\_pavp.dgn**
  - f. **lad\_roof.dgn**
  - g. **lad\_towr.dgn**.
5. Click **OK**.
6. In the *New Items* window, use the right mouse button to choose the document and select the **Show Files** command.
7. Verify the files are attached.
8. Right-click on the document, and select **Files > Attach File**.
9. From the D:\spf\_training\ref\_files folder, attach the two master files **lad\_modl.dgn** and **lad\_eln.dgn**.

10. Verify the files are attached and the references are linked correctly by right-clicking on the files, and selecting **Show Nested Reference Files**.

11. Logout of SPF Desktop Client and take a short break.

## 5.9 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.

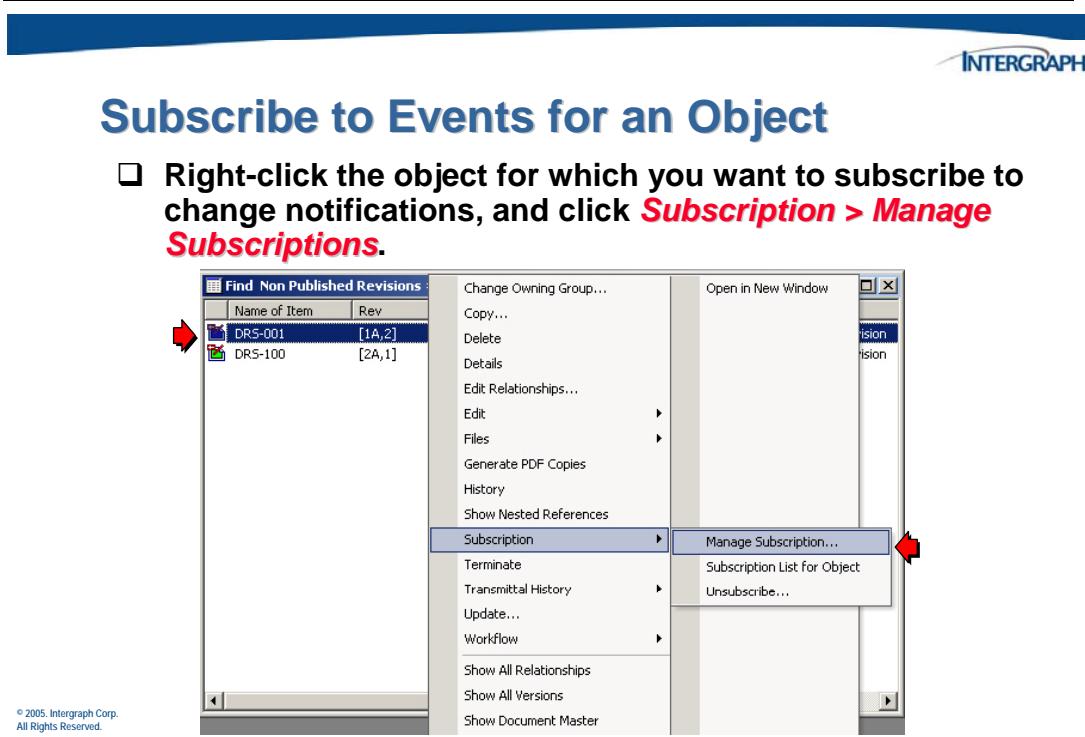


### Subscribe/Unsubscribe Overview

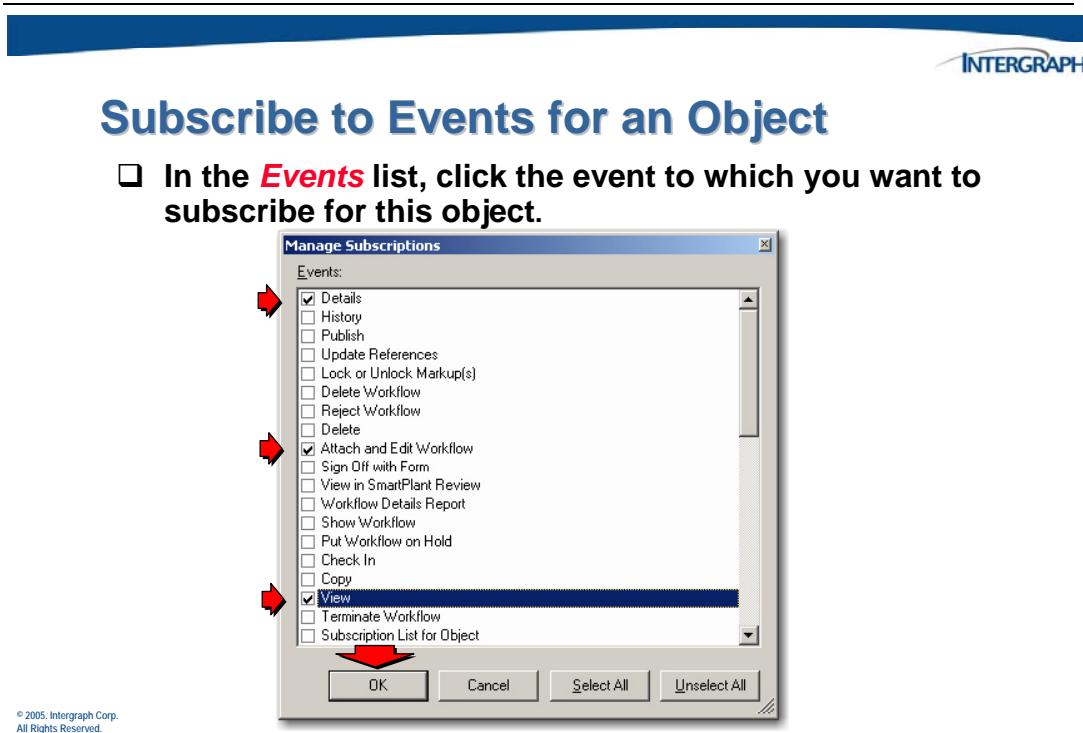
- In SPF you can register your interest in specific actions for objects to receive e-mail notification when that action is performed on that object (subscribe).
- You can also subscribe to changes for other objects, not just documents.
- SPF allows you to *Subscribe*, *Unsubscribe*, *Query* and *View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

## 5.9.1 Subscribe to Events for an Object

The **Manage Subscription** command allows you to specify whether you receive notification when particular actions are performed on the selected object.



The *Manage Subscriptions* dialog will appear.



If you have subscribed to events previously, those events appear selected in the list. Follow the same procedure to update the list and add and remove events.

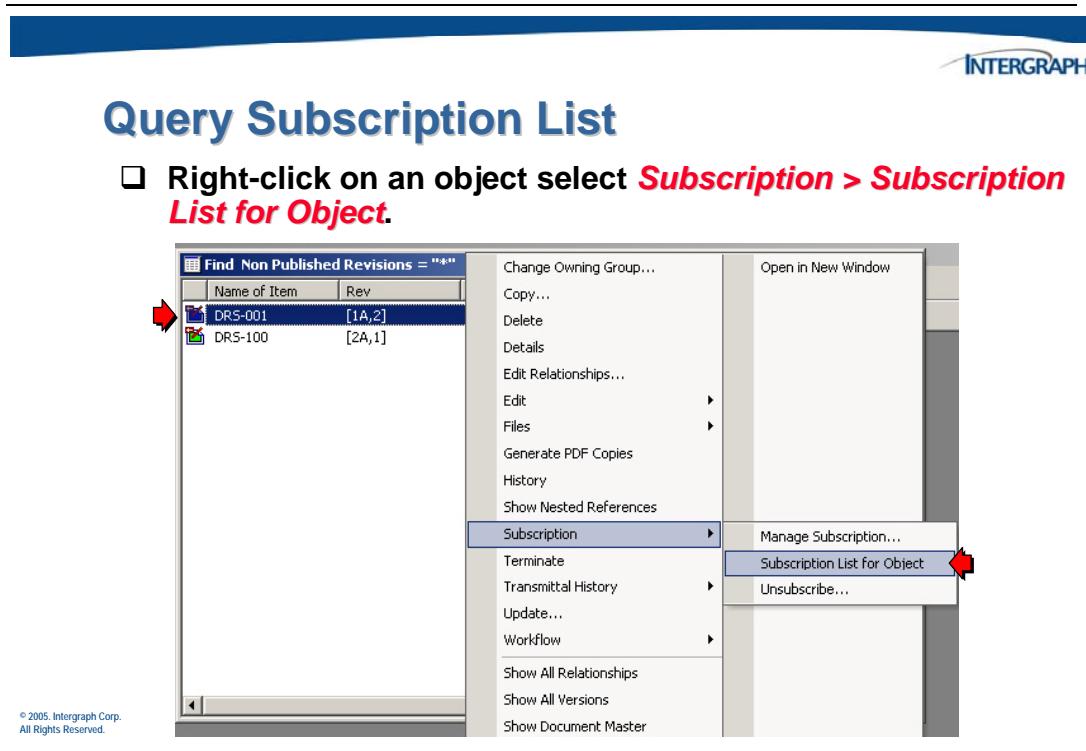
- To subscribe to all the events in the list, click **Select All**.
- To clear your selections, click **Unselect All**.
- Otherwise, check any events for which you want to receive notification.
- Click **OK**.

The software sends you e-mail notification when the event to which you have subscribed occurs. For example, if you subscribe to the check out event for a document revision, you receive e-mail notification when any user checks out the revision.

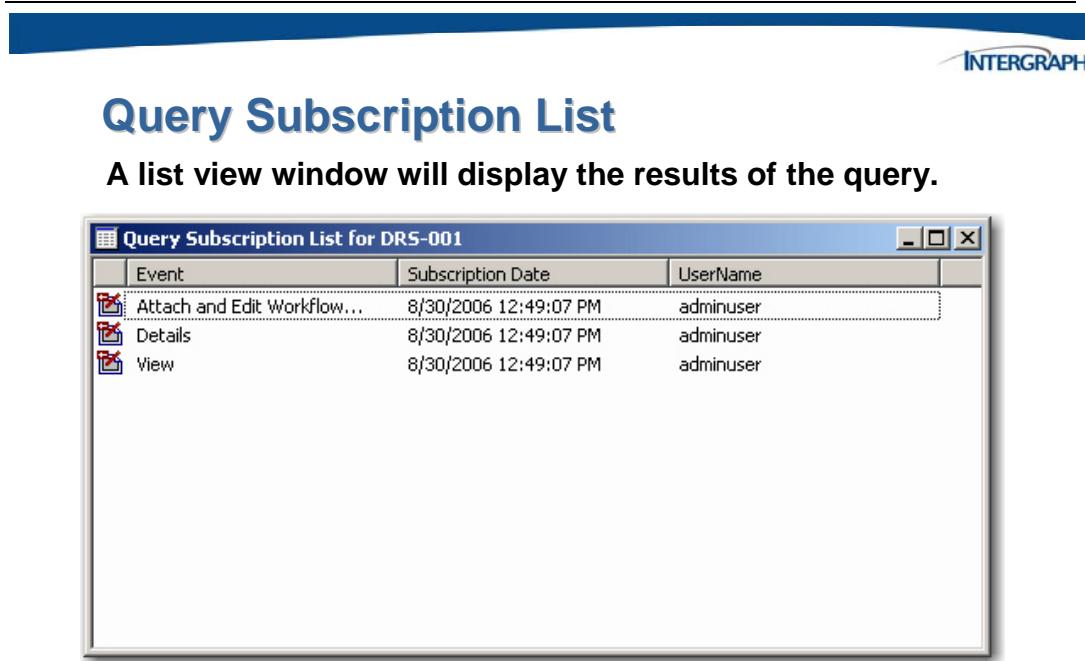
When using SPF with SmartPlant, you are automatically subscribed to the publish event for a document that you have previously published or retrieved at least once.

## 5.9.2 Subscription List for Object

The *Subscription List for Object* command allows you to view and update the subscription list for the selected object.



The *Query Subscription List* dialog will appear.



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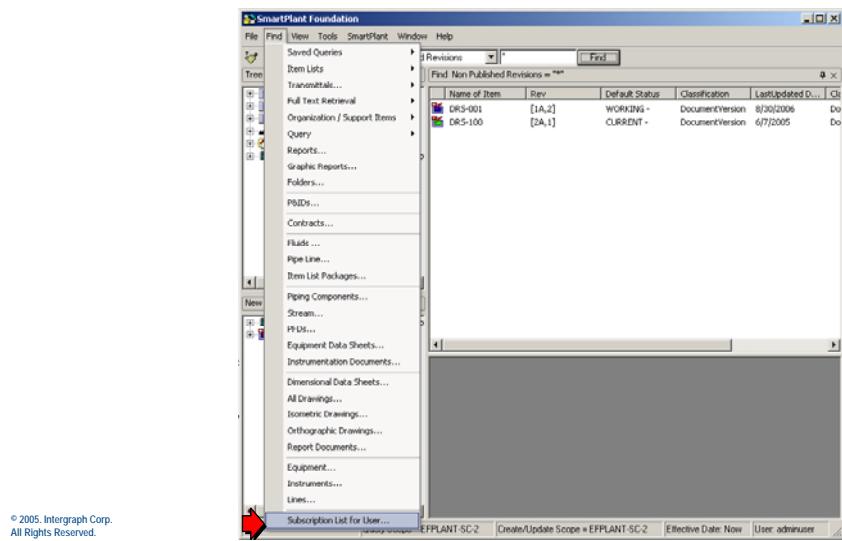
### 5.9.3 Query Subscription List

The *Query Subscription List* allows you to view the list of events to which you are subscribed for a particular object.

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#### View the Subscription List for a User

- From the menu, select **Query > Subscription List for User.**

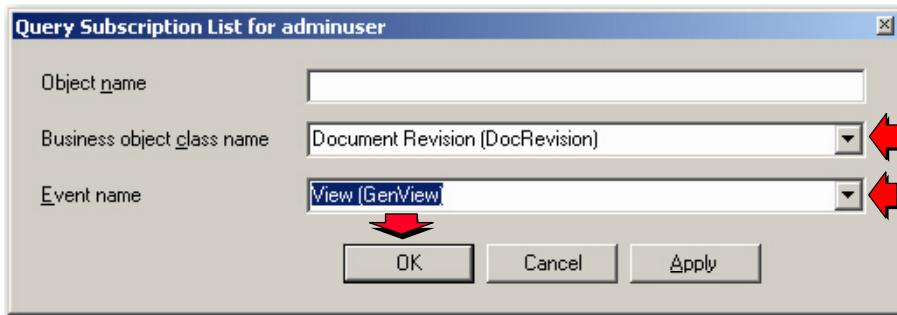


The *Query Subscription List* window will appear.



## View the Subscription List for a User

- To narrow your search to specific business objects or events, define search criteria in the *Query Subscription List for <User>* dialog box.



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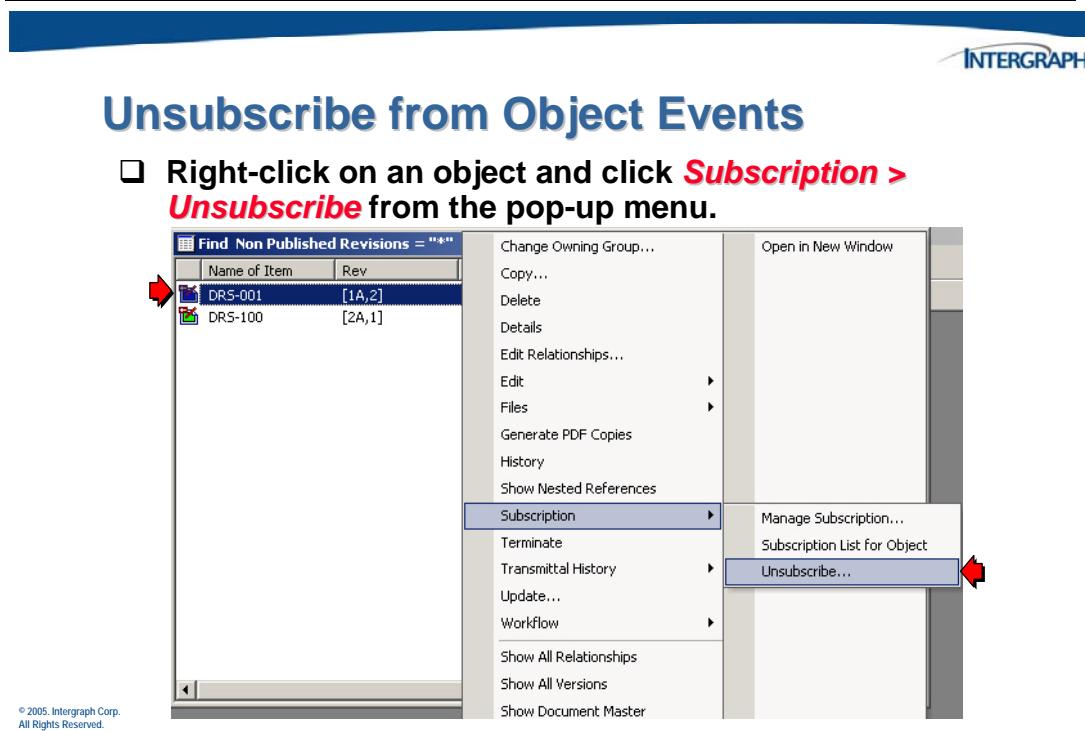
## View the Subscription List for a User

- You can view the subscription list only for the currently logged-on user.
- You can unsubscribe from an event by right-clicking the event in the list view, and then clicking Unsubscribe Event on the shortcut menu.
- You subscribe to additional events for the object by right-clicking an event, and then clicking Manage Subscription.

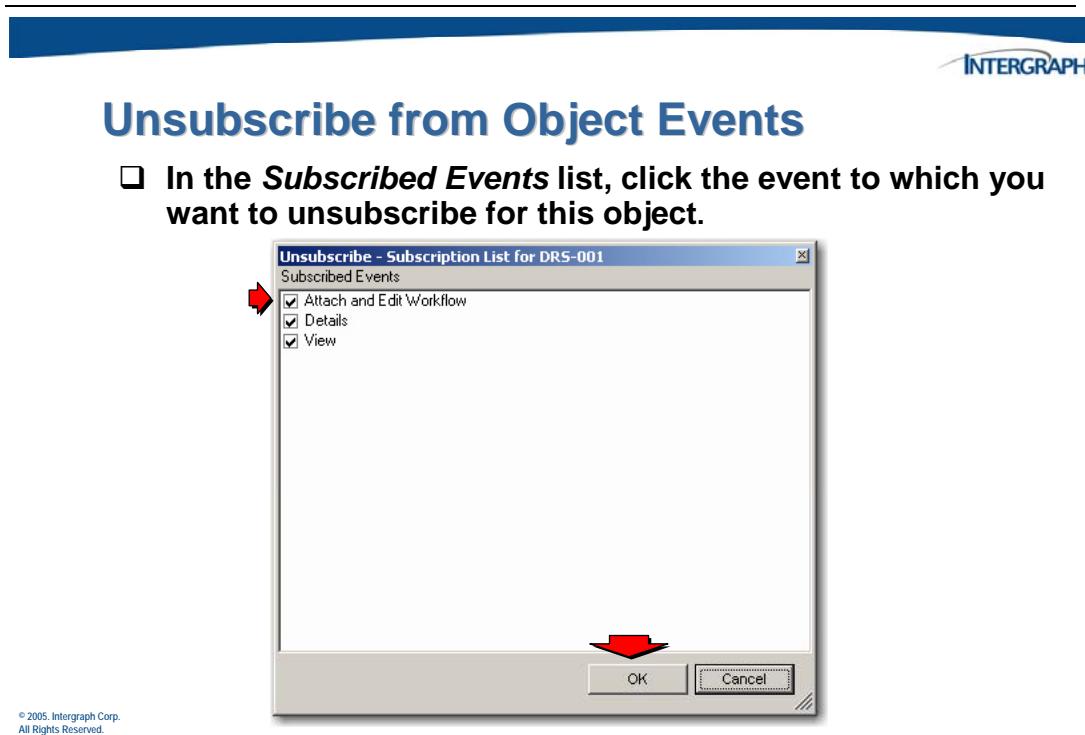
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## 5.9.4 Unsubscribe from Object Events

The **Unsubscribe** command allows you to unsubscribe from events for the selected item.



The *Unsubscribe - Subscription List* dialog box displays a list of all the events to which you are subscribed for the selected object.



To unsubscribe from one or more events, click the events from which you want to unsubscribe in the *Subscribed Events* list.

You can also unsubscribe from events for an object from the subscription list for that object. To view the subscription list for an object, right-click the object, and then click *Subscription > Subscription List for Object* on the shortcut menu.



## 5.10 Activity - Subscribing to Change Notifications

The objective of this activity is to allow you to manage your object event by subscribing to SPF events.

1. Login to SPF Desktop Client as **updateuser**.
2. Perform a search to find a document in the system (your choice).
3. Right-click on the document, and select **Subscription > Manage Subscription**.
4. Select the entries **History** and **Details** in the *Events* section.
5. Click **OK**.
6. Select the document, right-click on the document, and select **History**.
7. Close the History dialog box.
8. Select the document again, right-click on it, and select **Details**.
9. Close the Details dialog box.
10. Open Outlook Express.
11. Select **File > Switch Identity**, and switch to **updateuser**.
12. Within Outlook, what emails were created by the actions you performed?

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13. Exit Outlook.

14. In SPF Desktop Client, select the document again, and **Unsubscribe** to the document.
15. Remove the check marks on the events you selected earlier.
16. Rerun a command which would have sent a email, and verify in Outlook that no email was sent.
17. Logout of SPF and take a short break.

## 5.11 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

- Creating a document master and first revision, the document is automatically checked in.**
- When Documents are 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 to which a document belongs.**
- Checking out the document creates a new version of the document and copies the files attached to that new version of the document to a local directory that you specify for editing.**
- The original document is marked as superseded.**
- The software maintains the relationship between the copy of the document you check out and the original.**

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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.**

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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.

## 5.11.1 Check Out a Document

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



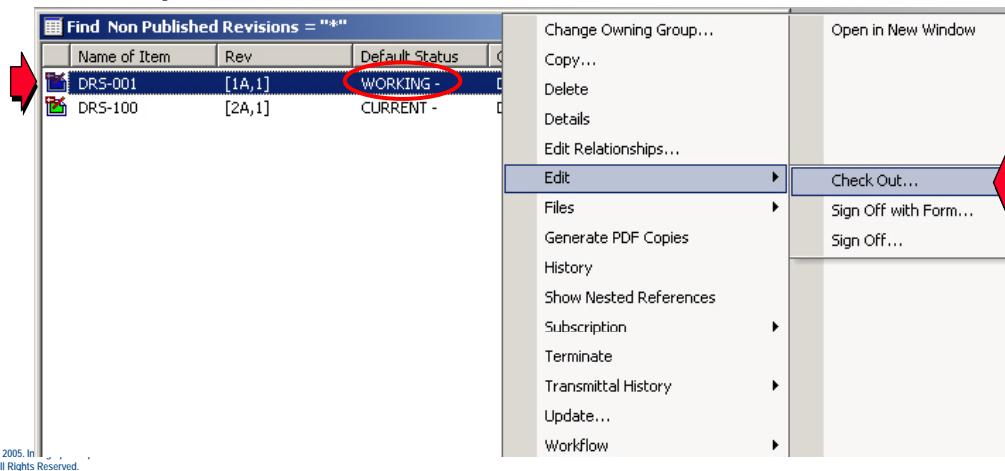
### Check Out a Document

- 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.
- To determine whether a file is checked out or not, right-click the file, and then click History, if *CheckedOutInd* is True, then the file is currently checked out.



## Check Out a Document

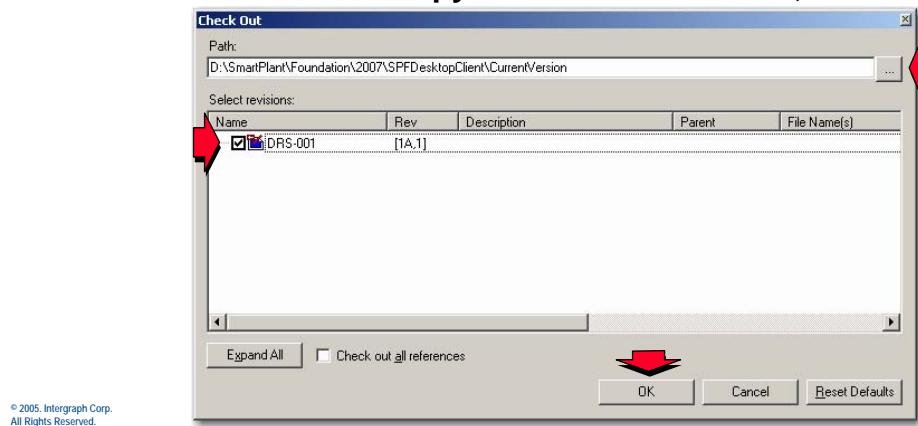
- Right-click the document revision or revisions that you want to check out, and click **Edit > Check Out** from the pop-up menu.



The *Check Out* dialog will appear.

## Check Out a Document

- Select the check box beside each attached document that you want to check out.
- Click **Browse** to select the directory into which you want the software to copy the checked out files, and click **OK**.





## Check Out a Document

- The software may display a message warning you that you are accessing a data source on another domain. If you receive this message, click **Yes** to continue the check out process.
- 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.

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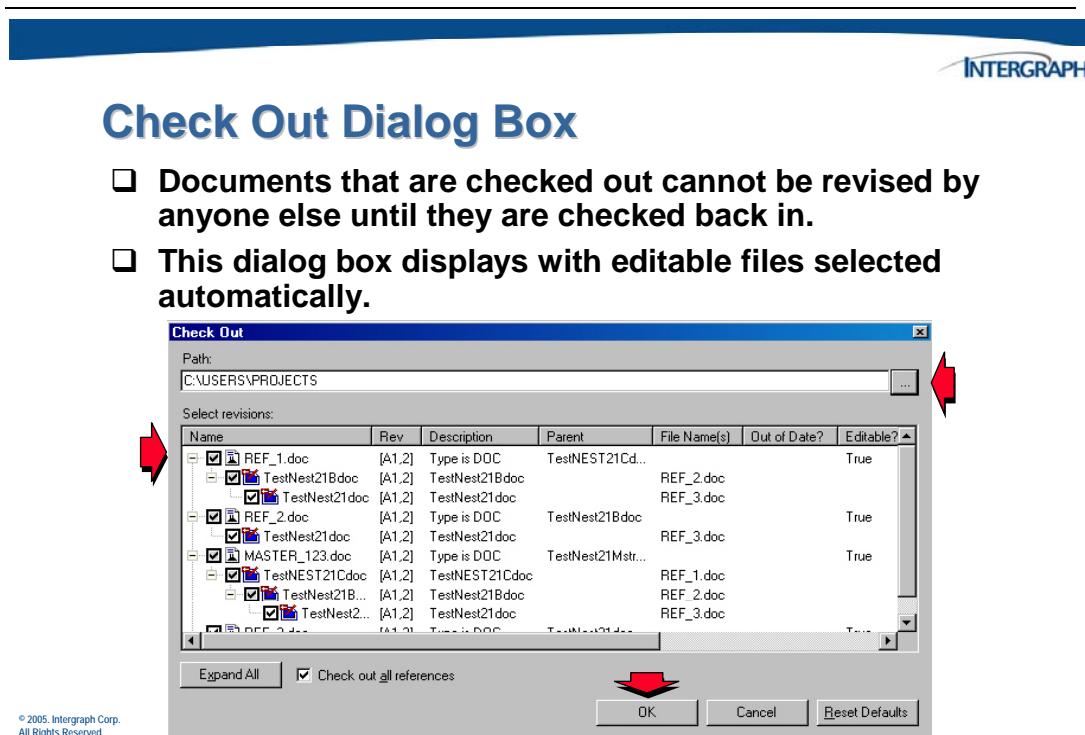
## Check Out a Document

- The software sets the following properties for the superseded document:
  - status to working,
  - the revise state to superseded,
  - the access flag to **9** (no update access), and
  - the version to **1**.
- The access flag for that new document is set to **1** (user access only), and the checked out indicator is set to TRUE.
- When you check out a document, any existing markups to files attached to the document are automatically copied forward with the checked out document.

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## 5.11.2 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.



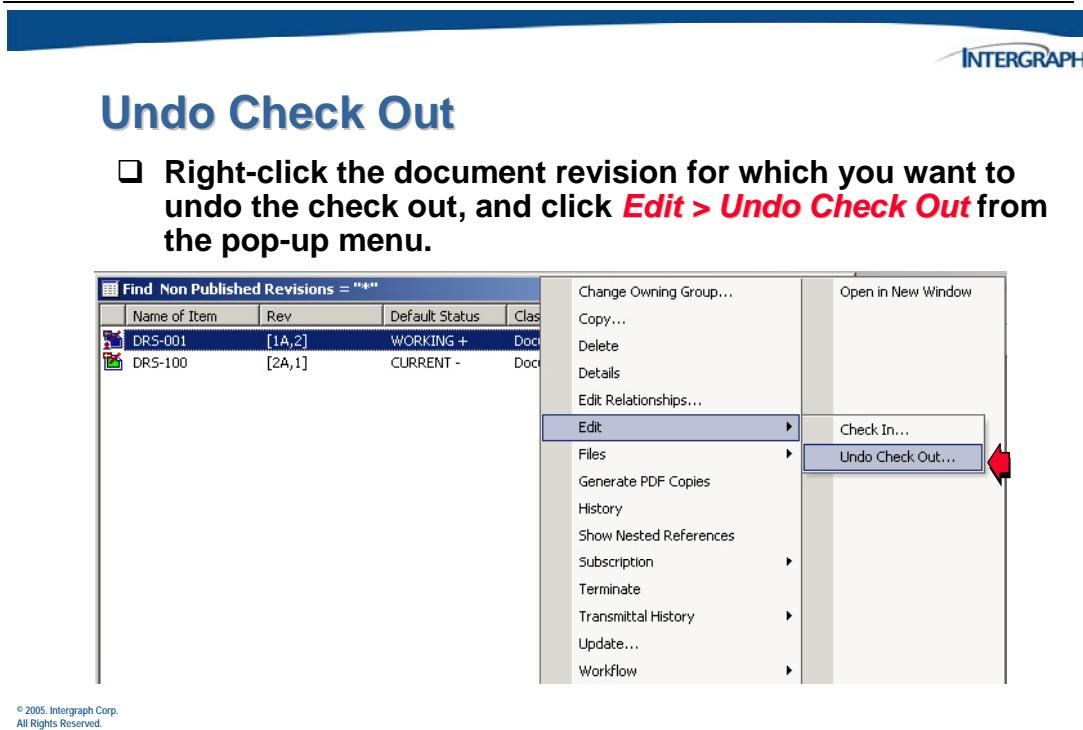
The following fields are found on the *Check Out* dialog:

- 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.
- Rev** - Displays the document revision to which the document is attached. This field is display-only.
- Description** - Displays the description of the attached file. This field is display-only.

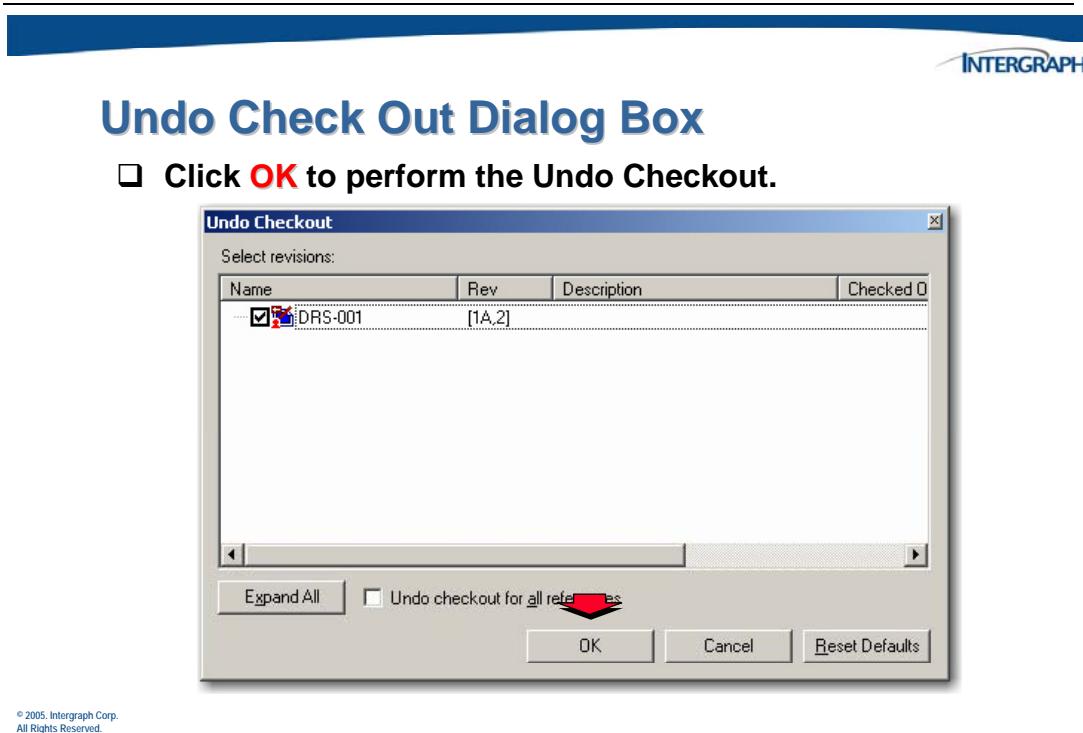
- Parent** - Displays the name of the document to which the file is attached. This field is display-only.
- File Name(s)** - Displays the file names of attached files participating in the reference file relationship with the master file. This field is display-only.
- Out of Date?** - Specifies whether 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.
- 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.

### 5.11.3 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.



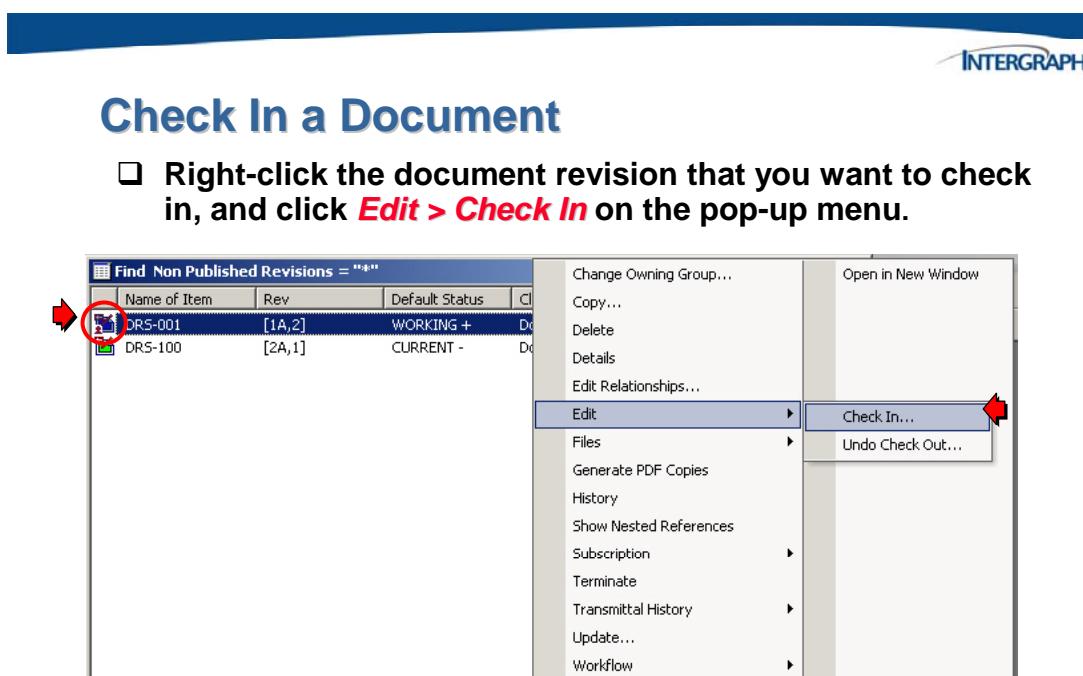
The following fields are found on the *Undo Checkout* dialog:

- ❑ **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.
- ❑ **Rev** - 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.
- ❑ **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.

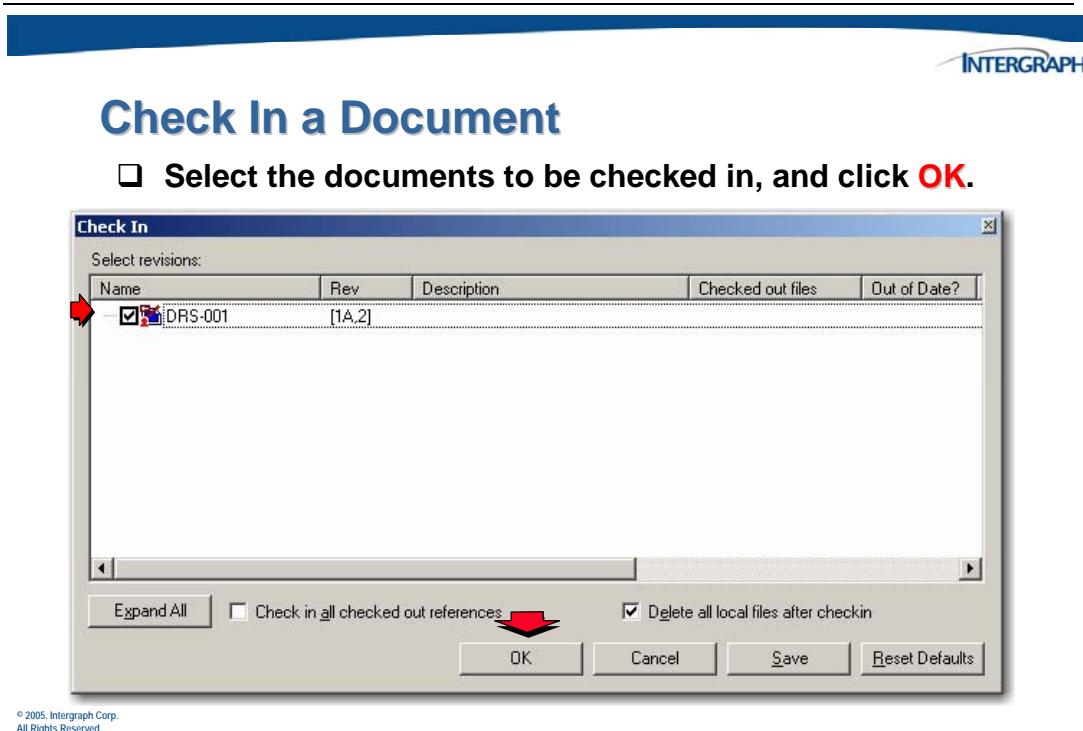
## 5.11.4 Check In a Document

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.



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The *Check In* dialog will appear.



The following fields are found on the *Check In* dialog:

- 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.
- Rev** - 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.
- Status** - Displays the status of the document. This field is display-only.
- Owner** - Displays the name of the us-r 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

- The software may display a message warning you that you are accessing a data source on another domain.**
- 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.



## 5.12 Activity – Document Check in and Check out

The objective of this activity is to allow you to perform document Checkin and Checkout operations.

1. Login to the SPF Desktop Client as **updateuser**.
2. Perform a search to find the Ref\_File\_Doc you created in the last section.
3. Right-click on this document, and select **Edit > Checkout**.
4. Select a local directory for the checked out files (use D:\users\spf\_user).
5. Perform an Undo Checkout on the document that you just checked out.
6. Right-click on the original document, and again select **Edit > Checkout** to perform the check out operation.
7. Check in the document/files that you just checked out.
8. Verify the version of the document after you check it back in.
9. Checkout the new version of the document.
10. Perform a Undo Checkout of the document and verify the version returns to the pre-checkout condition.
11. Logout of the Desktop Client and take a short break.

## 5.13 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.

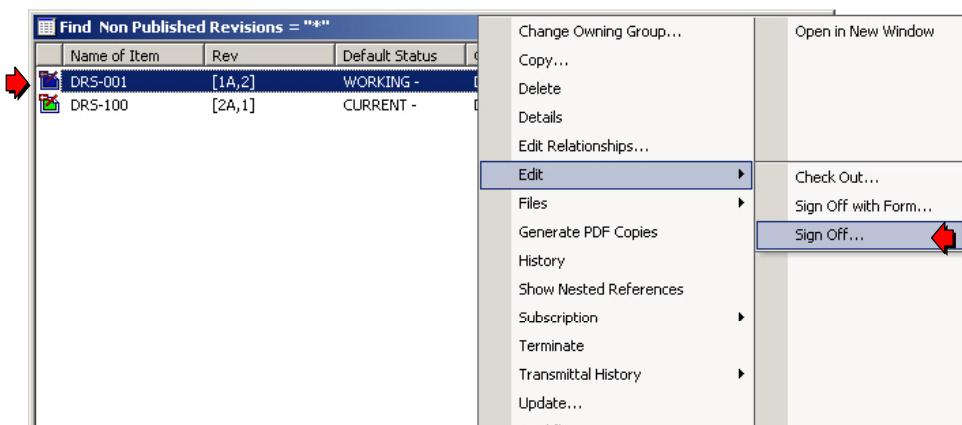
## 5.13.1 Sign Off a Document

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



### Sign Off a Document

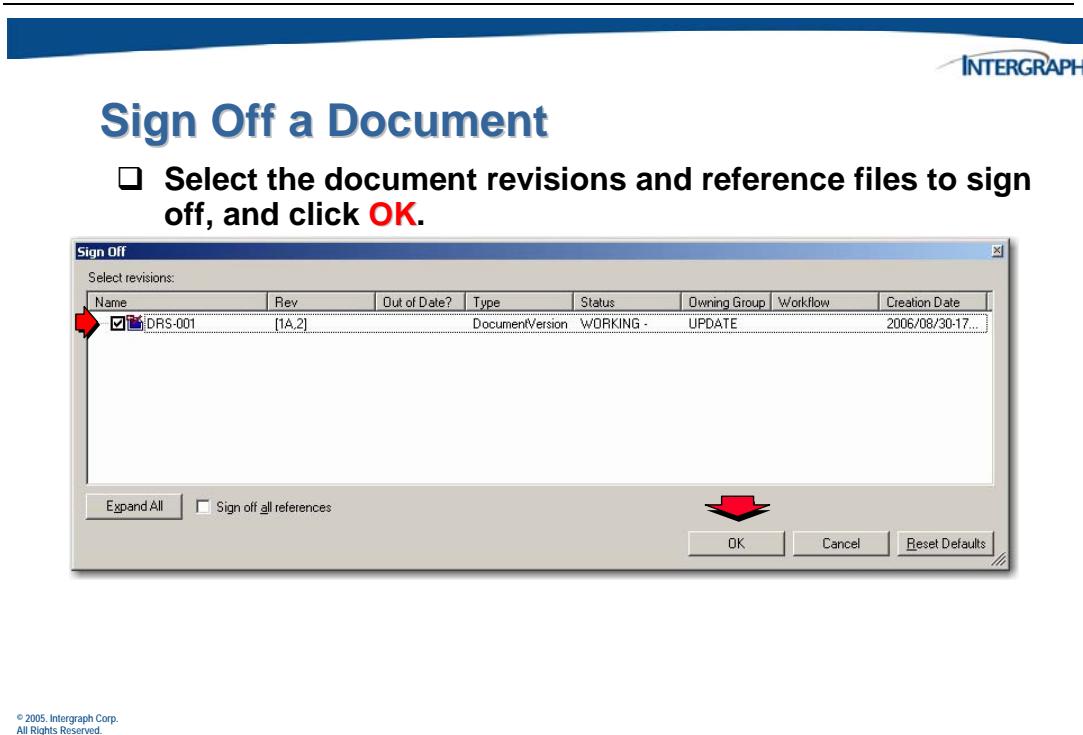
- Right-click the document revision or revisions that you want to sign off, and click **Edit > Sign Off**.



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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.

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:**

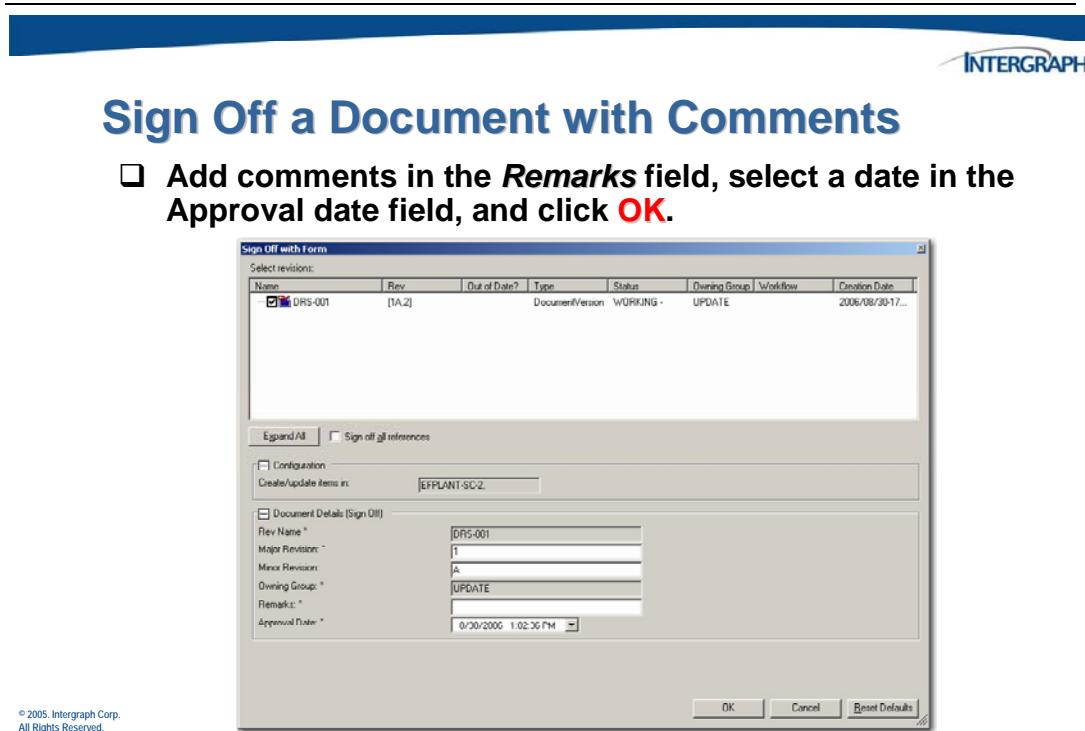
- Before you sign off a document, you must check in the document.**
- When you sign off a document, the software sets the status for the revision to current, the revise state to blank, and the version to 2.**
- Signing off a document sets the revise state for any previous revisions to superseded.**
- Signing off a document in a project does not update the as-built revision status to superseded.**
- Signing off a document changes the status of the document master to issued.**

## 5.13.2 Sign Off a Document with Comments

If you want to provide comments and the date you approved 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**.

## 5.14 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.**

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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.

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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.

## 5.14.1 Revise a Document

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

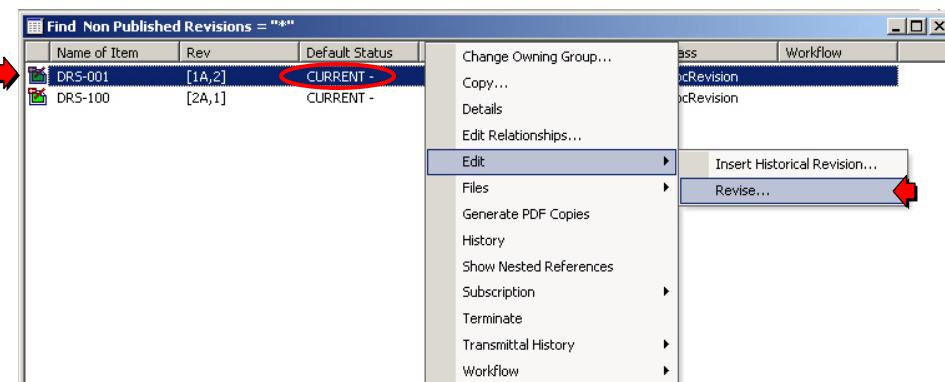


### Revise a Document

- 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.

## Revise a Document

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



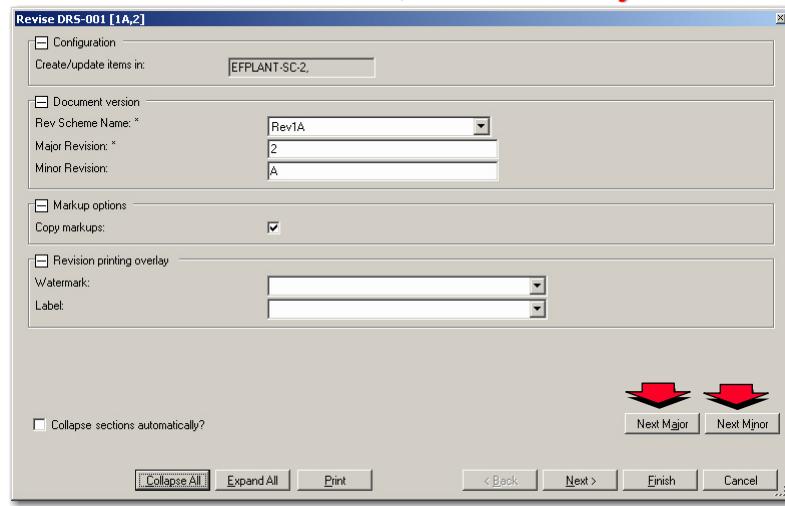
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To revise a document, the status must be current, which means that the document has already been signed off. If you want to copy markups to files attached to the document, select the **Copy markups** check box.



## Revise a Document

- To use the next major revision and next minor revision number for the document, click **Next Major** or **Next Minor**.



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.

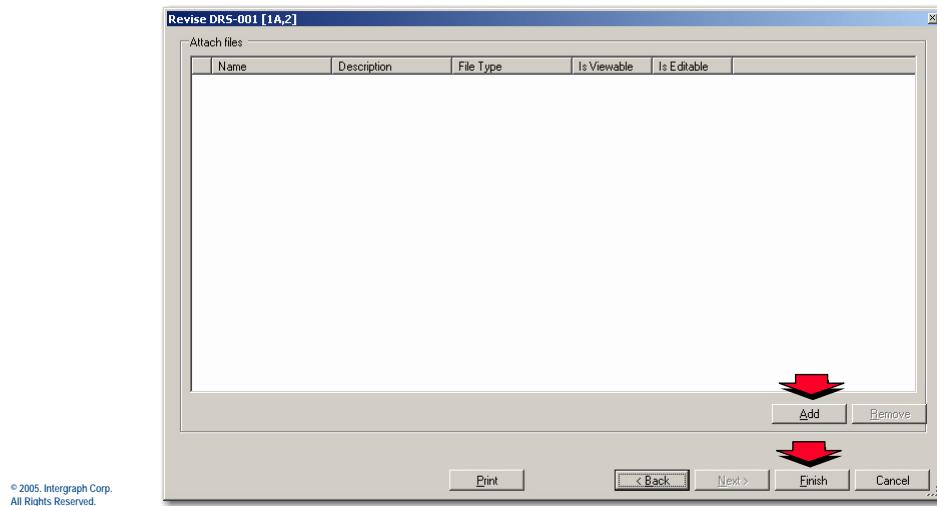
To use the next major revision number for the document, click **Next Major**. The software displays the next major revision number in the *Major* revision box. The revision number used for the latest current document revision, not the superseded revision being revised, determines the next major revision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



## Revise a Document

- Click **Add** to attach files or **Finish** to just create the new revision.



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To attach a file to the new revision, click **Add**, and then 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 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.

## 5.14.2 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.

## 5.14.3 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	IssueState	ReviseState	Check out indicator	Icon Name
		Doc Type				DocType
	Working	Master	RESERVED			DocMaster_R
		Rev A,1	WORKING		-	DocRevision_W
	Checked out	Rev A,2	WORKING		+	DocRevision_WC
	Superseded by check out	Rev A,1	WORKING	SUPERSEDED	-	DocRevision_WCS
	Checked in	Rev A,2	WORKING		-	DocRevision_W
	Superseded by check in	Rev A,1	WORKING	SUPERSEDED	-	DocRevision_WS
	Signed Off (rev A)	Master	ISSUED			DocMaster_I
		Rev A	CURRENT		-	DocRevision_C
	Revised	Master	ISSUED_WKG			DocMaster_IW
		Rev A	CURRENT	SUPERSEDED	-	DocRevision_CS
		Rev B	WORKING		-	DocRevision_W
	Signed Off (rev B)	Master	ISSUED_WKG			DocMaster_IW
		Rev A	SUPERSEDED	SUPERSEDED	-	DocRevision_SS
		Rev B	CURRENT		-	DocRevision_C
	Terminate	Revision	CURRENT	TERMINATED	-	DocRevision_CT
	Terminate	Revision	WORKING	TERMINATED	-	DocRevision_WT

## **5.14.4 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 committed 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 committed 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 committed.

If a project is discarded, the as-built revision state is reset from SUPERSEDED to blank.

## 5.15 Committing Project Work

Configuration management in SmartPlant Foundation Desktop Client allows you to create, view, modify, and delete changes within the context of a particular configuration, without affecting the as-built data.

It is represented by a tree of related business objects. Only business objects for which the system administration definition supports configurations are part of the configuration tree.

**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.



### Commit

- Configuration management allows you to create, view, modify, and delete changes within the context of a particular configuration.**
- Data creations, modifications, and terminations can be migrated from the configuration level in which the changes took place and merged into the parent configuration level.**
- System administrators can ensure that all change requests are created at the project level (or below that level in the tree) of a configuration.**

Data creations, modifications, and terminations can be migrated from the configuration level in which the changes took place and merged into the parent configuration level. This process can be repeated until the changes are moved up the tree to the as-built configuration.

SmartPlant Foundation controls the level at which specific business objects are created. For example, system administrators can ensure that all change requests are created at the project level (or below that level in the tree) of a configuration. Similarly, you may want to ensure that tags can be created or changed only within the context of a change request.

A change request is a business object that represent planned changes to a plant. Typically, they are organized into projects. Each change request can be evaluated and is then committed up one configuration level or discarded. At each level, the change request can

be evaluated again, with the same choices until the change is discarded or merged into the as-built configuration.

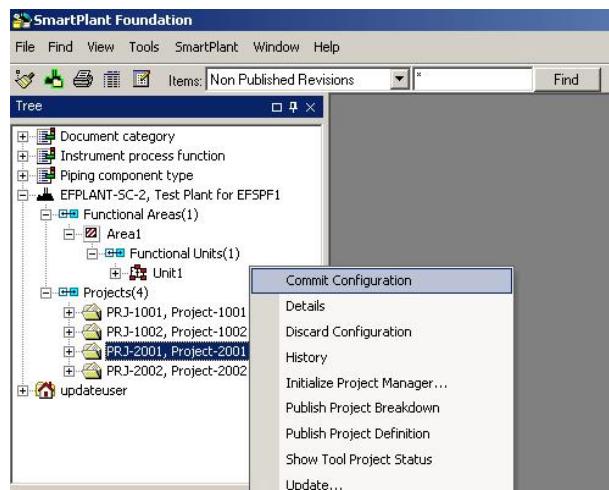
## 5.15.1 Commit a Configuration

The **Commit Configuration** command takes all the change requests in a configuration and moves them one level up to the parent configuration.

You will Commit the *Project* to the *As-Built* by expanding the tree view to show a list of available projects. Select a project, and from the right-click menu, click the **Commit Configuration** command to commit the project.

### Commit a Configuration

- In the Tree view, expand the plant that contains the project you want to accept.
- Choose the Project to commit, and select **Commit Configuration** from the pop-up menu.





## 5.16 Activity - Revising and Committing Objects

The objective of this activity is to sign off and make current documents that are in a project in order to get them ready to commit to the *As-Built* plant. As part of the sign off, document revisions may be needed so you will make some revisions. Once the revisions have been made, you will commit the project work to the plant **EFPLANT-SC-2**.

1. Login to SPF Desktop Client as **updateuser**.
2. Perform a search to find the Ref\_File\_Doc you checked in and out in the last activity.
3. Signoff the document by right-clicking on the document and selecting **Edit > Signoff**.
4. Highlight the signed off document, right-click on the document, and select **Edit > Revise**.
5. Create the next *Revision* of the document, and click **OK**.
6. Find the document you have been working with in this lab.
7. Right-click on the document, and select **Show All Versions**.
8. Review the *Status*, *Icons*, and all the *Revisions* of the master document.
9. Change user to *adminuser*.
10. Set your configuration *Scope* to **EFPLANT-SC-2,PRJ2001**.
11. In this configuration, create a new document.
12. Once the document is created, set the configuration *Scope* to the *As-Built* configuration **EFPLANT-SC-2**.

13. Search for the document you just created.
  
14. Is it in the As Built configuration? \_\_\_\_\_  
Why or why not? \_\_\_\_\_
  
15. Highlight the plant name **EFPLANT-SC-2**.
  
16. Expand the plant to show the projects beneath it.
  
17. Highlight PRJ2001, and right-click on this object.
  
18. Select **Commit Configuration**, and click **OK** in the confirmation dialog.
  
19. Verify that the document created earlier in the lab is now in the *As-Built* configuration.
  
20. When you finish this activity, you may take a short break until everyone has finished.

C H A P T E R

# 6

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## SPF Hotspotting



## 6. SPF Hotspotting

The SmartPlant Foundation SmartConverter converts MicroStation and AutoCAD drawings to SmartSketch (.igr) files which can be displayed and hotspotted so that users can select different graphics in these drawings to access related information in the SmartPlant Foundation database.



### SPF Hotspotting

**The SmartPlant Foundation SmartConverter (Hotspotting) allows MicroStation, AutoCAD and RAD format drawings to be hotspotted so that users can click graphics in these drawings to access related information in the SmartPlant Foundation database.**

**This is an alternative to the hotspotting that is produced for a P&ID drawing that is published by SmartPlant P&ID.**

**The hotspotting in this chapter is used for “dumb” graphics using text strings from the graphics file to locate and display data base information.**

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The SmartConverter can be used to convert any file type that can be opened by **SmartSketch 4.0 and later**. When installing SmartSketch, choose the **CAD Translators** and the **Programming Tools** optional components.



## Hotspotting Requirements

To setup Hotspotting, the following software and configuration are required:

### Software Requirements

- SmartSketch 4.0 or later
- CAD Translators and the Programming Tools optional components installed

### Configuration Requirements

- Runs on both Microsoft Windows 2000 or 2003 Server
- Change DCOM Configuration
- Grant the Internet Guest Account Full Control Access
- Modify SmartConverter Options in **SPFSmartConverter.ini** and **SPFHotspotter.ini** files

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**Note:** The SmartConverter does not load the tags in the SmartPlant Foundation database. The tags for the hotspots in the drawing should already be in the database.

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## 6.1 Hotspot Setup and Configuration

For the SmartConverter to run on the SmartPlant Foundation server, you must set DCOM configuration settings and grant full control access to a registry key.

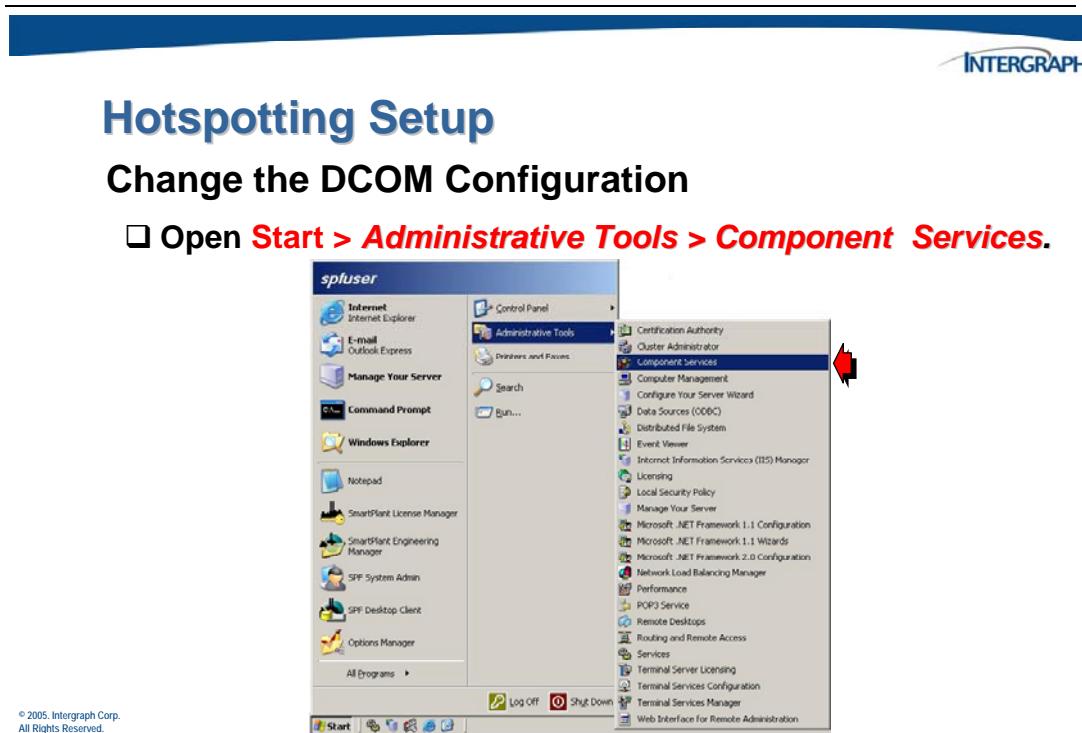
### 6.1.1 Setting the DCOM Configuration for the SmartConverter

In order for hotspotting to work properly, you must first set the DCOM configuration for the SmartConverter. The following configuration is required on all SmartPlant Foundation servers that will run the SmartConverter. The steps for modifying your DCOM configuration are slightly different in Windows 2000 and 2003.

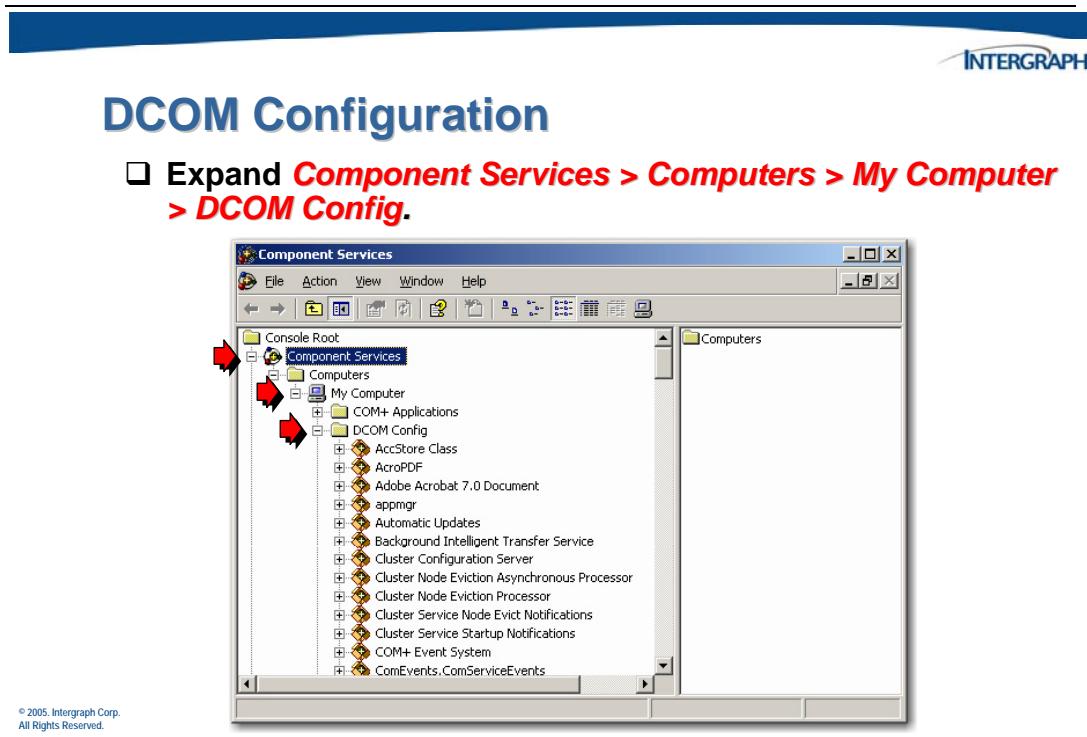
In this section, examples will be given for changing the DCOM configuration in Windows 2003, followed by a Windows 2000 example.

#### Change DCOM Configuration Settings in Windows 2003

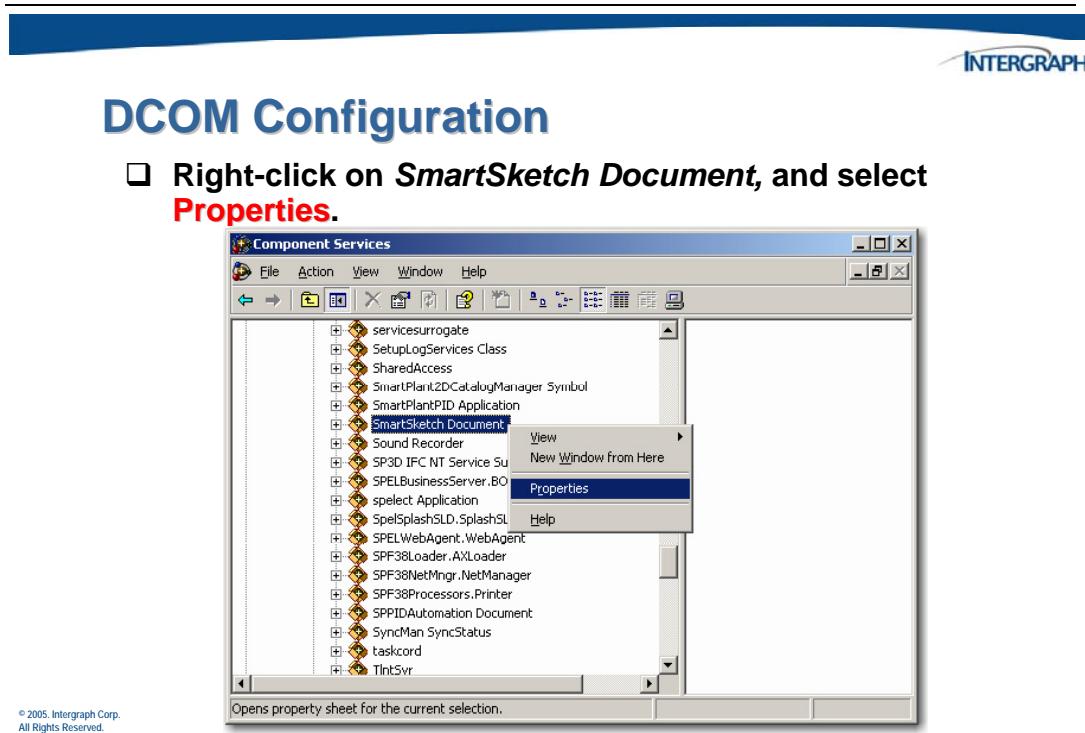
From the desktop, select *Start > All Programs > Administrative Tools > Component Services*.



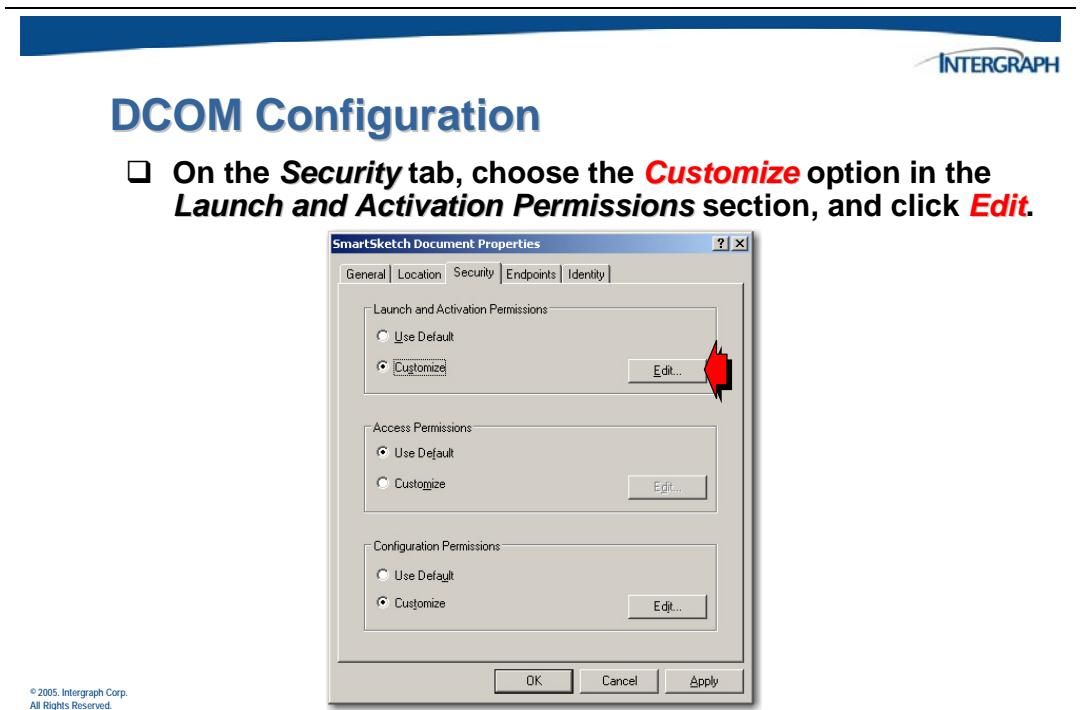
In the tree view, expand *Component Services > Computers > My Computer > DCOM Config.*



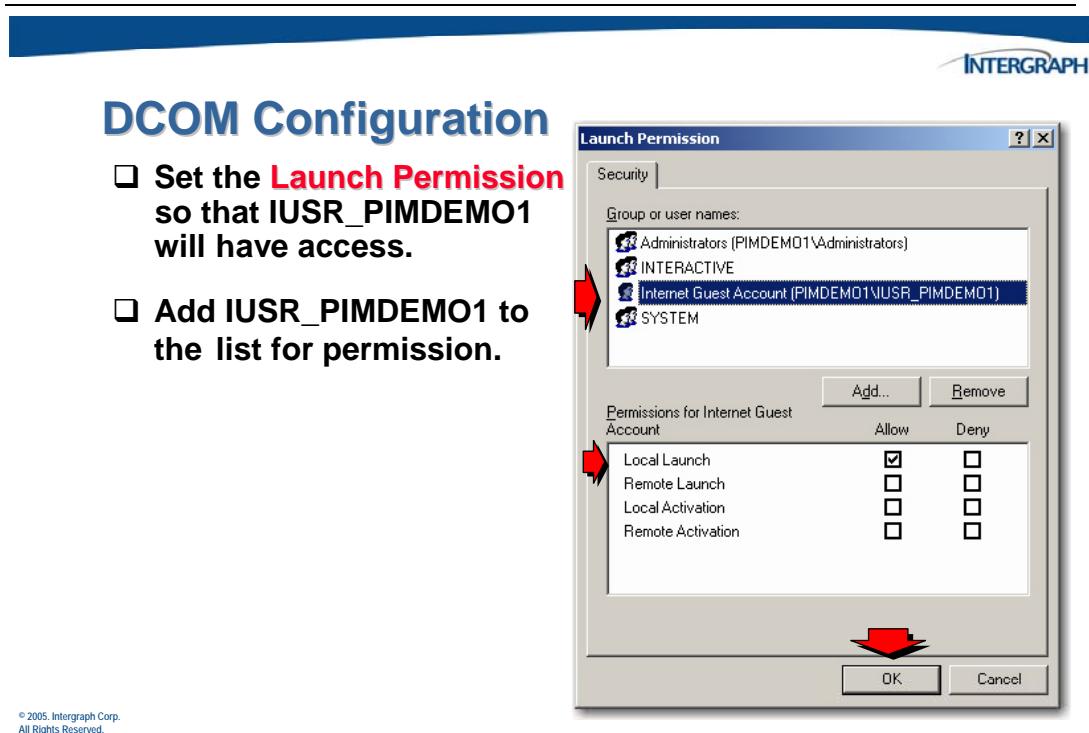
Scroll down until you see the **SmartSketch Document** entry.



The *SmartSketch Document Properties* dialog will appear. Under the *Security* tab, enable the **Customize** radio button.



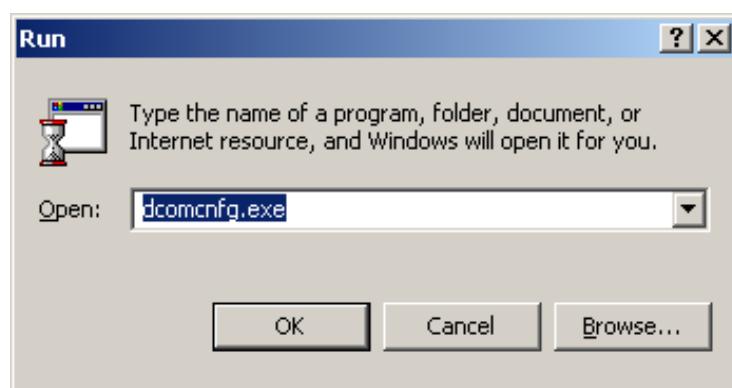
The *Launch Permission* dialog will open. In the *Launch Permission* dialog box, click **Add**, select **Locations**, and select the local computer name. Add the IWAM\_<ComputerName> and IUSR\_<ComputerName> to the list of users, and click **OK**.



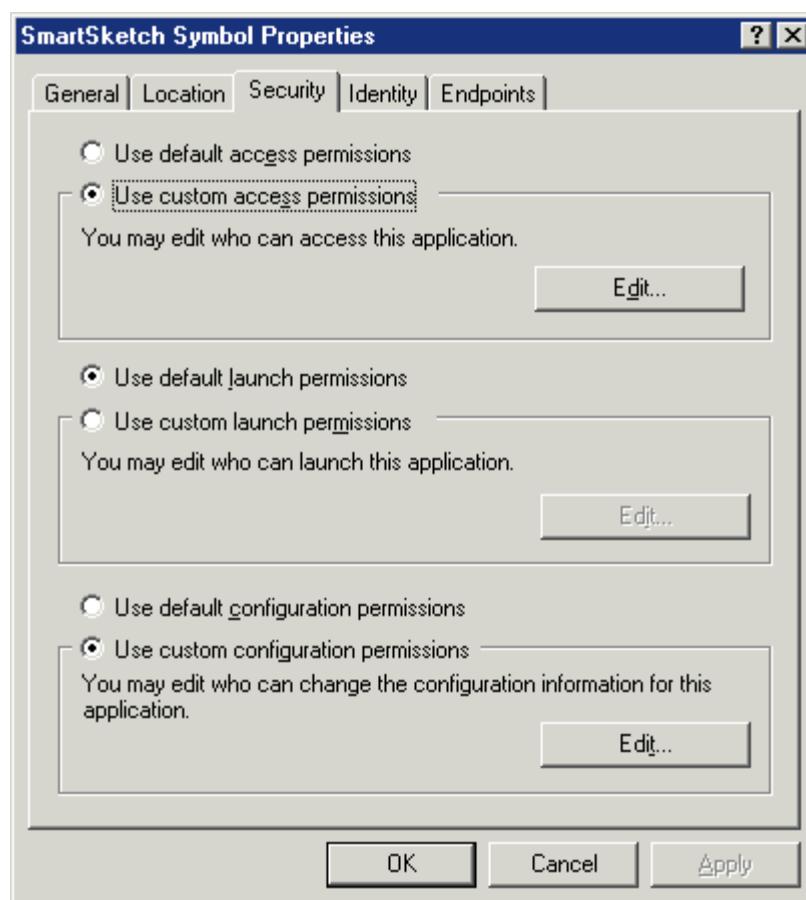
Click **OK** twice to save your changes.

## Change DCOM Configuration Settings in Windows 2000

1. Click *Start > Run*.
2. Type `dcomcnfg.exe`, and click **OK**.

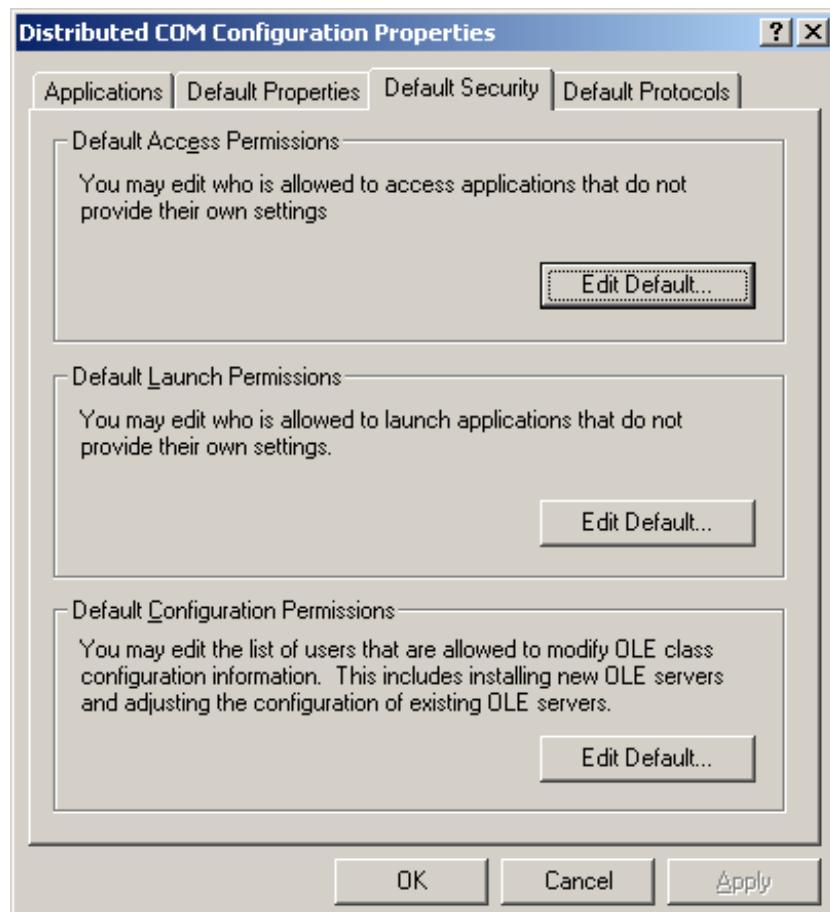


3. In the *Distributed COM Configuration Properties* dialog box, click **SmartSketch Symbol** on the **Applications** tab.
4. Click **Properties**.
5. In the *SmartSketch Symbol Properties* dialog box, click **Use custom access permissions**, and then click **Edit**.



6. In the **Add Users and Groups** dialog box, add the IWAM\_<ComputerName> user to the list of users, and click **OK**.
7. In the **SmartSketch Symbol Properties** dialog box, click **Use custom launch permissions** (use the **Local** option, not remote), and then click **Edit**.
8. In the **Add Users and Groups** dialog box, select the local computer name in the **List names from** box.
9. Add the **IWAM\_<ComputerName>** user to the list of users, and click **OK**.

10. In the *Distributed COM Configuration Properties* dialog box, click the **Default Security** tab.



11. Under *Default Access Permissions*, click **Edit Default**.
12. In the *Registry Value Permissions* dialog box, click **Add**.
13. Select the local computer name in the **List names from** box.
14. Add the Internet Guest Account (**IUSR\_<ComputerName>**) to the list of users (use **Local Access**), and click **OK**.
15. Click **OK** to save your changes.

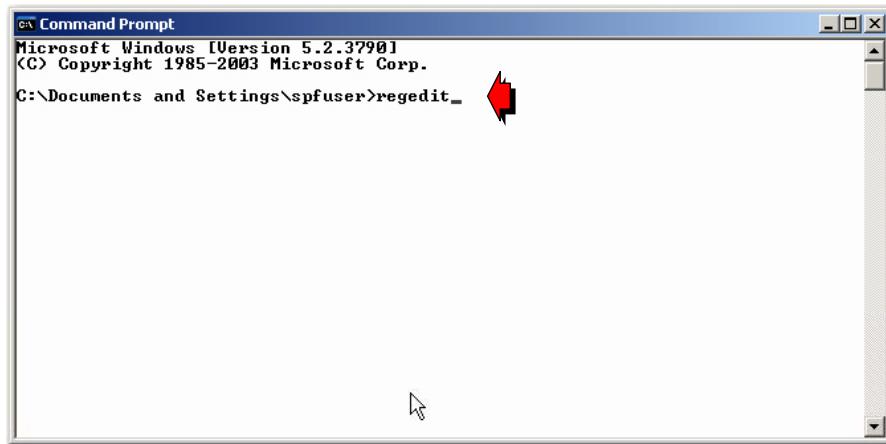
## 6.1.2 Granting the Internet Guest Account Full Control

The following procedure works on both Windows 2000 and 2003 servers. Use a Command Prompt window to start the Registry Editor.



### Registry Configuration

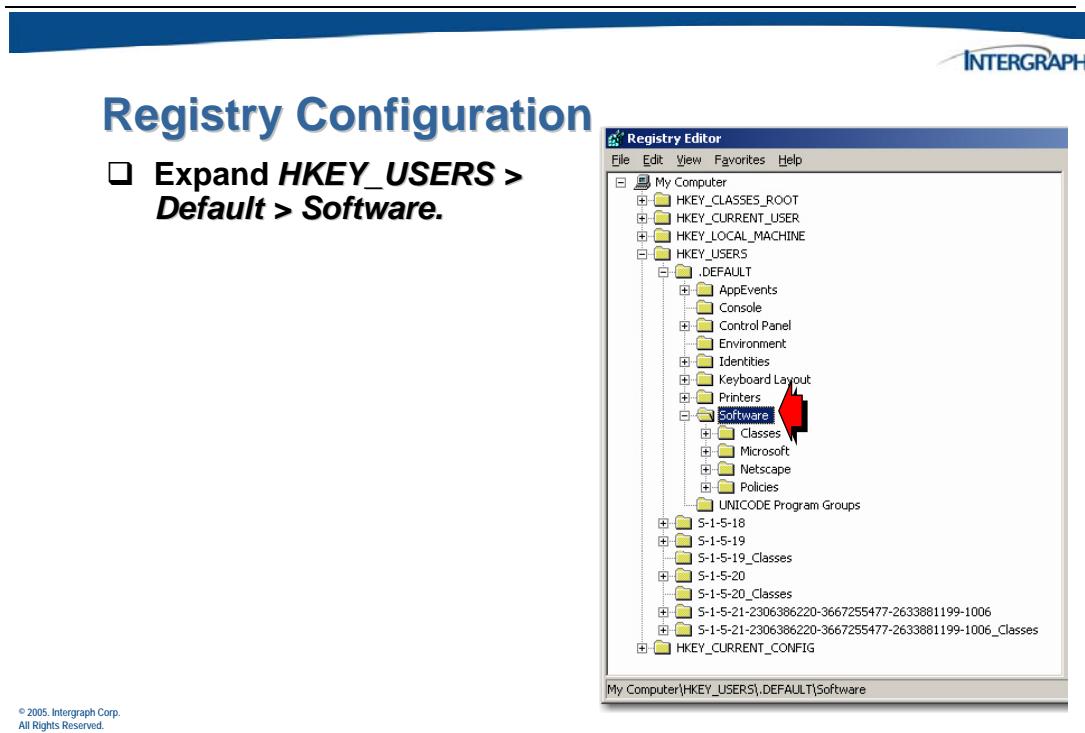
- Open a *Command Prompt* window, and enter **regedit** to start the Registry Editor.



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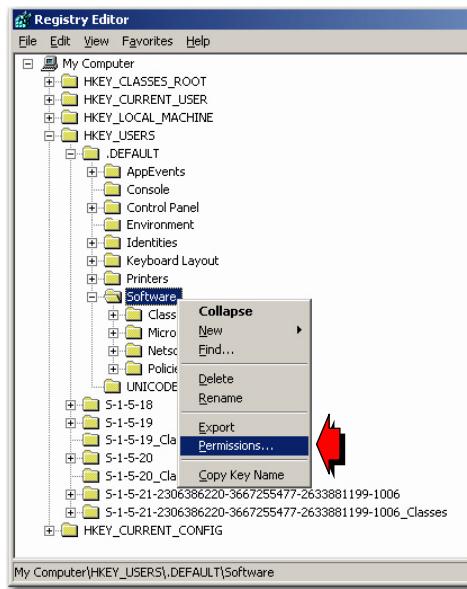
Open the **HKEY\_USERS** folder.



If an **Intergraph** folder appears under **Software**, select the **Intergraph** folder. If no **Intergraph** folder exists, select the **Software** folder instead.

## Registry Configuration

- Right-click on **Software**, and select **Permissions** from the pop-up menu.

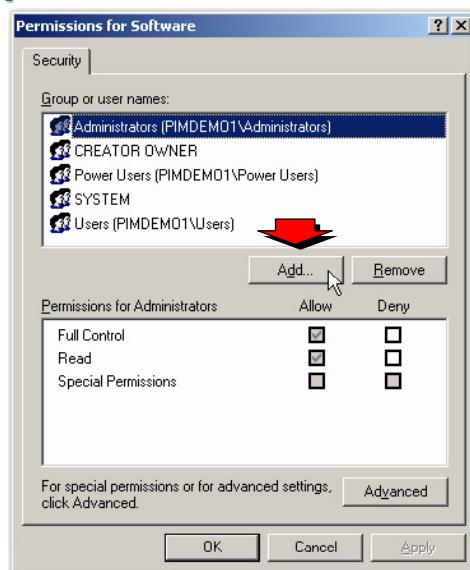


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The *Permissions for Software* dialog will appear.

## Registry Configuration

- Click the **Add** button from the **Permissions for Software** dialog.



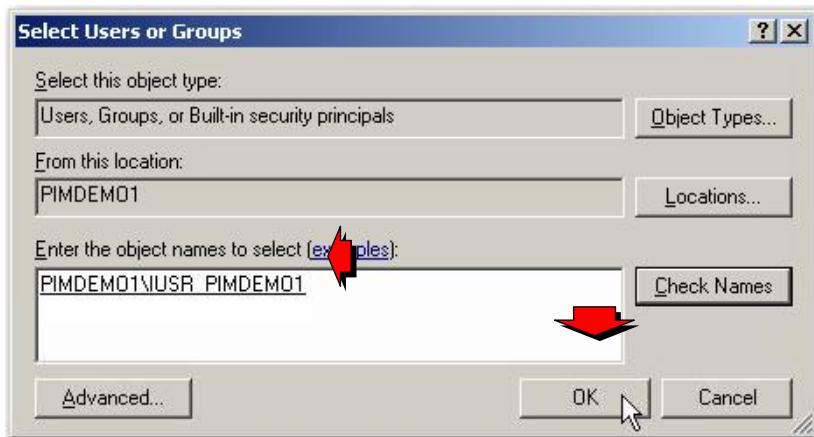
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In the *Select Users or Groups* dialog, select the name of the SmartPlant Foundation sever computer in the **Locations** list, and then add the **Internet Guest Account** (IUSR\_<ComputerName>).



## Registry Configuration

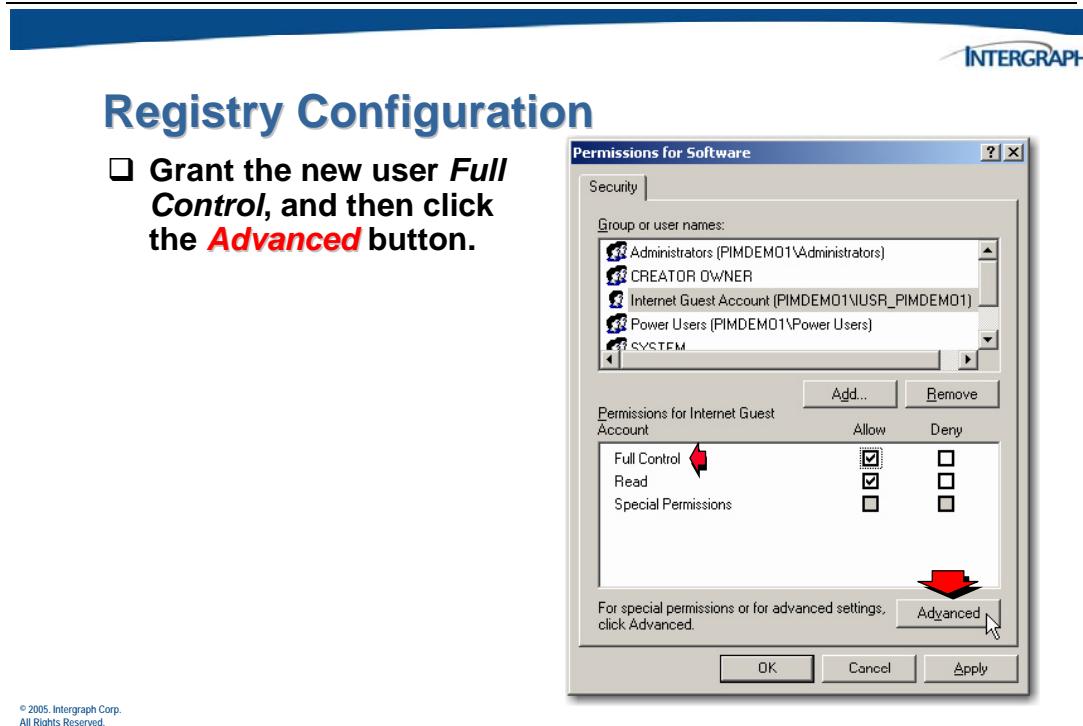
- Add IUSR\_PIMDEMO1 to the Access Permission. Click the **Check Names** button to verify the user.



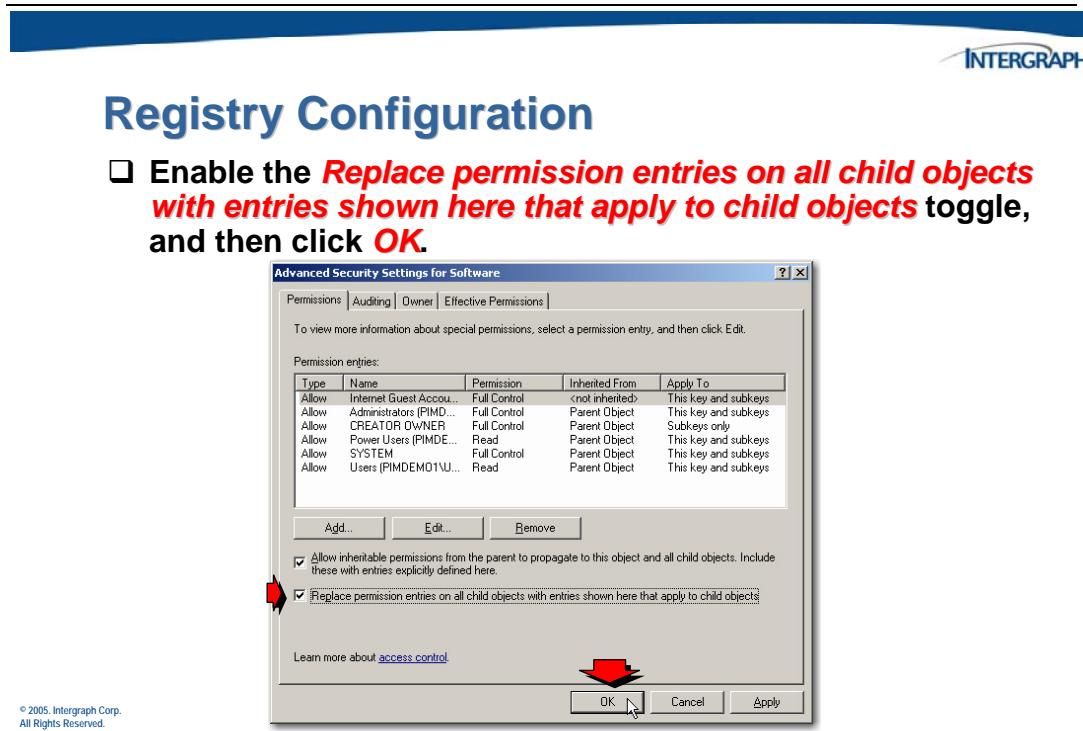
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Click **OK** to close the *Select Users or Groups* dialog box.



In the *Permissions for Software* dialog box, select the **Internet Guest Account** in the **Group or user Names** section, and then select the **Allow Full Control** check box under **Permissions**. Next, click **Apply**, and then click the **Advanced** button.



Click **OK** to close the *Advanced Security Settings for Software* dialog box.



## Registry Configuration

- ❑ When the following **Security** dialog appears, click **Yes**.



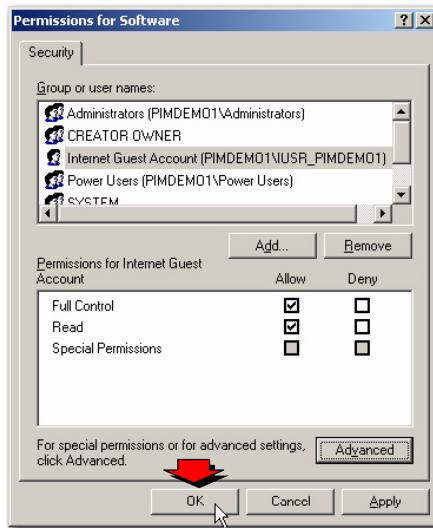
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## Registry Configuration

- ❑ Finally, click **OK** to save the new Access Permission.



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## 6.2 The SPFSmartConverter.ini file

The SPFSmartConverter.ini file is located in the **SPFSmartConverter** folder. This subfolder is in the SmartPlant Foundation installation folder path on the SmartPlant Foundation server. It contains the options that control the features of the SmartConverter.

The **[UserMacros]** section of this file is discussed in section 6.4.

In the **[DefaultOptions]** section of the file, the following options are available. For each option, set it to **1** to turn it on or **0** to turn it off.

## 6.2.1 HotspotFreeText

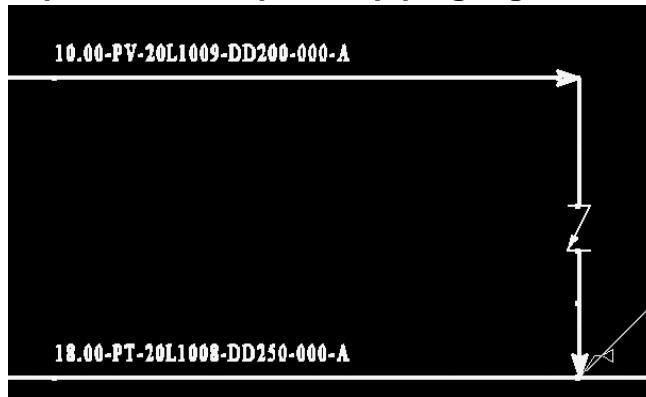
If this option is set, the SmartConverter looks at all the SmartSketch text boxes that are not part of groups, and hotspots any text box matching the hotspotter rules.



### Hotspotting Configuration Files

#### HotspotFreeText

- The SmartConverter looks at all text boxes that are not part of groups.**
- This option will hotspot the piping tag number text strings.**



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This text originates as a free and non-broken text element (not part of MicroStation cells, textnodes, etc.).

## 6.2.2 HotspotGroupText

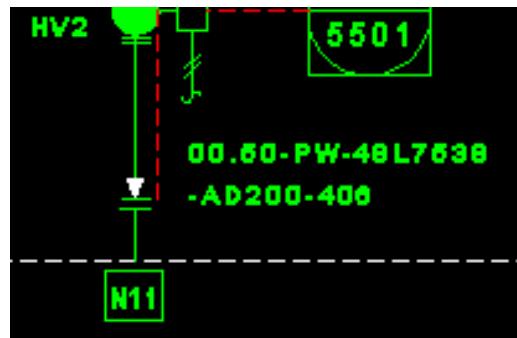
If this option is set, the SmartConverter looks at all the top-level SmartSketch groups, trapping groups that contain only text boxes.



### Hotspotting Configuration Files

#### HotspotGroupText

- The SmartConverter looks at all the top-level groups, trapping groups that contain only text boxes.
- These strings are concatenated, and the total string checked against the rules.
- This option will hotspot the line tag number text.



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The drawing paradigm of the originator has been to break it into multiple lines and keep them in a group (a MicroStation Text Node).

## 6.2.3 HotspotScatteredText

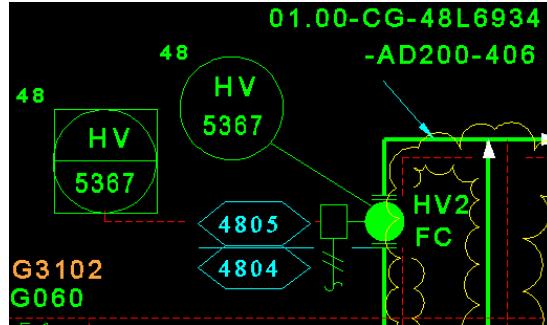
This option enables hotspotting of scattered text at graphic items. In this mode, the item will be hotspotted, as well as the pieces of text.



### Hotspotting Configuration Files

#### HotspotScatteredText

- This option enables hotspotting of scattered text at graphic items. Geographically scattered text parts are assembled, based on user definable rules.
- Graphics currently searched are groups and circles.
- Rules may be established so that these instrument bubbles will be hotspotted with the value “**48HV5367**”



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---

## 6.2.4 RemovePoints

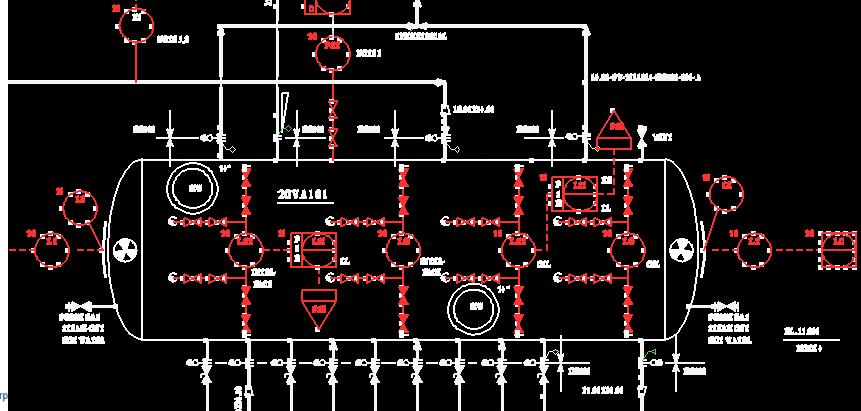
Some applications, such as PDS, use visual points as connect nodes. This option will remove all points, which tend to clutter the display.



### Hotspotting Configuration Files

#### RemovePoints

- Some applications, such as PDS, use visual points as connect nodes. This option will remove all points.
- The image below has points displayed:

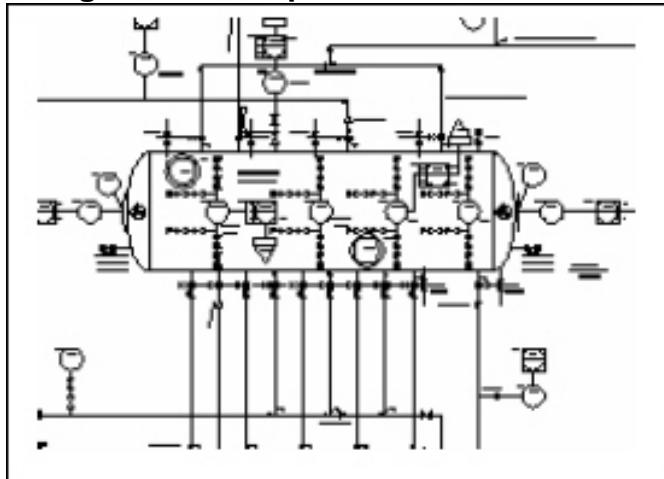




## Hotspotting Configuration Files

### RemovePoints

- The image below has points removed:



## 6.2.5 BW

If turned on, this option changes the colors of the resulting SmartSketch file to allow hotspots to be more easily identified.



### Hotspotting Configuration Files

#### BW

- If turned on, this option changes the colors of the resulting file to allow hotspots to be more easily identified.
- The background is forced to white, all non-hotspotted graphics to black, and all graphics carrying hotspots to red.
- If this option is turned off, the original colors of the drawing are maintained.
- In either case, hotspotted graphics are highlighted when the cursor passes over them.

## 6.3 Define Hotspotter Rules in SPFHotSpotter.ini

The SPFSmartConverter.ini file is located in the **SPFSmartConverter** folder. It contains the rules used for hotspotting.



### Hotspotter Rules (SPFHotspotter.ini)

#### Free Text and Group Text Rules

- The SPFHotspotter.ini file is located in the SPFSmartConverter subfolder under the SmartPlant Foundation installation folder on the SmartPlant Foundation server.
- The [TextRules] and [Concatenations] sections in the SPFHotspotter.ini file control the selection of text strings from the drawing.
- [TextRules] contains the selection rules.
- [Concatenations] gives the option of prefixing and suffixing the selected strings.



## Hotspotter Rules (SPFHotspotter.ini)

### [TextRules]

- Format:**  
**RuleBaseName|Topic|Variation|Operator|Argument**
- Example:**  
**EFPLANT-SC-2|TAG|Normal|=|##\***  
**EFPLANT-SC-2|DOCUMENT|Normal|=|??-????-??**
- Currently, the SmartConverter uses all rules in the SPFHotspotter.ini file regardless of the RuleBaseName.



## Hotspotter Rules (SPFHotspotter.ini)

### RuleBaseName|Topic|Variation|Operator|Argument

- RuleBaseName** - Identifies a set of rules. The value may be any string.
- Topic** - Identifies what kind of plant item class the drawing text expresses. SPF currently looks for TAG or DOCUMENT only.
- Variation** - The drawing text for a certain Topic may be formatted with several variations across drawings of the same plant, various subcontractors may format text differently, or a main equipment tag may be formatted differently from a line tag (but still same Topic "TAG").
- Operator** - Defines the text compare operation. Values allowed include the following: "=", "!", "<" or ">".
- Argument** – The text pattern of the object in the file.



## Hotspotter Rules (SPFHוטspotter.ini)

**RuleBaseName|Topic|Variation|Operator|Argument**

- Example :

EFPLANT-SC-2|TAG|Normal|=|##\*

EFPLANT-SC-2|DOCUMENT|Normal|=|??-????-??



## Hotspotter Rules (SPFHוטspotter.ini)

**RuleBaseName|Topic|Variation|Operator|Argument**

- Example :

EFPLANT-SC-2|TAG|Normal|=|##\*

EFPLANT-SC-2|DOCUMENT|Normal|=|??-????-??

- Drawing text 20VA1001 will be hotspotted as of topic "TAG".

- Drawing text AA-1010-BC will be hotspotted as of topic "DOCUMENT".

- Drawing text AB5000 will not be hotspotted since it does not match any rule.



## Hotspotter Rules (SPFHOTSPOTTER.ini)

RuleBaseName|Topic|**Variation**|Operator|Argument

- Example :  
EFPLANT-SC-2|TAG|Normal|<|9  
EFPLANT-SC-2|TAG|Normal|=|##\*####  
EFPLANT-SC-2|TAG|Line|=|##.##-\*
- Drawing text 20VA1001 will be hotspotted as of topic "TAG".
- Drawing text 01.00-CG-48L6940—AD200-406 will be hotspotted as of topic "TAG".

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---

The latter text fails the first Topic/Variation pair comparison, but matches the second.

---

**Notes:** The same Topic/Variation pair must follow on subsequent lines in the file.

The file is processed top down.

For best performance, place the Topic/Variation pairs that are assumed to give most matches as early in the file as possible.

---



## Hotspotter Rules (SPFHOTSPOTTER.ini)

### RuleBaseName|Topic|Variation|Operator|Argument

- = specifies “like” Argument.
- ! specifies “not like” Argument.
- > specifies that length of text must longer than the number in the Argument.
- < specifies that length of text must shorter than the number in the Argument.
- Lines for a given Topic/Variation pair may have multiple lines of same operator type. This feature does not make sense for “<” and “>”, but it gives flexibility for “=” and “!”

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---



## Hotspotter Rules (SPFHOTSPOTTER.ini)

### RuleBaseName|Topic|Variation|Operator|Argument

- Any whole positive number if the Operator is “<” or “>”.
- A text pattern if Operator is “=” or “!”.
- A group of one or more characters (*charlist*) enclosed in brackets ([ ]) can be used to match any single character in *string* and can include almost any character code, including digits.
- Wild Cards :
  - ? - Any single character.
  - \* - Zero or more characters.
  - # - Any single digit (0–9).
- [*charlist*] - Any single character in *charlist*.
- [!*charlist*] - Any single character not in *charlist*.

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---

<b>Characters in pattern</b>	<b>Matches in string</b>
?	Any single character.
*	Zero or more characters.
#	Any single digit (0–9).
[charlist]	Any single character in <i>charlist</i> .
[!charlist]	Any single character not in <i>charlist</i> .



## Hotspotter Rules (SPFHOTSPOTTER.ini)

Rule|BaseName|Topic|Variation|Operator|Argument

Examples :

```
EFPLANT-SC-2|DOCUMENT|KE|>|6
EFPLANT-SC-2|DOCUMENT|KE|<|20
EFPLANT-SC-2|DOCUMENT|KE|=|?-*-*
EFPLANT-SC-2|DOCUMENT|KE|!|?-*.?-*
EFPLANT-SC-2|DOCUMENT|KPS|>|6
EFPLANT-SC-2|DOCUMENT|KPS|<|20
EFPLANT-SC-2|DOCUMENT|KPS|=|??-*-*
```

Hotspot drawing text as Topic “DOCUMENT” if: (Length of text greater than 6 characters AND less than 20 characters AND value of text is like “?-\*-\*” AND value of text is not like “?-\*.?-\*”) OR (Length of text greater than 6 characters AND less than 20 characters AND value of text is like “??-\*-\*”).



## Hotspotter Rules (SPFHOTSPOTTER.ini)

### [Concatenations]

- Strings successfully passing through the [TextRules] section may need to be prefixed and/or suffixed. For example, off page connectors usually do not refer to the other document using the complete document number.
- Format : Rulebase|Topic|Variation|Prefix|Suffix
- SQL type **wildcards** may be specified for Prefix and Suffix.
- Example :  
EFPLANT-SC-2|DOCUMENT|KEPID|C056-KV-|-01  
EFPLANT-SC-2|DOCUMENT|KPSPID|C056-%-P-|
- A **string** identified by [TextRules] to be of topic DOCUMENT, variation KEPID, is returned as C056-KV-**string**-01. The latter will be returned as C056-%-P-**string**.

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In this example:

EFPLANT-SC-2|DOCUMENT|\*|C056-KV-|-01

The \* means of any Variation. So all strings identified by the [TextRules] to be of topic DOCUMENT will be prefixed with "C056-KV-" and suffixed with "-01", regardless of the variation.



## Hotspotter Rules (SPFHOTSPOTTER.ini)

### Scattered Text Rules

- Scattered text processing was originally designed with instrument symbols on a P&ID in mind.
- The processor anticipates that these are circles or (SmartSketch) groups, and uses these as area criteria for finding the text strings scattered around them.
- For each area processed, the found set of text strings has to undergo a series of checks where it may be rejected at any time.
- The following sections apply for specifying the rules: **[ScatterTolerance]**, **[ScatterPreHit]**, **[ScatterRules]**, and **[ScatterSequenceRules]**.

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## Hotspotter Rules (SPFHOTSPOTTER.ini)

### [ScatterTolerance]

- Step 1 of scattered text processing is building the search areas.
- Search areas for text are based on the boundary rectangles of the circles and groups in the drawing.
- Only one set of factors is allowed per RuleBase.
- The last argument determines if objects are recognized if they overlap the boundary. Values: 1- only items fully inside, 0- allows items that overlap the boundary.
- Format :  
`Rulebase|LeftFactor(real number)|BottomFactor(real number)|RightFactor(real number)|TopFactor(real number)|Inside`
- Example : EFPLANT-SC-2|0.6|0.1|0.15|0.2|1

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## Hotspotter Rules (SPFHוטspotter.ini)

### [ScatterPreHit]

- Step 2 of scattered text processing is to check the number of text strings found within a search area.
- Here a minimum and a maximum number may be specified as criteria for further processing.
- Only one rule is allowed per RuleBase.
- Format : Rulebase|minimum|maximun
- Example : EFPLANT-SC-2|2|8
- Example: Only groups that contain at least two and no more than eight pieces of text will be considered for hotspotting.

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---



## Hotspotter Rules (SPFHוטspotter.ini)

### [ScatterRules]

- Step 3 of scattered text processing is to filter out all strings within a search area that do not comply with simple text rules.
- One set of rules is allowed per Topic.
- Variation is not considered in this case, although a Variation is required in each line of the rule for compatibility reasons.
- Format : Rulebase|Topic|Variation|Operator|Textpattern\_or\_number
- Example :  
EFPLANT-SC-2|TAG|X|>|1  
EFPLANT-SC-2|TAG|X|<|7  
EFPLANT-SC-2|TAG|X||!|\*|\*

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---



## Hotspotter Rules (SPFHוטspotter.ini)

### [ScatterSequenceRules]

- During step 4 of the scattered text, the processor will pick out the rule sets (rule set: having the same topic/variation pair) that have the same number of rules as the remaining number of strings.
- If no such set is found, the set of strings is rejected
- For step 5 of the scattered text processing, the processing is top down in the list of rules (of the rule sets that have the correct number of rules).
- Therefore, you should place the more restrictive rule sets high in the list. Do the same within the rule set.
- You can specify a string delimiter that suffixes the matching string in the concatenation process. The delimiter is a string that is added to the end of the matching string when the item tag is constructed.

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---



## Hotspotter Rules (SPFHוטspotter.ini)

### [ScatterSequenceRules] (cont)

- Example:  
If a rule matches the string "FE" and you specify "--" as the delimiter, the hotspotter will append the dash when constructing the tag, such as FE-128
- Format :  
Rulebase|Topic|Variation|Operator|TextPattern\_or\_number  
|SequenceNo|Delimiter

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---

*Implied restriction:* Only one rule may exist per Sequence number per rule set.

Each line is a rule formatted as:

Rulebase|Topic|Variation|Operator|TextPattern\_or\_number|SequenceNo|Delimiter

Examples:



## Hotspotter Rules (SPFHOTSPOTTER.ini)

**Example:**

```
:Special Item
EFPLANT-SC-2|TAG|SI|=|SI|1|
EFPLANT-SC-2|TAG|SI|=|##*|2|
:Instrument
EFPLANT-SC-2|TAG|Inst|=|[A-Z]*|2|-|
EFPLANT-SC-2|TAG|Inst|=|##|1|-|
EFPLANT-SC-2|TAG|Inst|=|###*|3|
```



## Hotspotter Rules (SPFHOTSPOTTER.ini)

### Adding a Special Tag Handler

- There are cases where the text that is hotspotted does not match the tag stored in the SmartPlant Foundation database.
- For example, a pipe run label may be 10.00-PV-20L1009-DD200-000-A in the drawing, but only the third part of the string, 20L1009, represents a tag stored in SPF.
- You can configure the SmartConverter to call a method in a custom ActiveX .DLL that changes the text used to look up the tag when the user clicks the label in the drawing.
- To create a macro to do this, follow the instructions in this Training manual.

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To create such a method, do the following:

1. Use Visual Basic to create an ActiveX .DLL project.
2. Give the project a name, such as SpecialTagHandler.
3. Create a class, and give it a name such as LineSpecial.
4. Add a function called Special, defined as follows:

```
Public Function Special(ByVal RuleBase As String, _
    ByVal Topic As String, _
    ByVal Item As String, _
    OutTopic As Variant, OutItem As Variant) As Boolean
```

Arguments:

Name	Input/Output	Description
RuleBase	Input	The rulebase being processed
Topic	Input	The topic being processed
Item	Input	The text to be hotspotted
OutputTopic	Output	The new topic to use
OutputItem	Output	The new item to use

5. Add code to the method to set OutItem to the tag you want SmartPlant Foundation to look up when the label is selected in the drawing.

6. The OutTopic, generally, should be set to the input variable Topic. The two possible values for Item and OutputItem are "TAG" and "DOCUMENT". If the item being hotspotted is not the name of a document, then OutputItem should be set to "TAG".
7. Compile your .DLL.
8. If your .DLL is not located on the SmartPlant Foundation server, copy it to the server, and register it using the regsvr32 command.
9. In the SPFHotSpotter.ini file, look for the section named **[Special]** and add the ProgID of the class on a line by itself. The ProgID is the project name, followed by a period, followed by the class name. For example, using the names mentioned above, the ProgID would be SpecialTagHandler.LineSpecial.

Example Special method:

```

' Method to change line labels to match SPF database
' Extracts 3rd substring from label using "-" as delimiter
' For example for the pipe run with the label:
' 10.00-PV-20LI1009-DD200-000-A
' Suppose the corresponding tag in the SPF database is
' 20LI1009. This function would insure that when the pipe label
' is select, SPF will look up 20LI1009 instead of the full
' label
Public Function Special(ByVal RuleBase As String, _
                        ByVal Topic As String, _
                        ByVal Item As String, _
                        OutTopic As Variant, OutItem As Variant) As Boolean
    ' RuleBase      - The rulebase being processed
    ' Topic         - The topic being processed
    ' Item          - The text to be hotspotted
    ' OutputTopic   - The new topic to use
    ' OuptutItem    - The new text to hotspot

Dim aItem() As String

    Special = True
    OutTopic = Topic
    OutItem = Item

    'Is the item label candidate to be a line label?
    'If so extract "tag portion" only
    If InStr(Item, ".") > 0 Then
        'Extract 3 'rd substring from "--" delimiting
        aItem = Split(Item, "-")
        If UBound(aItem) >= 2 Then
            OutItem = aItem(2)
        End If
    End If
End Function

```

## 6.4 Adding a User Macro

There may be cases where items in the drawing cannot be hotspotted correctly using the hotspotter rules. The SmartConverter can be made to call a specified SmartSketch macro that can add hotspots.



### Adding a User Macro

- In cases where items in the drawing cannot be hotspotted correctly using the hotspotter rules, you can use a specified SmartSketch macro that you can create to add hotspots.**
- Examples and setup are described in this Training manual.**

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To create such a macro, do the following:

On the SmartPlant Foundation server, run the SmartSketch Macro Wizard (MacroWizard.exe) located in the C:\Program Files\SmartSketch\Macro Wizard folder.

Use the wizard to create a SmartSketch macro, providing the necessary data.

Open the project for your new macro in Visual Basic.

Click **Project > References**.

Add a reference to Intergraph SPF361 - Hotspotter Utilities. Note that the name of this reference is version dependent.

Locate the Command Control in your project, and edit the Initialize method.

Here is example code that hotspots any text box whose text begins with the word "NOTE". Refer to the Hotspotter Utilities Component Reference section of this course guide for descriptions of the available methods and properties.

```
Private Sub igCommand1_Initialize()
```

```
' Hotspotter Utilities component
Dim objHSUtils As HSUtils
Dim strCmdLineArgs As String
Dim objApplication As Object
Dim objDocument As SmartSketch.Document
Dim objSheet As SmartSketch.Sheet
Dim objTextBoxes As SmartSketch.TextBoxes
Dim objTextBox As SmartSketch.TextBox
Dim strText As String
Dim bSts As Boolean

On Error Resume Next

' Create a reference to the Hotspotter Utilities component
Set objHSUtils = New HSUtils

' Get the command line arguments. These must be passed
' to HotSpotObject
strCmdLineArgs = igCommand1.CmdLineArgs

' Get the ActiveSheet
Set objApplication = igCommand1.Application
Set objDocument = objApplication.ActiveDocument
Set objSheet = objDocument.ActiveSheet

' Example: Hotspot all text boxes that start with the
' string "NOTE"
Set objTextBoxes = objSheet.TextBoxes
If Not objTextBoxes Is Nothing Then
    For Each objTextBox In objTextBoxes
        strText = objTextBox.Text
        If StrComp(Left$(strText, 4), "NOTE", vbTextCompare) = 0 Then
            ' Make sure it's not already hotspotted
            bSts = objHSUtils.IsObjectHotSpotted(objTextBox)
            If Not bSts Then
                ' Hotspot this one
                bSts = objHSUtils.HotSpotObject(strCmdLineArgs, _ objTextBox, strText,
                "IOBJECT")
            End If
        End If
    Next
End If

ExitSub:
'Terminate the command
igCommand1.Done = True

End Sub
```

In Visual Basic, click **File > Make** to compile the macro.

In the **Make Project** dialog box, make sure that Visual Basic saves the macro in the SPFSmartConverter folder under the SmartPlant Foundation installation folder.

Depending on the options chosen in the Macro Wizard, the compile will create a file ending in DLL or in OCX.

Edit the SPFSmartConverter.ini file in the SPFSmartConverter subfolder. In the **[UserMacros]** section, create an entry for the macro you just created. The format of this line is **Macro|RunWhen**, where:

Macro is the file name of the macro, followed by a double quote, and then by the user chosen arguments.

---

**Notes:** SmartPlant Foundation may pass additional arguments to the user macros, all of which will be prefixed with -spf (example: spfmapfile).

RunWhen may be A (run after the SmartConverter hotspot processing) or B (run before the SmartConverter hotspot processing).

---

Here is an example based on a macro named mydll.dll to be run after the SmartConverter hotspot processing, with the arguments named -myswitch1 and -myswitch2.

[UserMacros]

mydll.dll"-myswitch1 -myswitch2|A

## 6.5 Methods

### HotSpotObject

This method hotspots the specified drawing object.

Format:

```
Public Function HotSpotObject(ByVal pstrMacroCmdLineArgs As String, _
    ByVal pObjDrawingObject As Object, _
    ByVal pstrText As String, _
    Optional ByVal pstrInterface As String = "IObject") As Boolean
```

Arguments:

Name	Input/Output	Description
PstrMacroCmdLineArgs	Input	The command line arguments passed to the macro
PobjDrawingObject	Input	Any SmartSketch drawing object (for example: circles, groups, text boxes, etc.)
PstrText	Input	The text to look up in the SmartPlant Foundation database when the hotspotted graphic is selected.
PstrInterface	Input	The interface used to search for the text. If this argument is omitted, then IObject is used.

Return Value:

This method returns True if successful, False otherwise.

### IsObjectHotSpotted

This method determines if the specified drawing object is hotspotted.

Format:

```
Public Function IsObjectHotSpotted(ByVal pObjDrawingObject As Object) As Boolean
```

**Arguments:**

Name	Input/Output	Description
pobjDrawingObject	Input	Any SmartSketch drawing object (for example: circles, groups, text boxes, etc.)

**Return Value:**

This method returns True if the object is already hotspotted, False otherwise.

## 6.5.1 Test the Rules

To test the hotspotter rules, open one of the MicroStation or AutoCAD drawings in SmartSketch. It is automatically converted to the SmartSketch format.

Click **Tools>Macro**. In the **Run Macro** dialog box, browse to the SPFSmartConverter subfolder under the SmartPlant Foundation installation folder. Run the Hotspotter361.dll macro. (Note that this file name is version dependent). The hotspotter macro runs in rules development mode. This forces the background to be black and initially sets all graphics to dark blue. All hotspotted graphics are displayed in green.

For the scattered text rules, the search rectangles are displayed in different colors based on the rules that are obeyed.

- Search rectangles that will be plotted initially are dark yellow.
- Search rectangles that obey rules specified in the [ScatterPreHit] section of the .ini are yellow.
- Search rectangles that obey the rules above and those specified in the [ScatterRules] section are magenta.
- Search rectangles that obey the rules above and that have the correct count of strings as specified in the [ScatterSequenceRules] section are white.

If the graphics are not hotspotted as expected, modify the rules and test again. Be sure to test the rules with several representative drawings.

## 6.6 Set the IsFileConversionNeeded Condition

SmartPlant Foundation uses a condition named **IsFileConversionNeeded** to determine if a file should be converted using the SmartConverter when it is viewed with the *View and Markup* command.



### IsFileConversionNeeded Condition

- The condition named **IsFileConversionNeeded** is used to determine if a file should be converted using the SmartConverter when it is viewed with the View and Markup command.
- The Default files to be converted are Microstation and AutoCAD. Other types need to be added to the condition in System Administration.

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---

By default, this condition is set to the following:

`Len(Obj.FileType)<0`

If necessary, use SmartPlant Foundation System Administration to change this condition.

For our examples, we want to convert DGN files. Another common file to convert is the DWG file type. The following text will tell the application to convert both types:

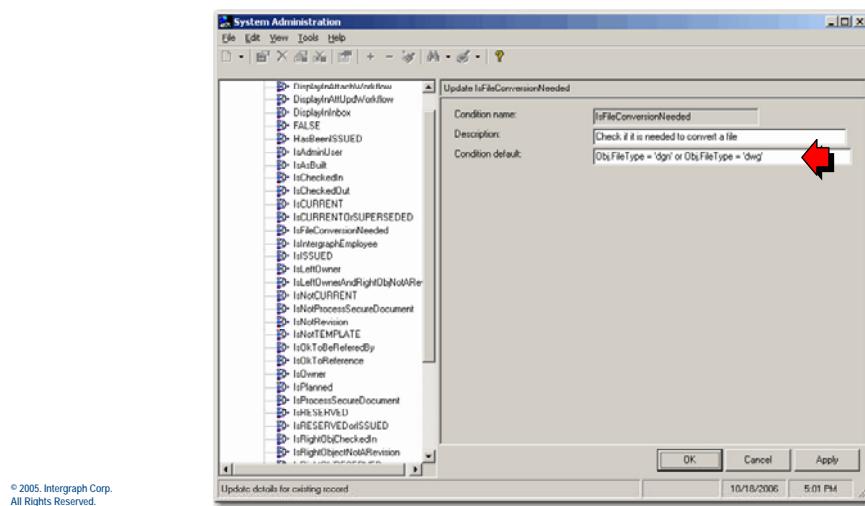
`Obj.FileType='dgn' or Obj.FileType='dwg'`

Be sure that the file type name matches the name defined in the System Administration application (File Types are covered in a later section of this course guide), and remember that the file type designation is case sensitive. If you file extenstions are lower case, the definition here should be lower case as well.



## IsFileConversionNeeded Condition

- The System Administration utility is used to modify the **IsFileConversionNeeded** condition.



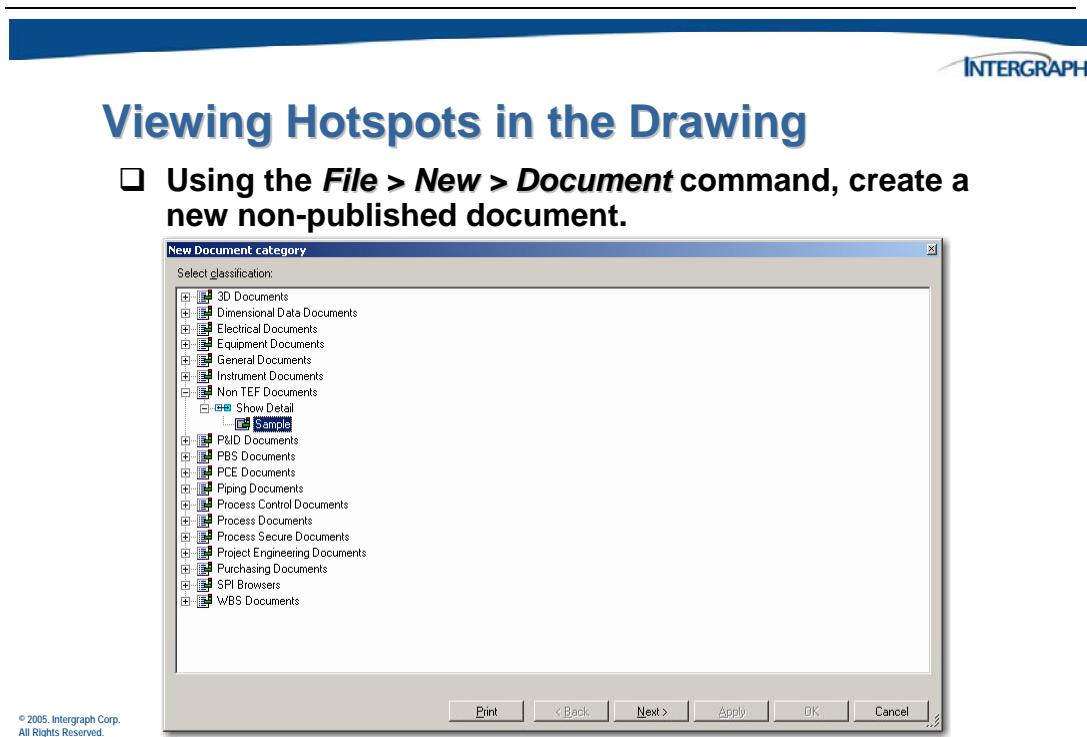
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## 6.7 Viewing Hotspots in the Drawing

If the SmartConverter has been set up properly, users can view one of these drawings using the **View and Markup** command in the SmartPlant Foundation client. The first time the drawing is viewed, the SmartConverter converts the drawing to SmartSketch and hotspots the drawing according to the rules defined in the .ini file.

In this example, we are creating a new document with two DGN files attached. The data associated with a number of items in those drawings has already been loaded in the SPF database.

Note, however, that until the data corresponding to the object is in the database, there is nothing in for the hotspotter to link to image to, and hotspotting cannot work.





## Viewing Hotspots in the Drawing

- Provide a name and title for the new document.

New Sample

Configuration  
Create/update items in: EFPLANT-SC-2

Details  
Name: \* DemoHotspot  
Description: Test Hotspotting Feature

Document  
Document category: \* Non TEF Documents  
Document type: \* Sample  
Document sub-type:  
Document title: \* Demo Hotspot

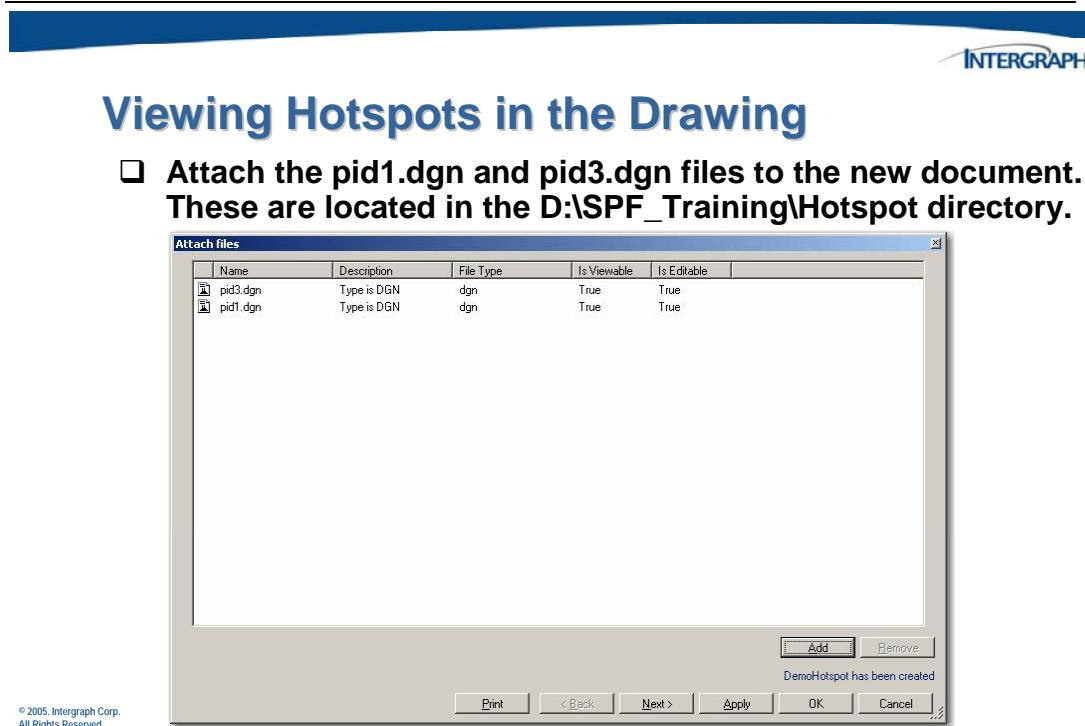
Owner  
Owning group: UPDATE

Include revision details?  Collapse sections automatically?

[Collapse All](#) [Expand All](#) [Print](#) [< Back](#) [Next >](#) [Apply](#) [OK](#) [Cancel](#) [...](#)

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Attach to the new document the pid1.dgn and pid3.dgn files delivered in the following location: D:\SPF\_Training\Hotspot.



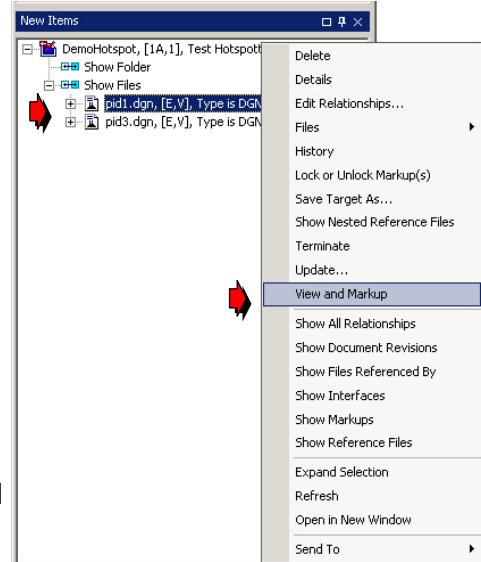
The new document will appear in the New Items window. Use the short cut menu to view the attached files. Right-click on the pid1.dgn file to find the View and Markup command.

**Note:** You can also right-click on the document and use the **Files > View and Markup** command. In that case, since there are two attached files, you will be prompted to indicate which you want to see.



## Viewing Hotspots in the Drawing

- Right-click on the document, and click **Show Files** to see the two files you attached to it.
- Right-click on the *pid1.dgn* file and select the **View and Markup** command to view the file in the SmartPlant Markup viewer.
- The first time the drawing is viewed, the SmartConverter converts the drawing to SmartSketch and creates hotspots in the drawing according to the rules defined in the *.ini* file.



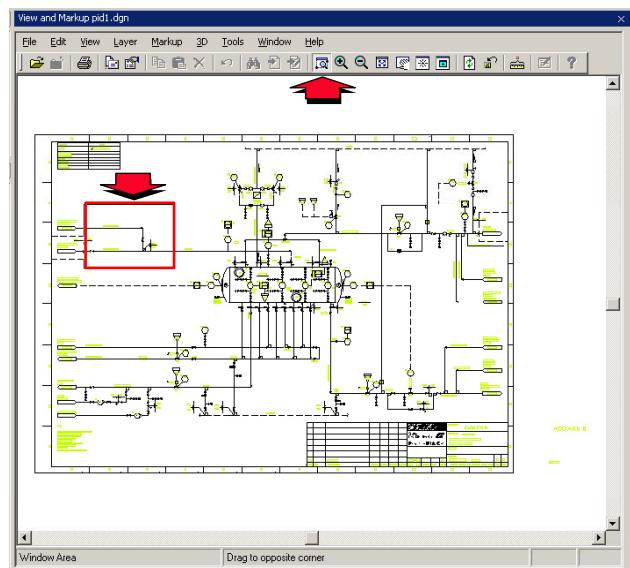
© 2005, Intergraph Corp.  
All Rights Reserved.

The attached file will be converted and then displayed using SmartPlant Markup.



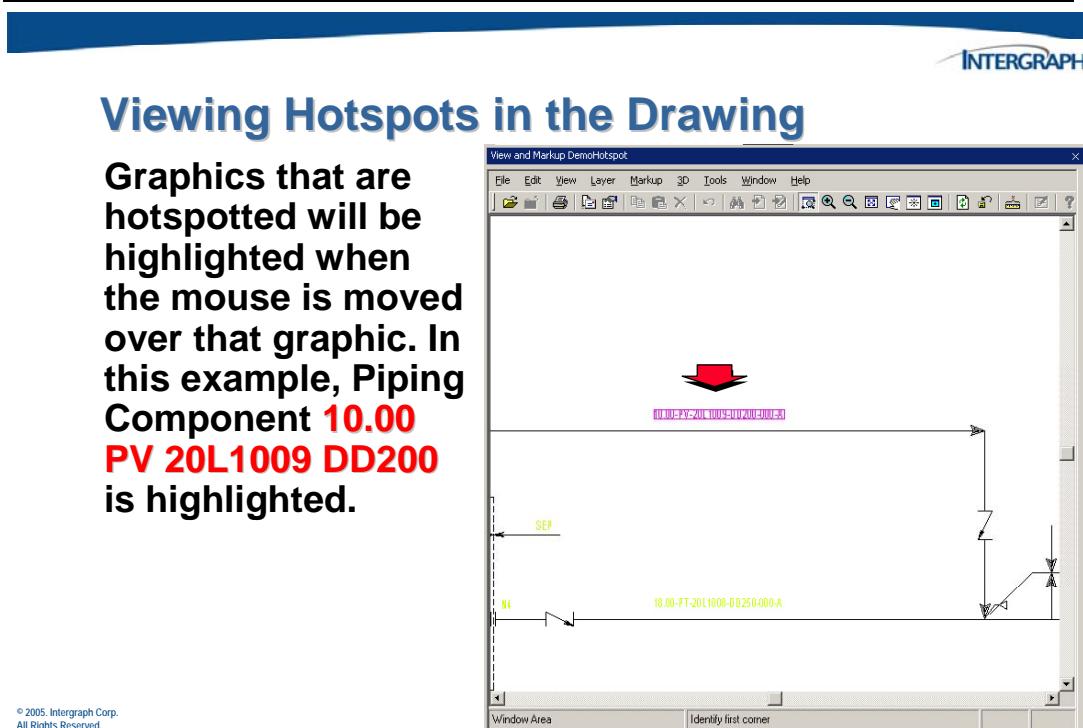
## Viewing Hotspots in the Drawing

- Use the **Zoom Area** command to focus on an area of the drawing to test the hotspotting.



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The hotspotted graphics will be highlighted when the mouse is moved over the graphics. When the user clicks a hotspotted graphic, SmartPlant Foundation will look in the database for the tag, and display its properties. When the user right-clicks a hotspotted graphic, SmartPlant Foundation will look in the database for the tag and display the context menu for the object. If the tag is not found in the database, an error will be displayed.

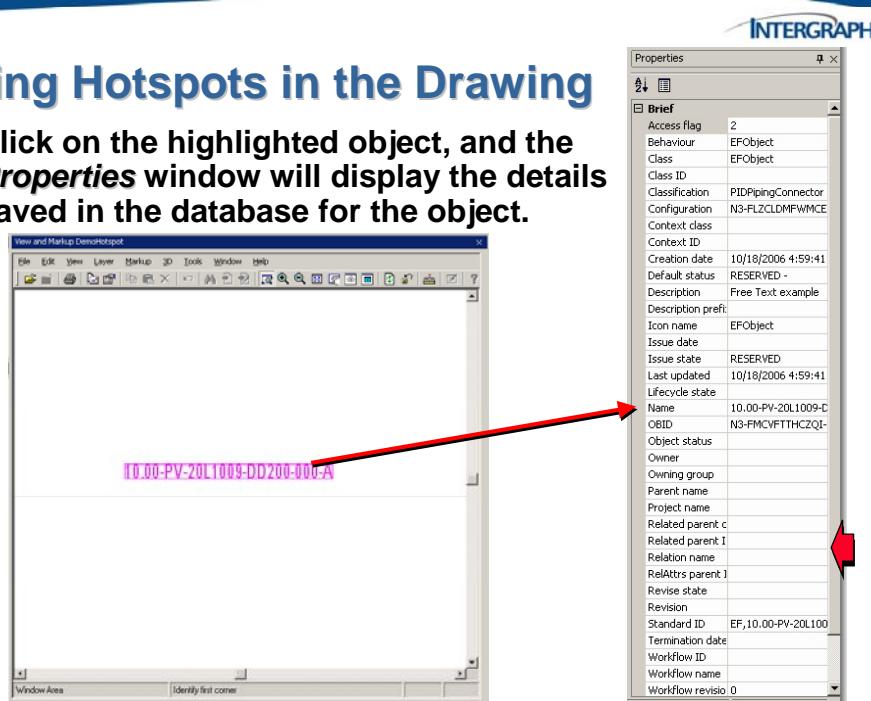


View the highlighted object's property details.

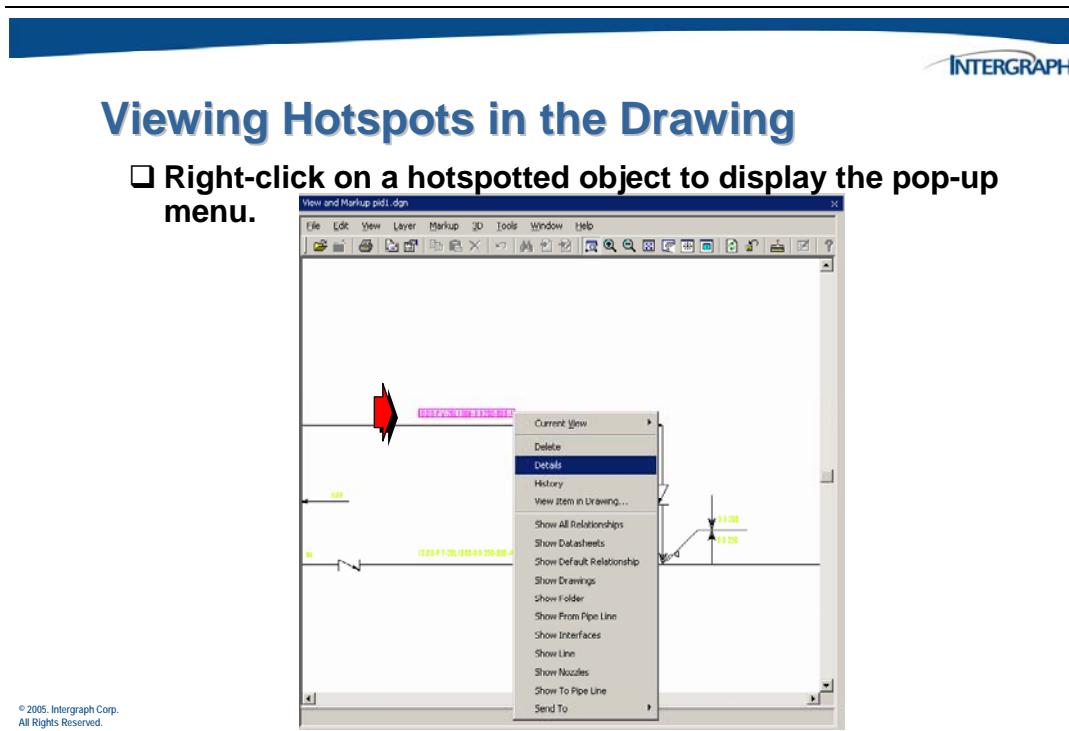
## Viewing Hotspots in the Drawing

- Click on the highlighted object, and the **Properties** window will display the details saved in the database for the object.

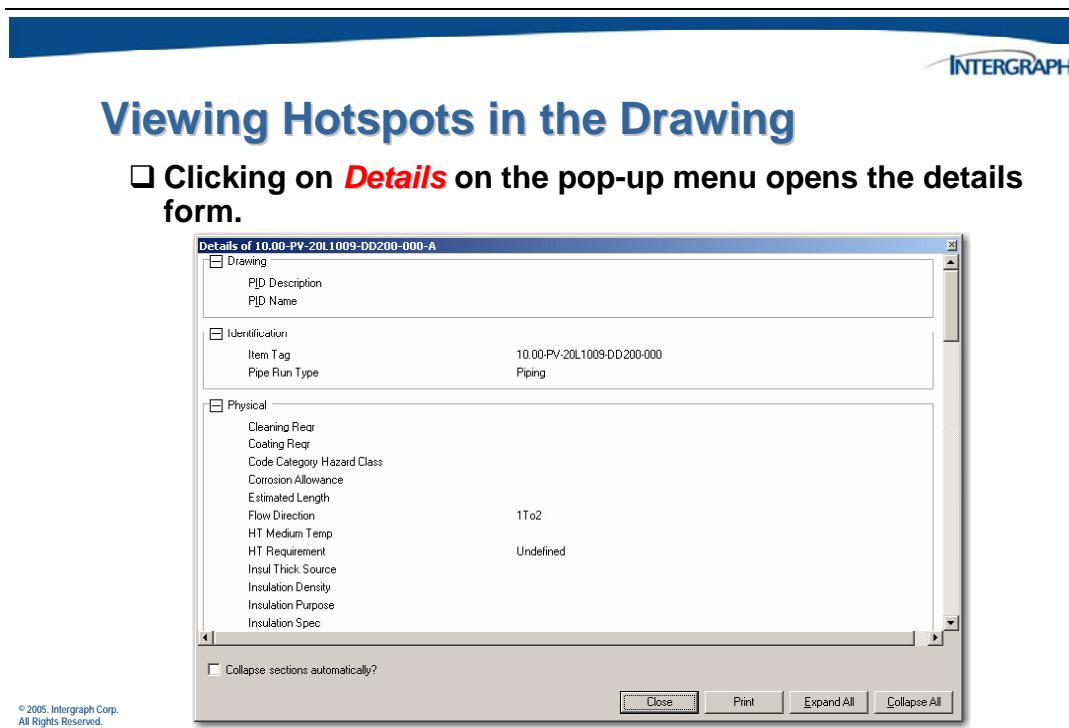
© 2005, Intergraph Corp.  
All Rights Reserved.



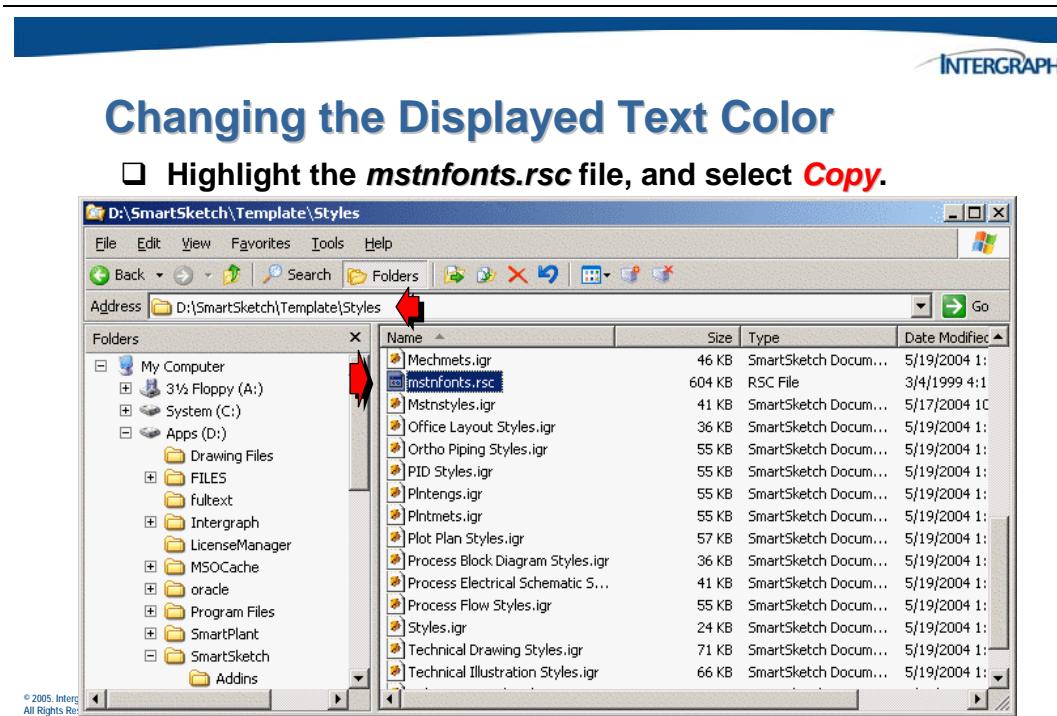
Right-click on an object to view its shortcut menu.



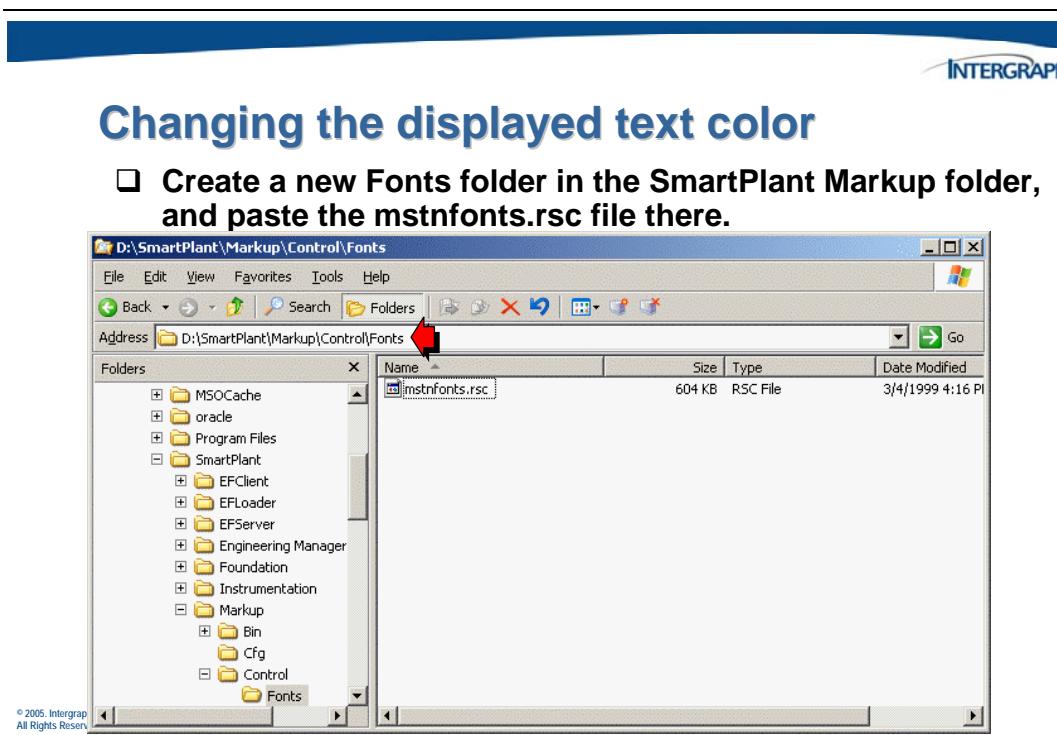
Information from the database related to the selected object will be shown in a form.



The default color for the displayed text can be changed by locating a fonts resource file in the *Smartsketch\Template\Styles* folder.



Create a new folder called **Fonts** in the *SmartPlant\Markup\Control* folder.



## 6.8 Activity – SPF Hotspotting

The objective of this activity is create a new document, and then modify the SPFHotSpotter.ini file so the design file will be hotspotted when opened with **File > View and Markup** from the SPF Desktop Client.

1. From the Desktop Client, create a new document, DemoHotspot. Attach files pid1.dgn and pid3.dgn. (These files are located in D:\Spf\_Training\Hotspot\dgnfiles)
2. From the new items window, select the new document, right-click and click the **Show Files** command. Beneath the document, select the pid1.dgn file, right-click it and select the **View and Markup** command.
3. In the View and Markup window, find the **10.00-PV20L1009-DD-200** object, and click on it to test the FreeText hotspotting. Does the information appear in the Properties window for the object?
4. Close the View and Markup window.
5. Return to the New Items window, and select the pid3.dgn file attached to your new document. Right-click on that file, and click View and Markup.
6. In the View and Markup window, find the **50-PW-48L7538-AD-200-406** object. Click on that hotspot to test the GroupText hotspotting. Does the information for the object appear in the Properties window?
7. Find the **48HV5368** object, and click on it. Does the correct information display in the *Properties Window*?
8. Modify the **SPFHotSpotter.ini** file (D:\SmartPlant\Foundation\2007\SPFSmartConverter), and add the rules necessary to read that instrument's label and associate it with a tag in the system.
9. Once the ini file has been changed and saved, perform a *Check Out* and *Check In* of the document to cause another version of the design file to be created.

---

**Note:** Because the conversion is run on a document only the first time it is viewed (not every time you view it), you must create a new version of the document and attached file. Then, the SmartConverter will be run against the file the next time it is viewed, and the new hotspots rules you created will be implemented against that file.

---

10. Use the SPF Desktop Client to search for and view the latest version of the new document.

Suggested Solution:

```
[ScatterSequenceRules]
:Instrument
ASGB|Tag|Inst|=|[A-Z][A-Z]|2|
ASGB|Tag|Inst|=|##|1|
ASGB|Tag|Inst|=|###*|3|
```



C H A P T E R

# 7

---

## Basic System Administration



## 7. System Administration Overview

SmartPlant Foundation has two System Administration utilities.

---



### SPF Administration Overview

#### System Administration utilities include:

- System Administrator**
  - Data model, user interface and user access
  - Form Builder for GUI definitions
- Change Management Administrator**
  - Workflow definitions

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---

System Administration is called SmartPlant Foundation configuration. SmartPlant Foundation system configuration is stored as system data in the system administration database.

In this chapter, the System Administrator utility is used to perform SmartPlant Foundation system configuration. The Change Management and Form Builder utilities are covered in a later class.

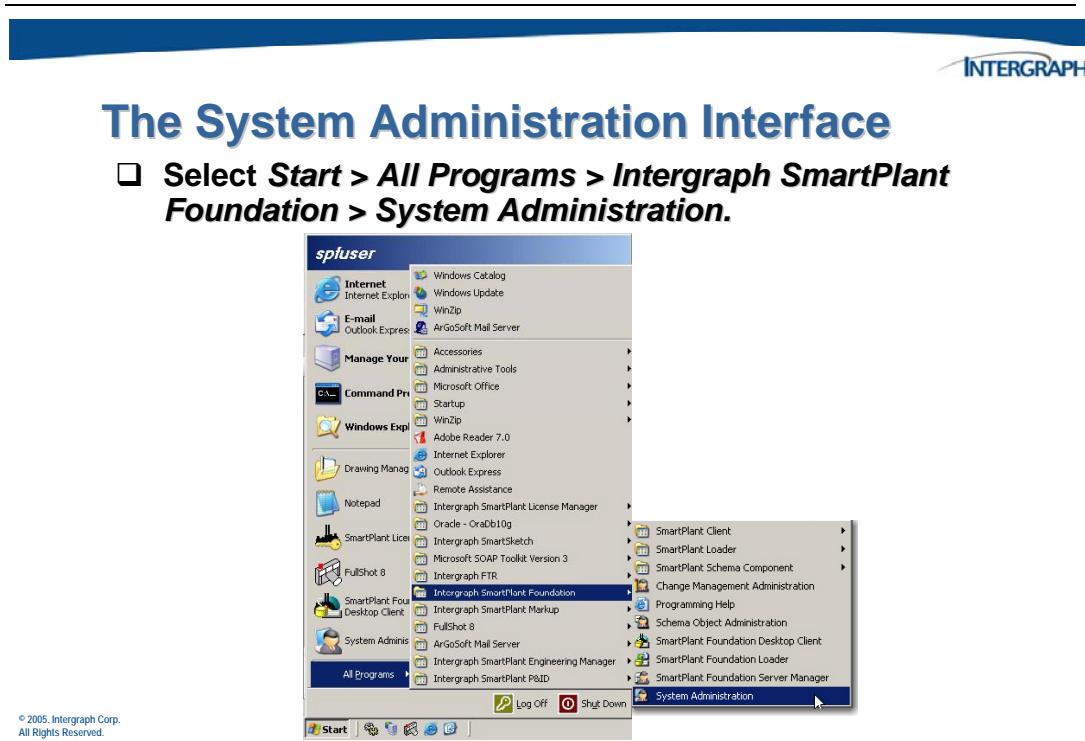
## 7.1 System Administration Utility

The SmartPlant Foundation *System Administration* interface allows you to create and maintain basic system elements and defines the functionality provided to each user of the SmartPlant Foundation system.

Using the System Administration interface, you can perform the following operations:

- Create and maintain interfaces, definitions, methods, plants, and projects.
- Create and maintain relationships to provide security.
- Create and maintain users and user groups.
- Customize the user interface through access controls, toolbars, menus, and forms.

To use the *System Administration* interface, start this utility from the windows desktop.



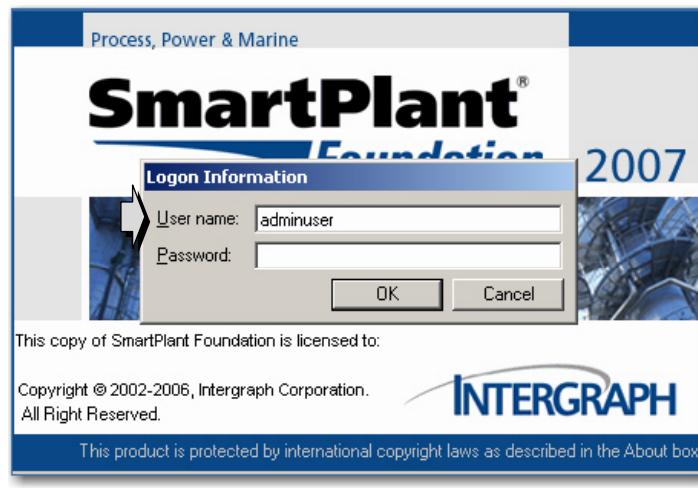
A logon screen appears.

---



## The System Administration Interface

- Enter the administrative login user name and optional password.



The *User name* field displays your OS name. Change it to a valid SmartPlant Foundation user name.

## 7.2 User Access Configuration

Access control of objects within the SmartPlant Foundation Model are controlled by the relationship of Users to User Groups. They are further controlled by the relationships of User Groups to the control object.

---



### User Access Configuration

- User Access** configuration is used to control which functions (methods) are available in dynamic (right hand mouse button) menus, static menus, and toolbar buttons
- User Access** controls who can create or expand relationships
- Objects associated to projects can be controlled based on a list of projects
- Access to individual data fields can be controlled by using **Access Controls**



## User Access

- Users**
  - Every user requires a valid user name
  - Users are **active** or **non-active**
- User Groups**
  - Contain users
- User Access** is controlled only by user groups and never by individual users
- Projects and Access Controls** are associated to User Groups

## 7.2.1 Creating Users and User Groups

Before creating users and user groups, determine how each user and user group 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.

---



### Users

**User objects have these characteristics:**

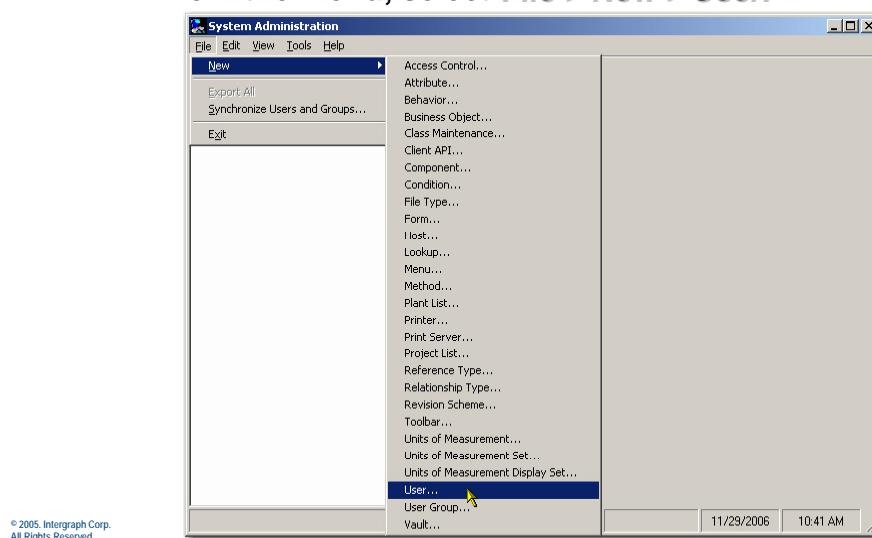
- Login name, password, and full name**
- Company name and email address (related to lookup COMPANIES)**
- Search limits (warning and maximum)**
- Password expiration period**
- Default printer and print server**
- System administration functionality access flags**
- Left company indicator**

**Note:** A user *should* not be deleted.

To create a new SmartPlant Foundation user, perform the following steps:



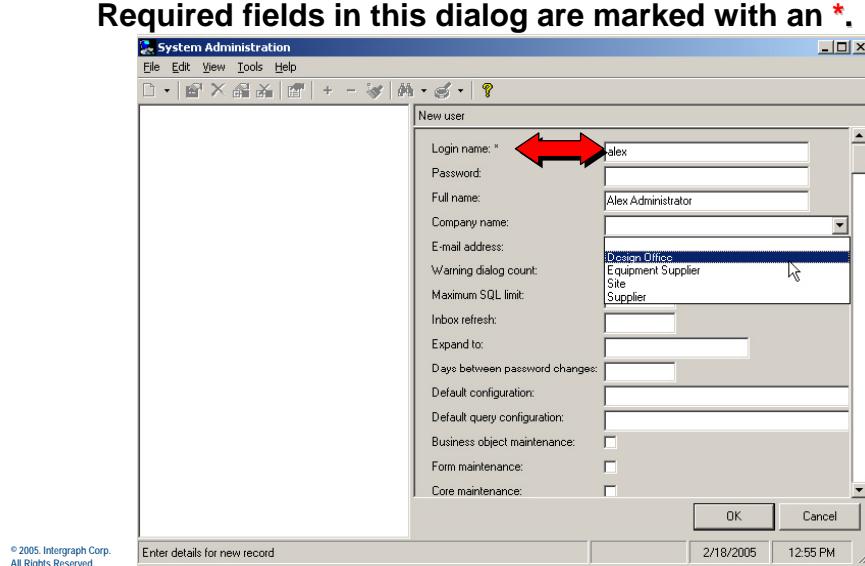
- From the menu, select **File > New > User.**



The *New user* form will appear in the right pane of the System Administration window.

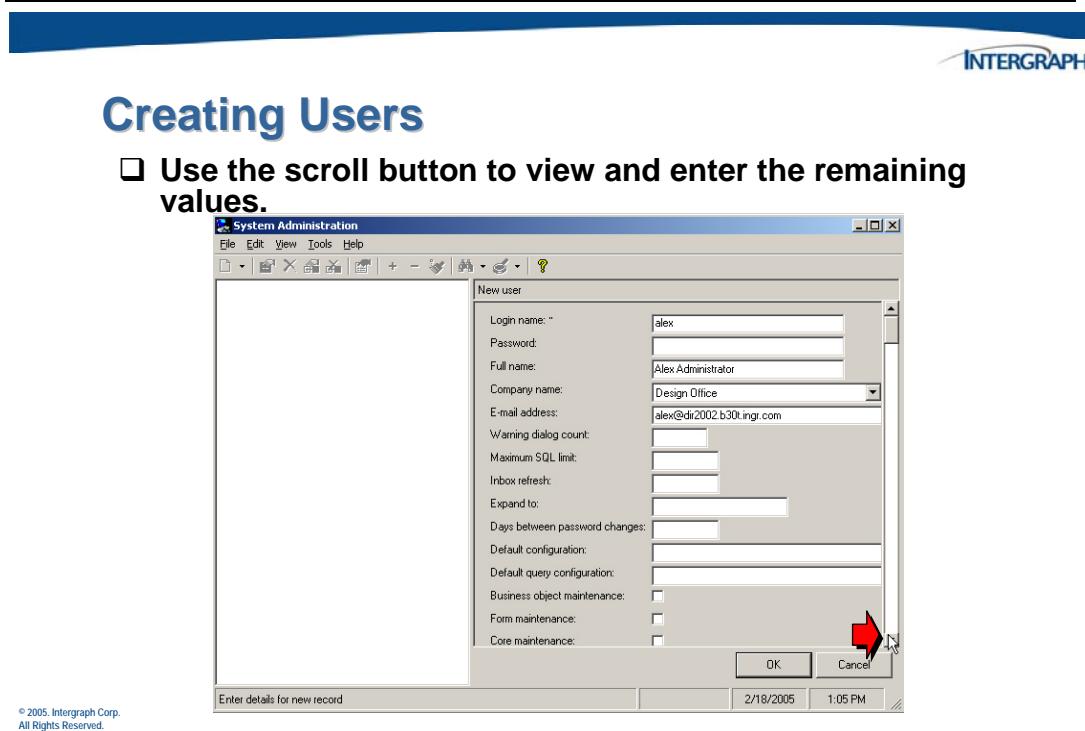


Required fields in this dialog are marked with an **\***.



Enter the following information to create a new *User*:

- Login name** - Unique name for the user and a required field.
- Password** - Specifies an optional password for the user.
- Full name** - Records the complete name of the user.
- Company name** - Specifies a company name from the available list.



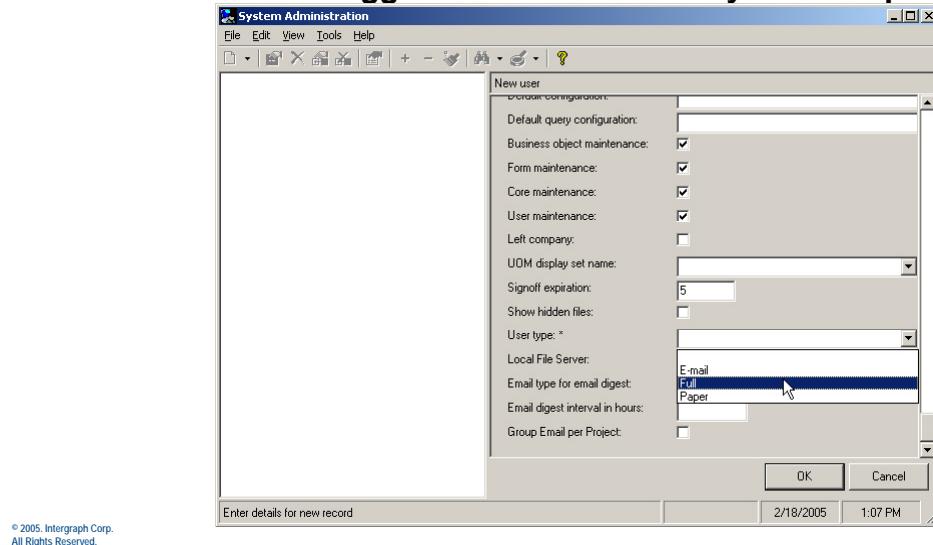
- E-mail address** - Specifies an e-mail address for the user for automatic notifications.
- Warning dialog count** - Specifies the number of items returned on a search before a warning is issued.
- Maximum SQL limit** - Specifies the maximum number of items returned during a search.
- Inbox refresh** - Specifies the number of seconds for a refresh of the Change Management inbox.
- Expand to** - Reserved for future use.
- Days between password changes** - Requires the user to change his/her password and allows you to specify how often this change must occur.

- Default configuration** - Enter the configuration name to specify a client configuration for the user. Leave this field blank and it will be populated once the active scope is set in the client.
- Business object maintenance** - Defines access restrictions for business object maintenance.
- Form maintenance** - Defines access restrictions for forms maintenance.
- Core maintenance** - Defines access restrictions for core maintenance.



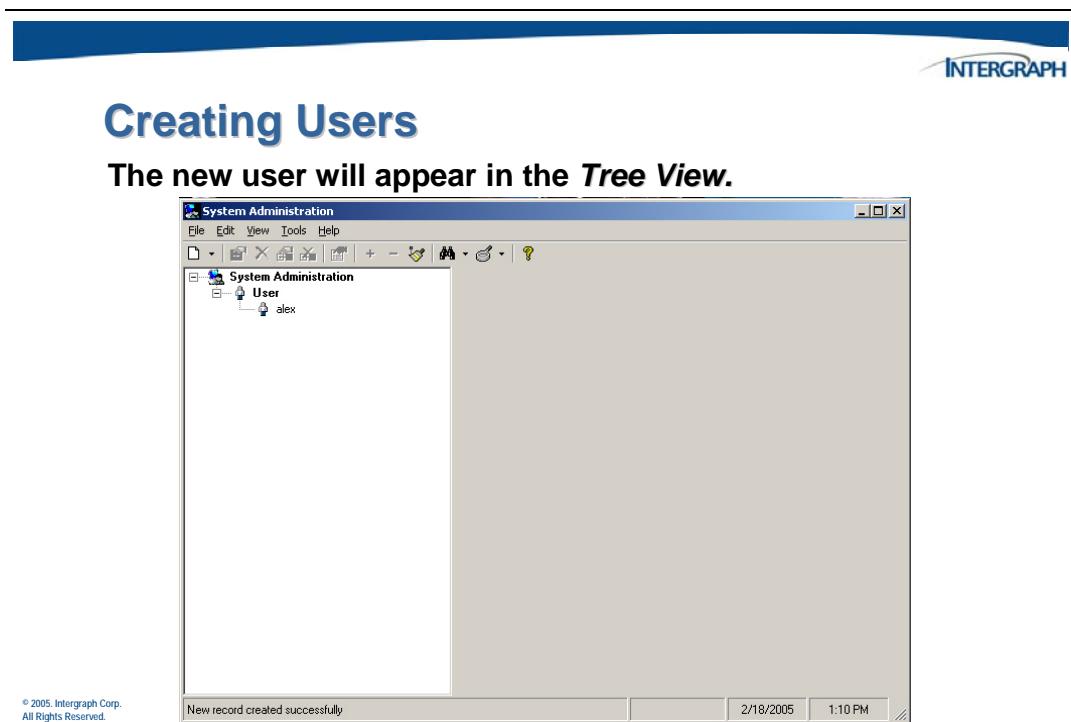
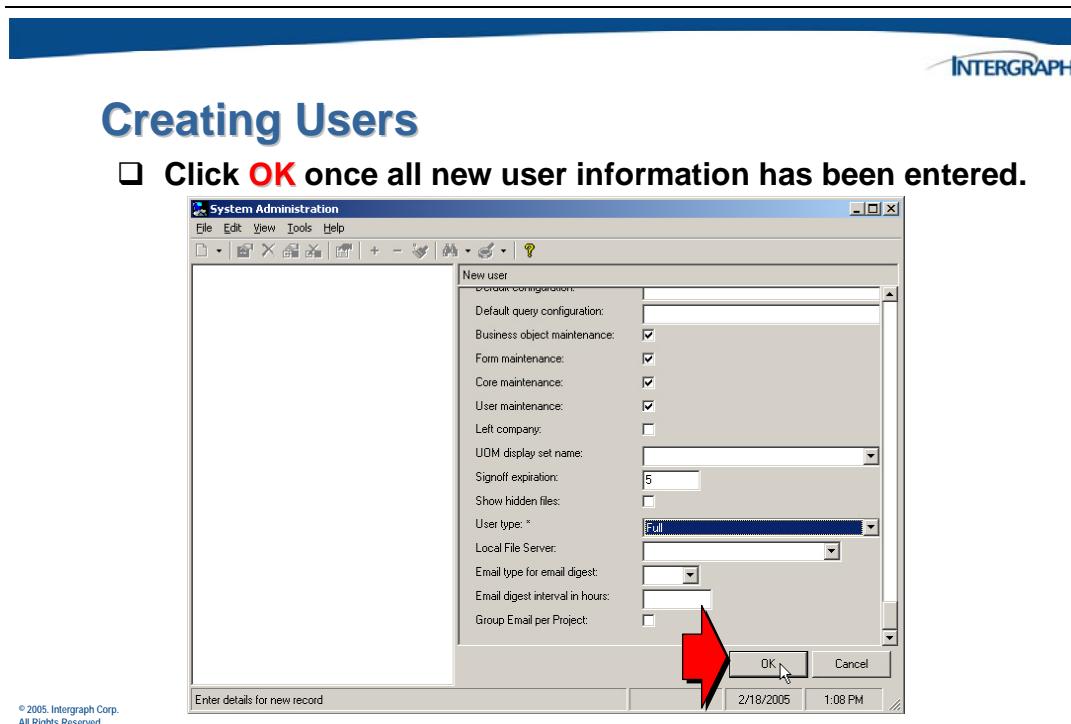
## Creating Users

- Enable the toggle boxes for necessary account privileges.**



- User maintenance** - Defines access restrictions for user maintenance.
- Left company** - Used to disable a user's access to the system.
- UOM display set name** - Assigns a UOM (Unit of Measurement) display set to this user. Select a UOM from the available list.
- Signoff expiration** – Sets the time (in days) the user has before the Workflow item is set as expired.
- Show hidden files** – Allows the user to see model hidden files in System Administration.
- User type** - Specifies whether the user is a *Full* SmartPlant Foundation user, an *Email* only user, or a *Paper* only user. These different user types are used for SmartPlant Foundation transmittals.

Click **OK** in the *New user* pane to create the new user.



A user group defines a collection of users with common job functions or access. These groups are key to the access control permissions. Methods, menus, toolbars, and relationships are all associated with user groups to provide access to them through the user interface.

---

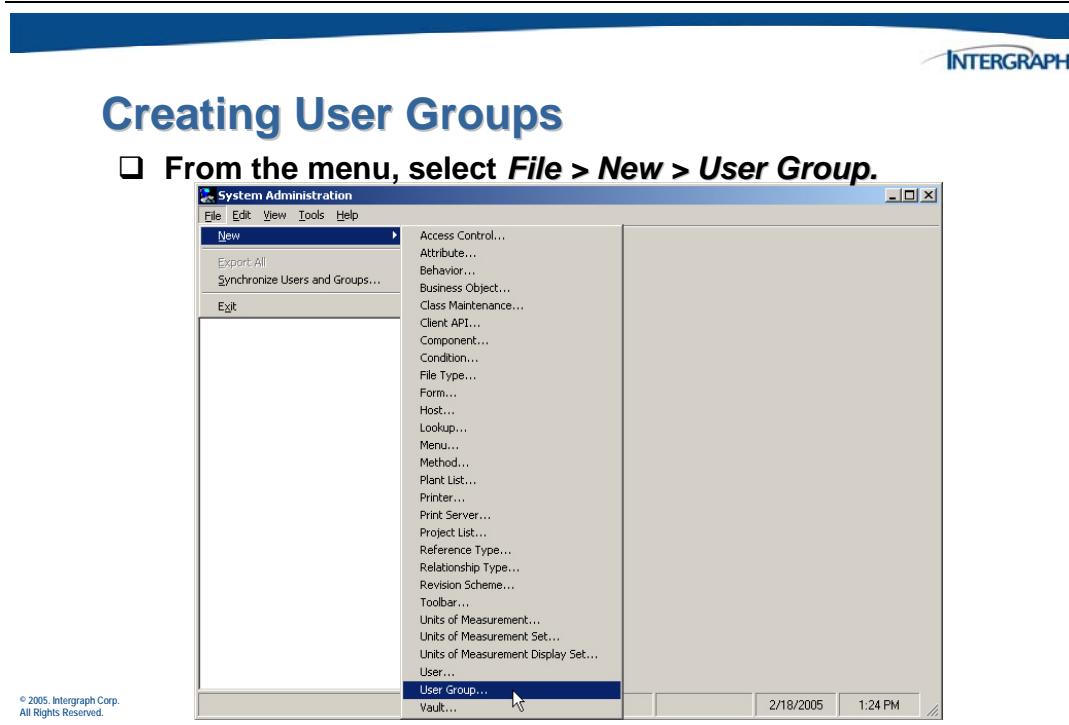


## User Groups

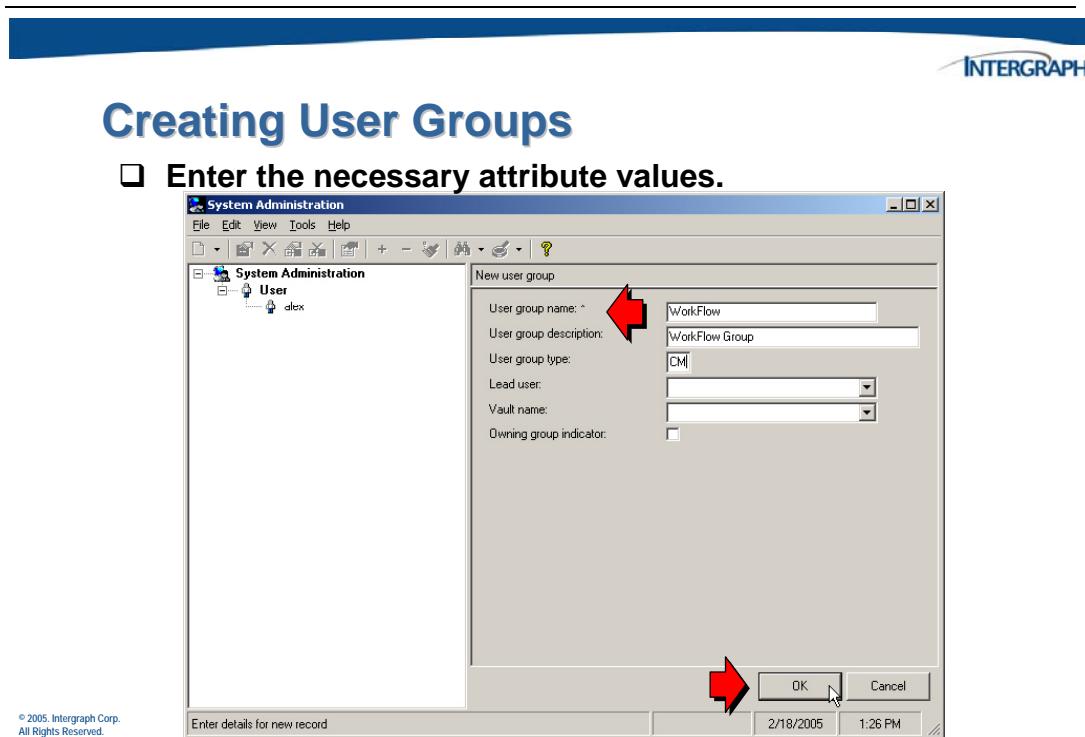
### User Groups have these characteristics:

- User group name**
- User group description**
- User group type (only valid option is CM)**
- Lead user (related to User)**
- Vault name (related to Vault)**
- Owning group indicator (for vault)**

To create a new *User Group* in SmartPlant Foundation, follow these steps:



The *New user group* form will appear in the right pane.

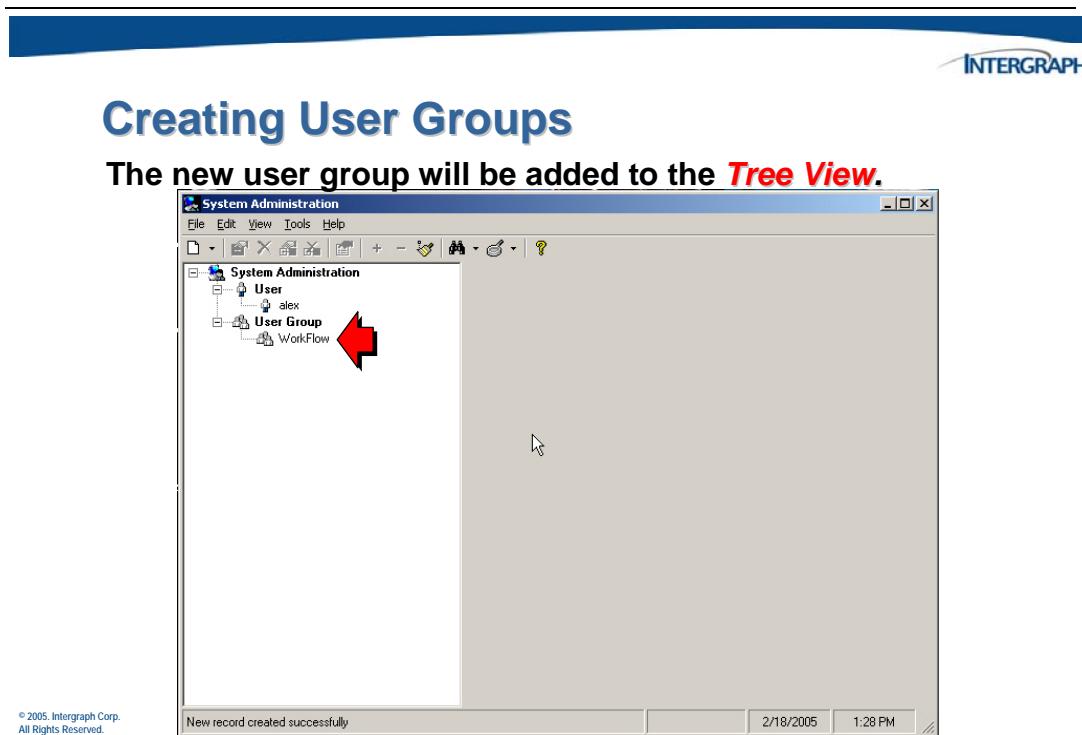


Click **OK** to create the new *User Group*.

The following information is used to create a new *User Group*:

- User group name** - Specifies a unique and descriptive name for the group and is required.
- User group description** - Used to provide a short statement about the job function or role of the user group.
- User group type** - Enter **CM** to make this user group available in *Change Management Administration*; otherwise leave it blank.
- Lead user** - Use the list button to select a lead user for this user group.
- Vault name** - Use the list button to select a vault for the user group.
- Owning group indicator** - Specifies that this user group will control ownership of data for the selected vault.

The **Owning group indicator** specifies that this user group controls ownership of data. TEF users need to be members of the owning group (EFPLANT-SC-2\_VAULT, for example) in order for published documents to be stored in the correct vault.



## 7.2.2 Creating User/User Group Associations

Dropping a user onto a user group gives a user access privileges within SmartPlant Foundation.

---

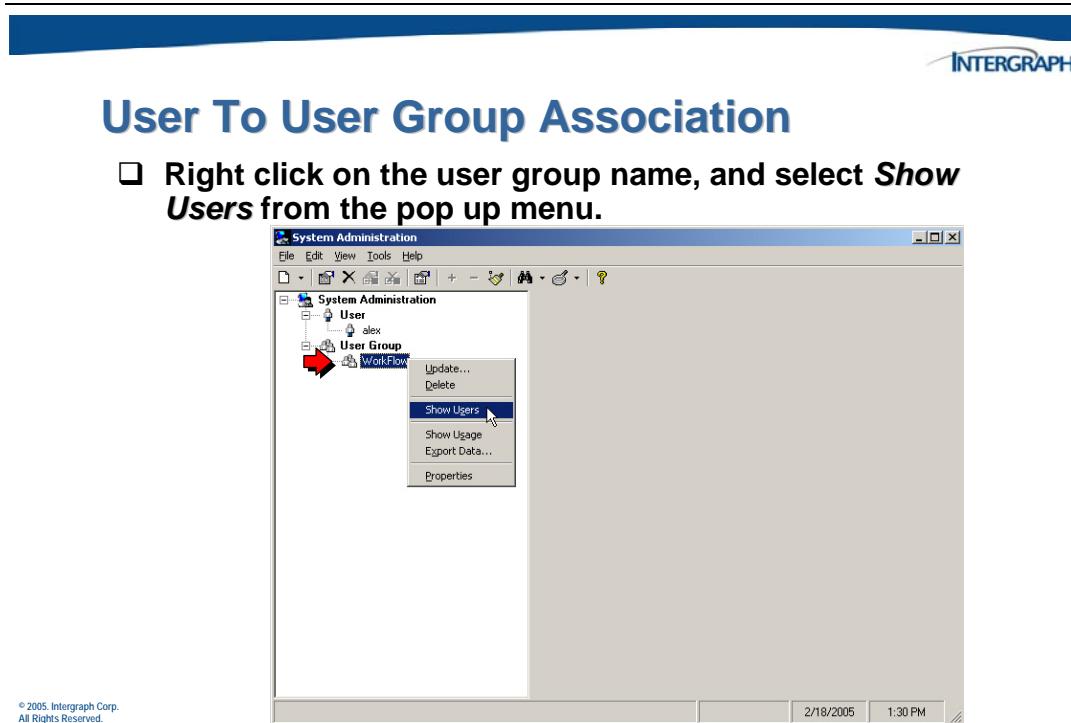


### User/User Group Association

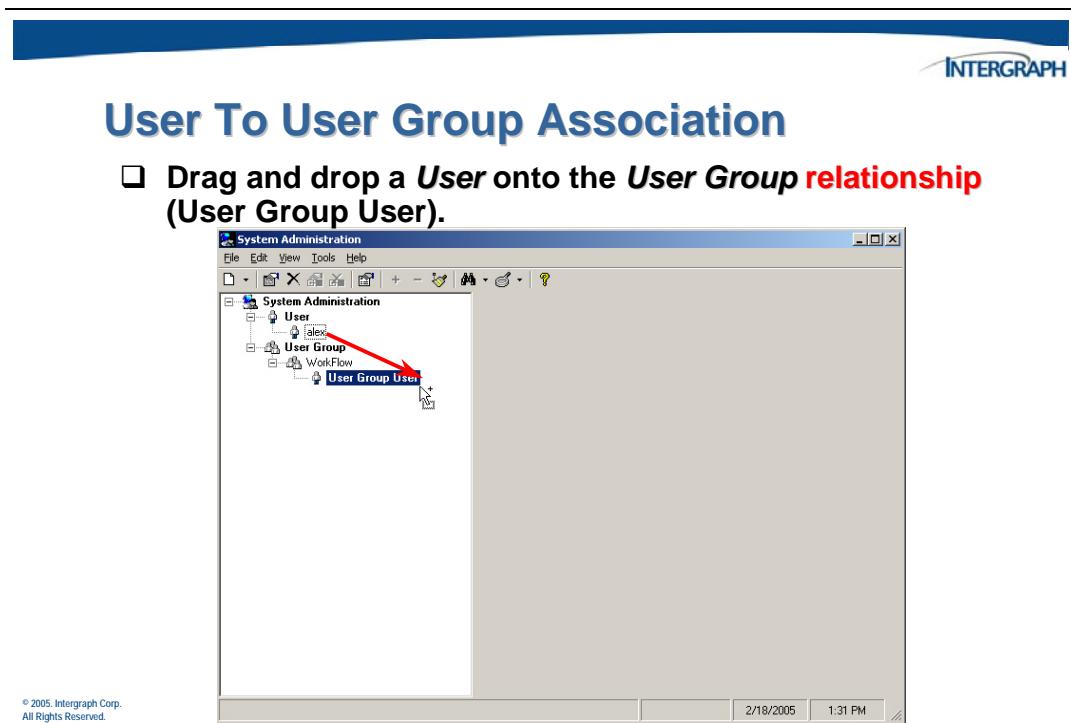
**These associations are created by dragging and dropping a user onto a user group:**

- Parent object name (user group) filled automatically
- Child object name (user) filled automatically
- Default plant list (related to **Plant List**)
- Default project list (related to **Project List**)
- User/User group combination name

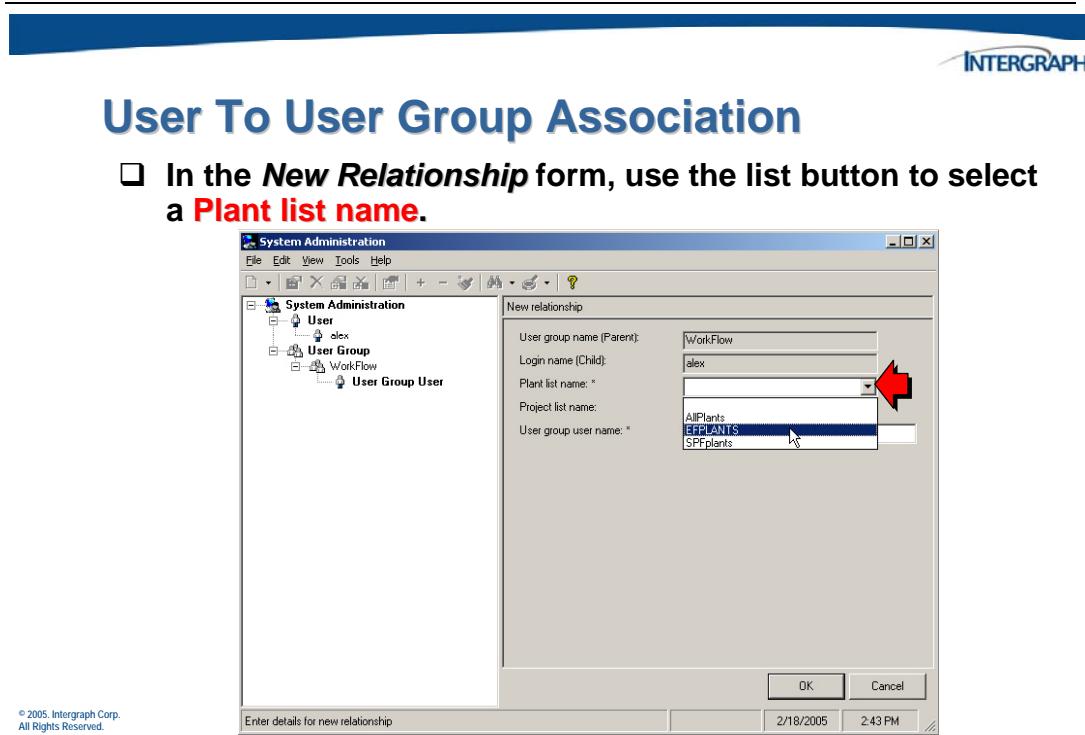
To create a *User To User Group Association*, follow these steps:



The *Tree View* will expand to show the **User Group User** relationship.



The *New Relationship* form will appear in the right pane.



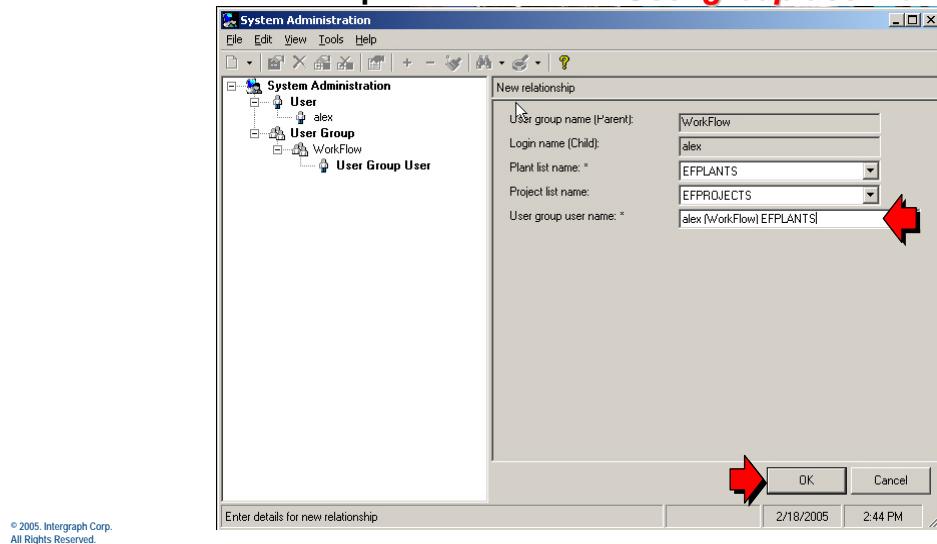
The following information is used to create a new *User Group Association*:

- User group name (Parent)** - Lists the name of the group to which the user is being added.
- Login name (Child)** - Lists the name of the user that is being added to the group.
- Plant list name** - Specifies a plant list for the relationship and is required.
- Project list name** - Use the list button to select an optional project list for the relationship.
- User group user name** - Specifies the user name as it will be displayed in the user group list and is required.



## User To User Group Association

- Enter or accept the default for **User group user name** field.

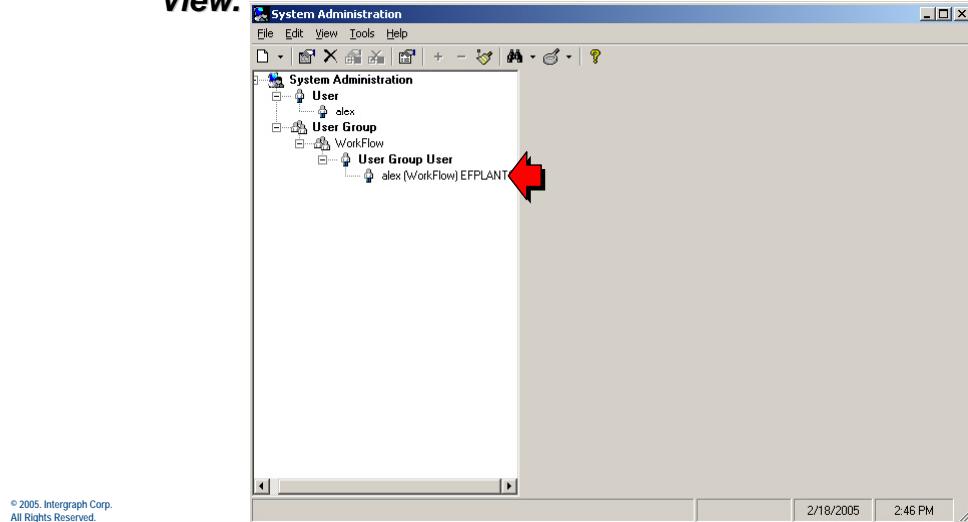


Click **OK** to create the new relationship.



## User To User Group Association

- The new user group relationship is displayed in the **Tree View**.



## 7.3 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:

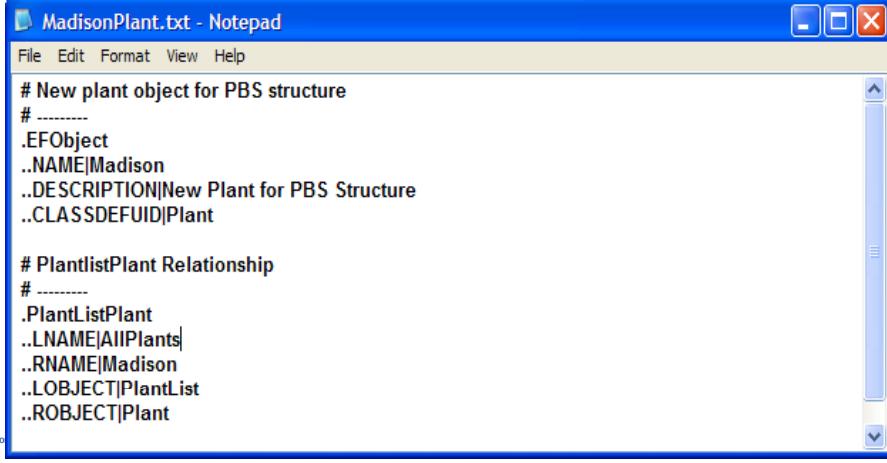
- Plant name
- Plant description

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---

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 Loader. The SmartPlant Foundation Loader will be discussed in detail later in this section.



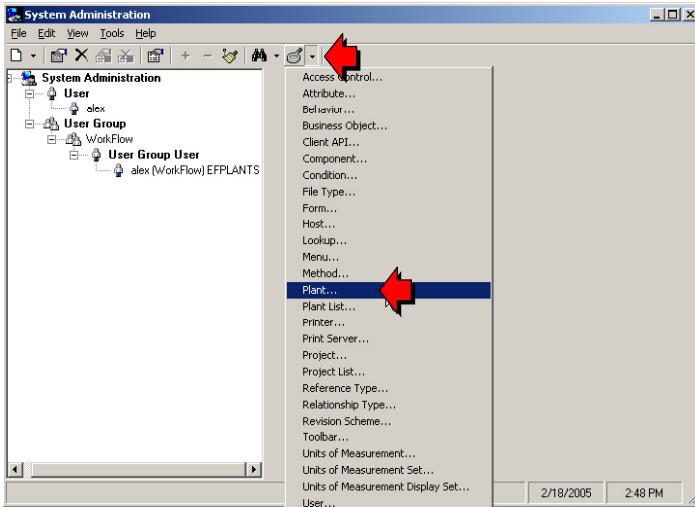
The screenshot shows a Windows Notepad window titled "MadisonPlant.txt - Notepad". The content of the file is as follows:

```
# New plant object for PBS structure
# -----
.EFObject
..NAME|Madison
..DESCRIPTION|New Plant for PBS Structure
..CLASSDEFUID|Plant

# PlantlistPlant Relationship
# -----
.PlanListPlant
..LNAME|AllPlants|
..RNAME|Madison
..LObject|PlantList
..RObject|Plant
```

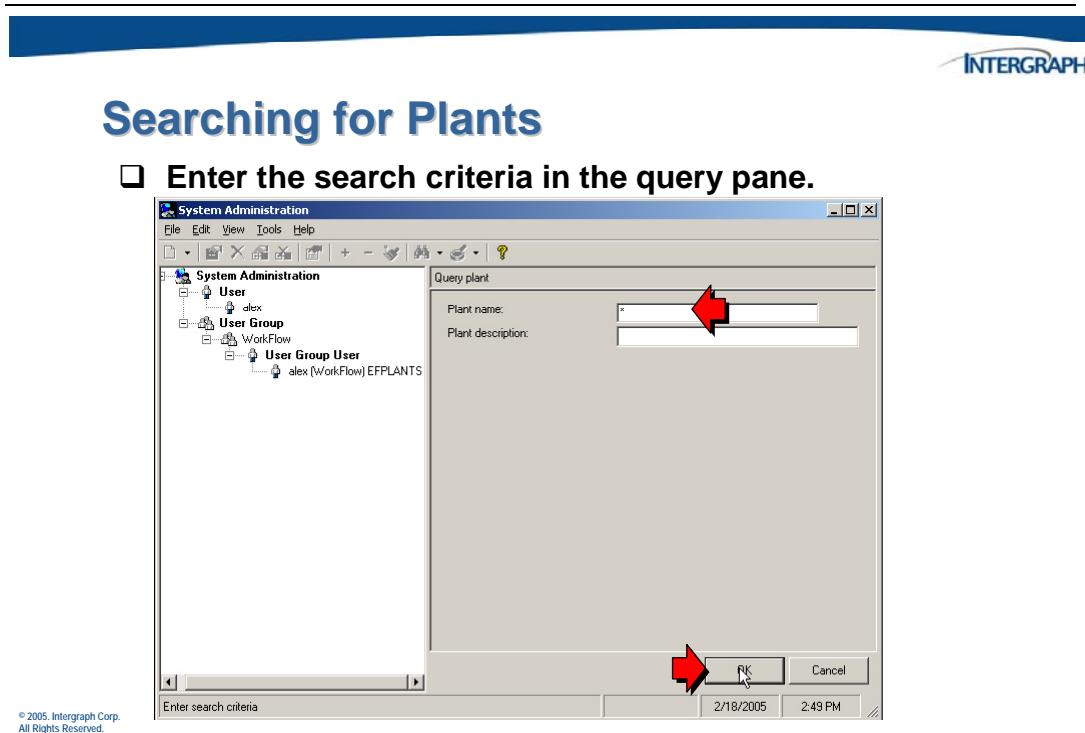
At the bottom left of the window, there is a small copyright notice: "© 2005, Intergraph Corp. All Rights Reserved."

To review a list of default Plants in SmartPlant Foundation, use the *Query* or *Find* functions.

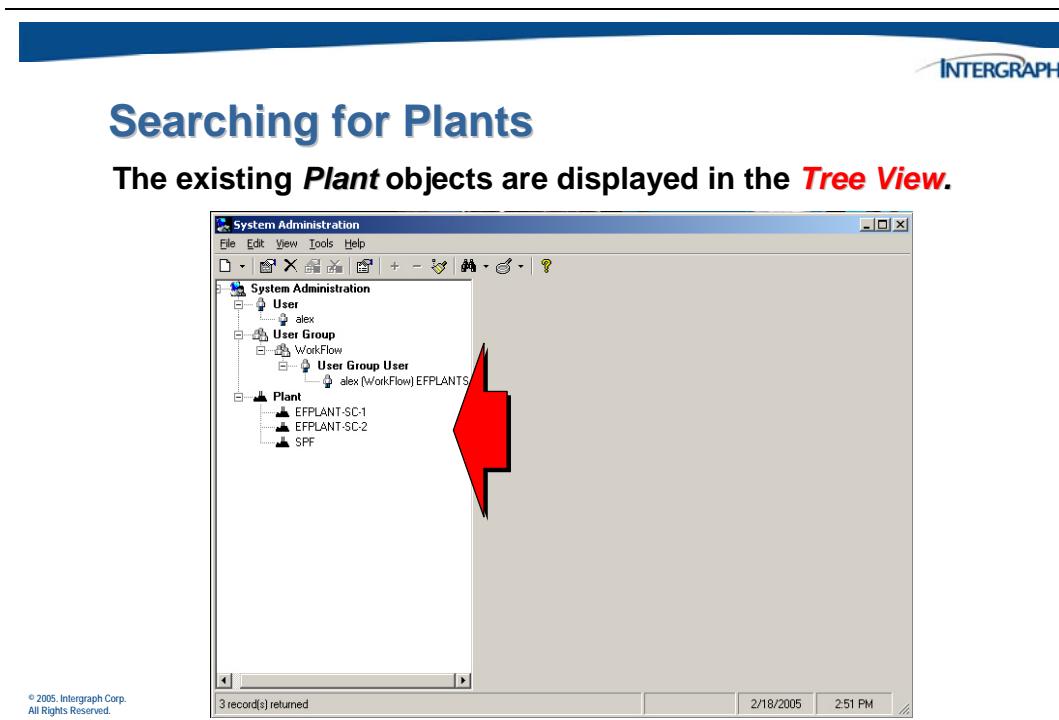


The screenshot shows the "System Administration" application window. On the left, a tree view shows "System Administration" with branches for "User", "User Group", and "Workflow". Under "User Group", there is a "User Group User" node with "alex (Workflow) EFPLANTS" as a child. A context menu is open over this node, with the "Plant..." option highlighted by a red arrow. The menu also includes other options like "Access Control...", "Attribute...", "Behavior...", etc.

A *Query plant* form appears in the right pane.



Click **OK** to execute the query. A list of default Plants will be displayed.



## 7.4 Projects and Project Lists

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

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---

Project is used to make changes to an *as-built* Plant. You can commit changes (**Commit configuration** command) - which moves the changes to the Plant level, or discard changes.

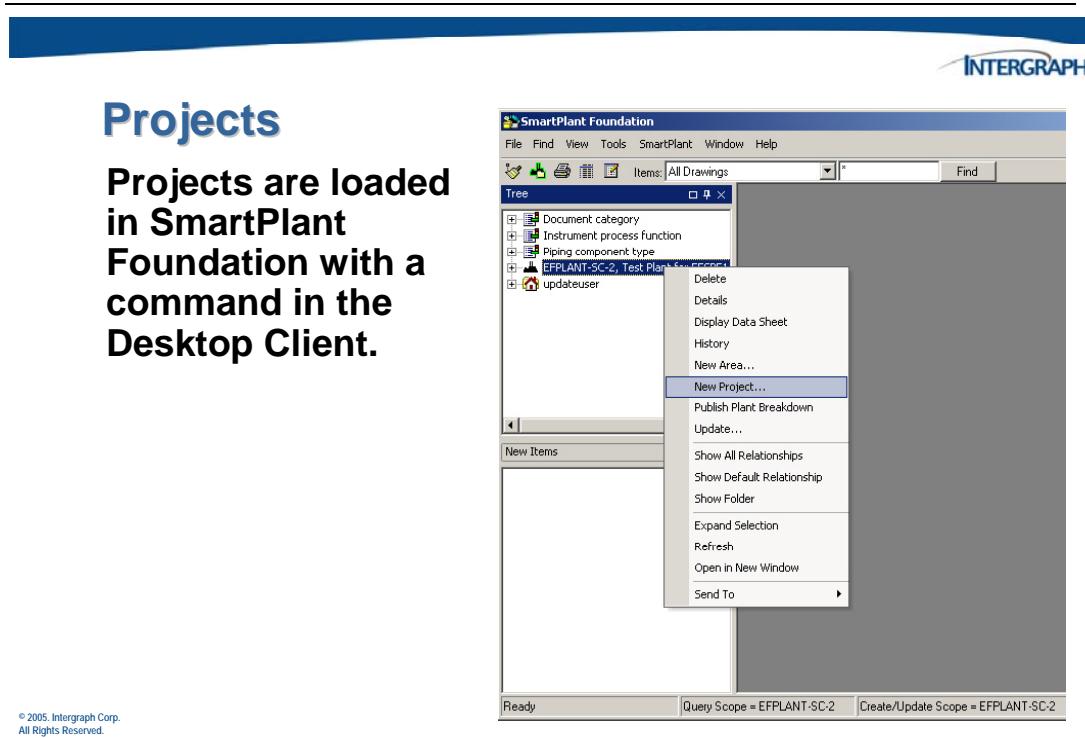
The hierarchy is:

```
Plant
  |
  Project1
  |
  Project2
  ...
  
```

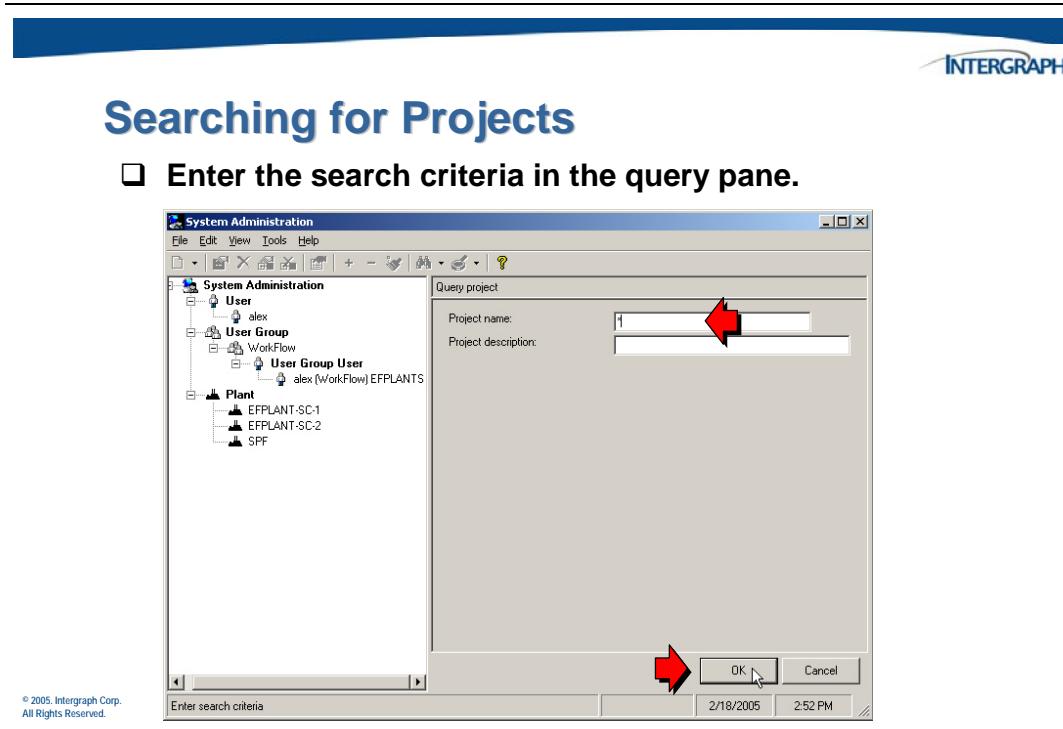
Each object has a configuration value stored as part of the object, to map it to a configuration level, such as *PlantA* or *PlantA, Project1*.

Since the introduction of the Configuration value, there is no need for the unique key that was used in the old business object model. This information is true for both the Schema Object (EF) and converted Schema Object (Dev) models.

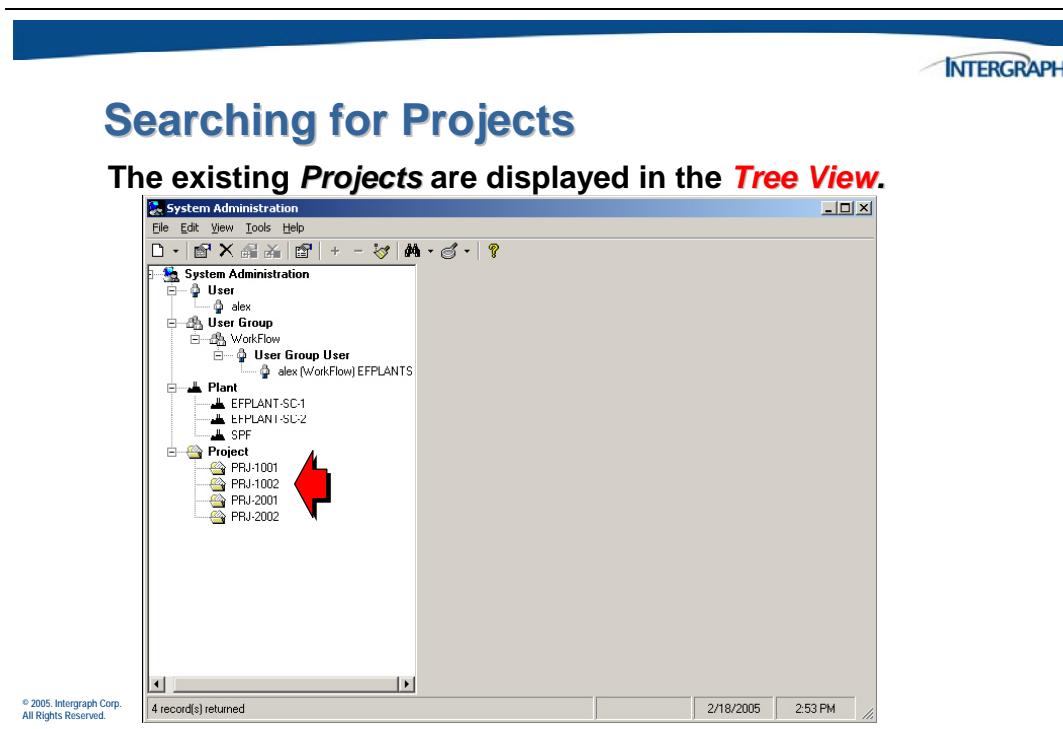
To create a Project within a model you must use the SmartPlant Foundation Desktop Client. The ProjectCreate method is not activated for any user groups by default, but can be turned on to allow user to see a New Project command that allows them to create new projects. The *SmartPlant Foundation Configuration and Administration II* course covers adding methods to a user group.



To review a list of default Projects, use the *Query* or *Find* functions. The *Query project* form will appear.



Click **OK** to execute the query.



Projects are created and linked together on **Project Lists**. In a similar way to plants, a Project List can be set by the user and user group relationship. Project Lists are configured so that a set of projects identifies a specific plant thus creating the second level of the data hierarchy.

---

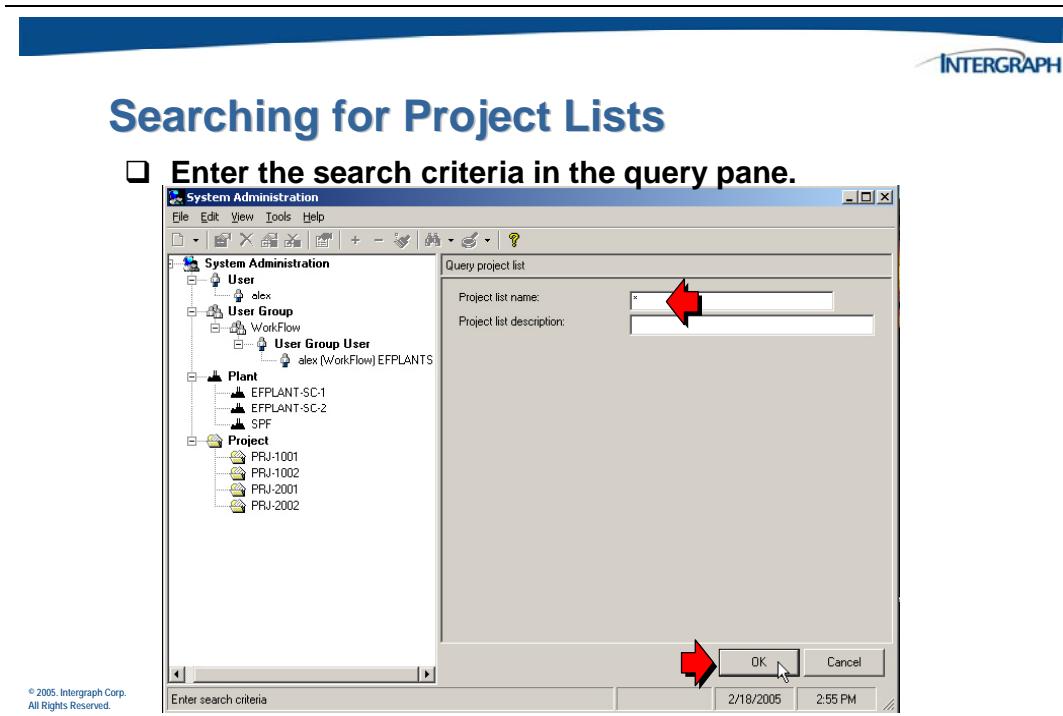


## Project Lists

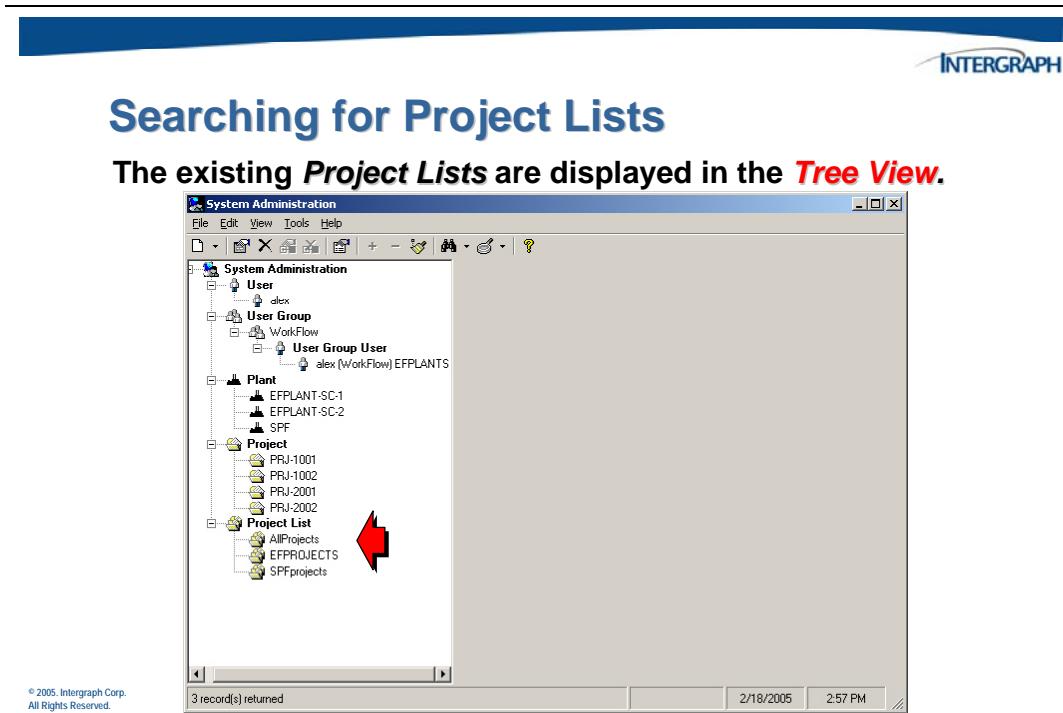
**Project lists are used to define access based on projects.**

**Project lists are defined when a user is associated to a user group.**

To review a list of default Project Lists, use the *Query* tool. The *Query project list* form will appear.



Click **OK** to perform the query.

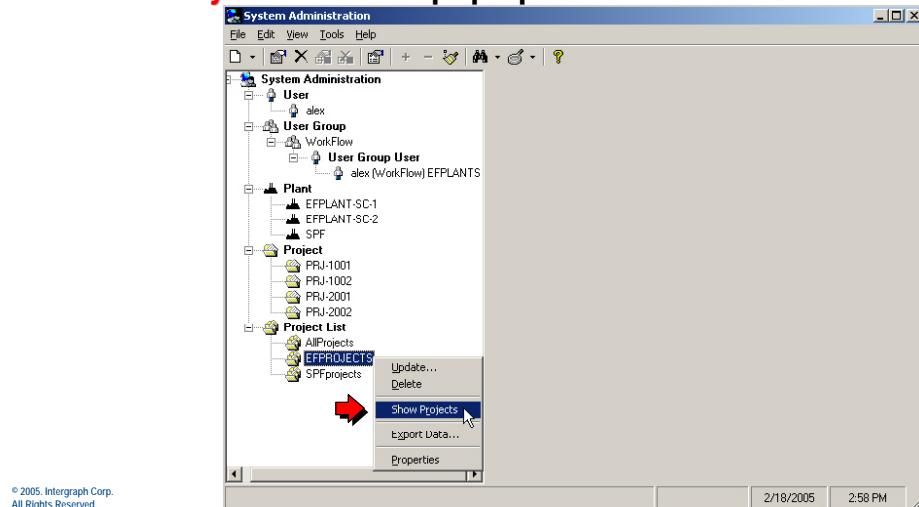


Expand the Tree View to see a list of *Projects* in the *Project Lists*.



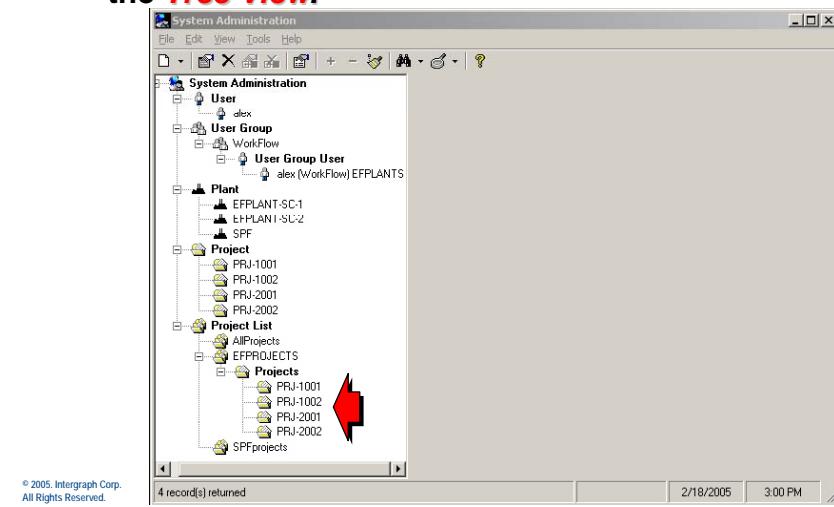
## Display Projects in Project Lists

- Right click on a project list name, and select **Show Projects** from the pop up menu.



## Display Projects in Project Lists

The *Projects* (in the *Project List*) relationship is displayed in the *Tree View*.



## 7.5 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.

---



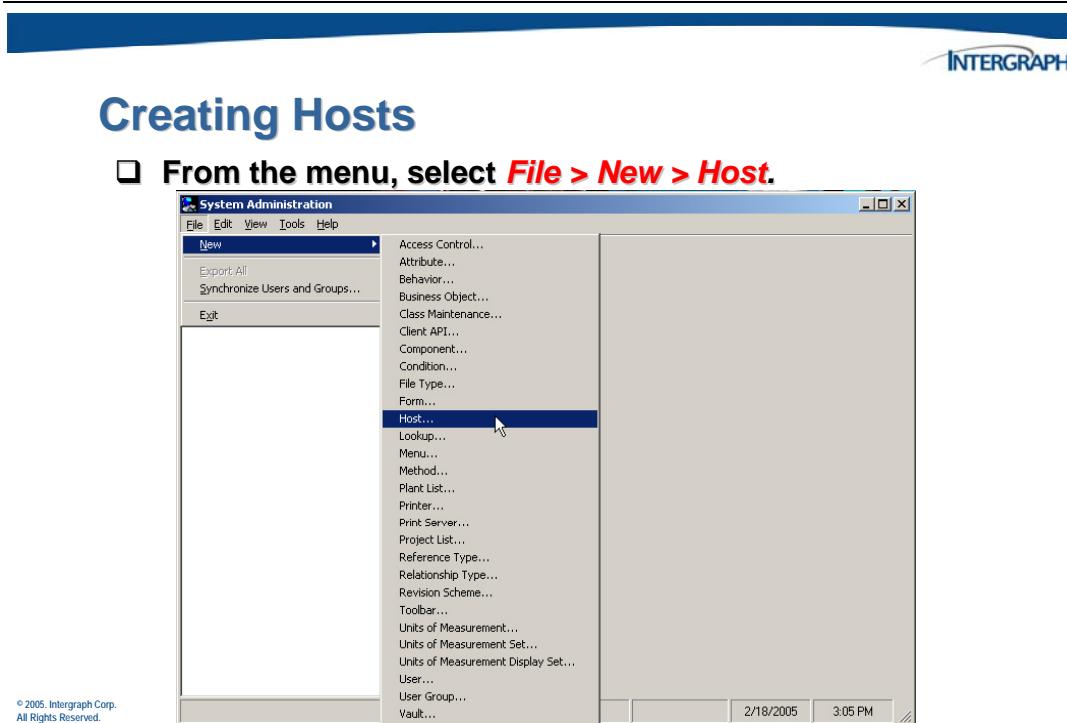
### Hosts

**Hosts** are needed to define both permanent and temporary file storage areas.

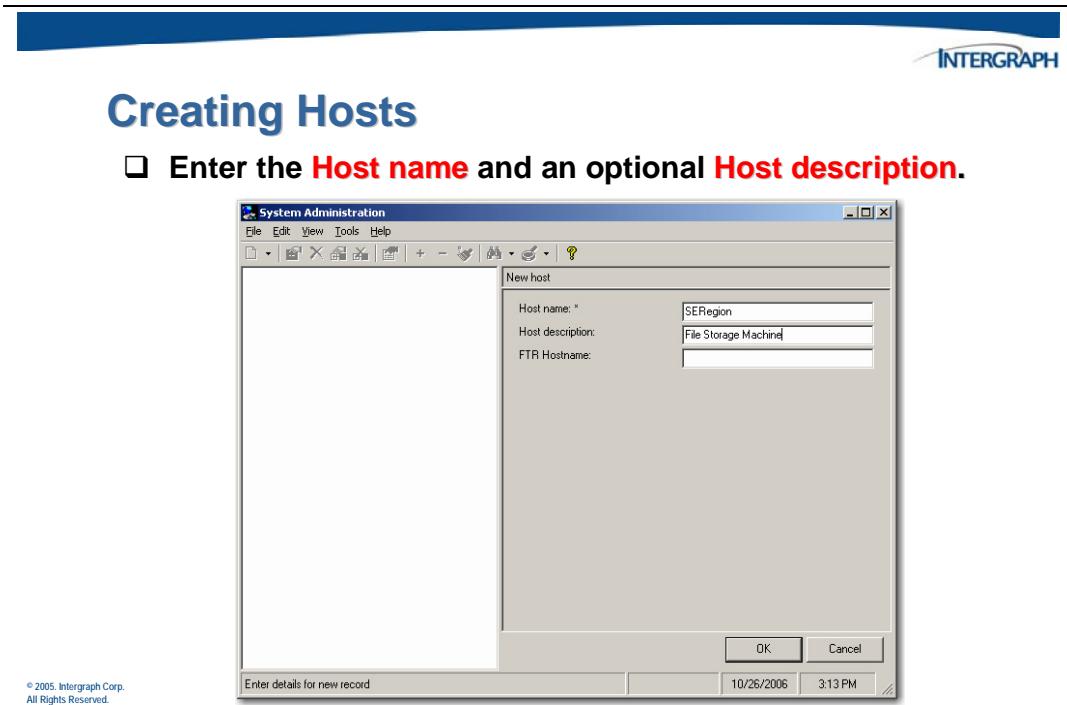
**Host objects have these characteristics:**

- Host name
- Host description
- FTR Hostname

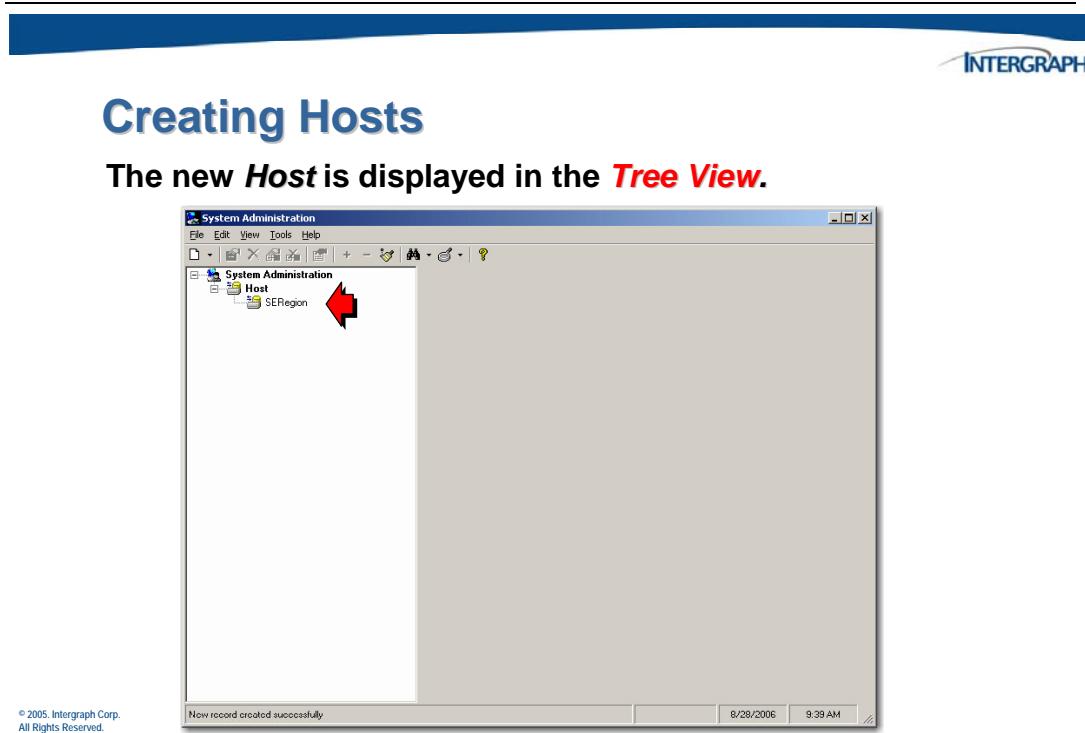
Use the following procedure to create a new host.



The *New host* form will appear.



Click **OK** to create the new host.



## 7.6 SmartPlant Foundation Vaults

A vault is used to store the physical files associated with a business object. When a business object is created, it is owned by the owning group of the user that created it. When a file is attached to the business object, it is transferred to the vault associated with the owning group. If a user needs to work on the files associated with the business 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 business object.

---



### Vaults

**Vaults** are used to define physical storage locations for files on hosts.

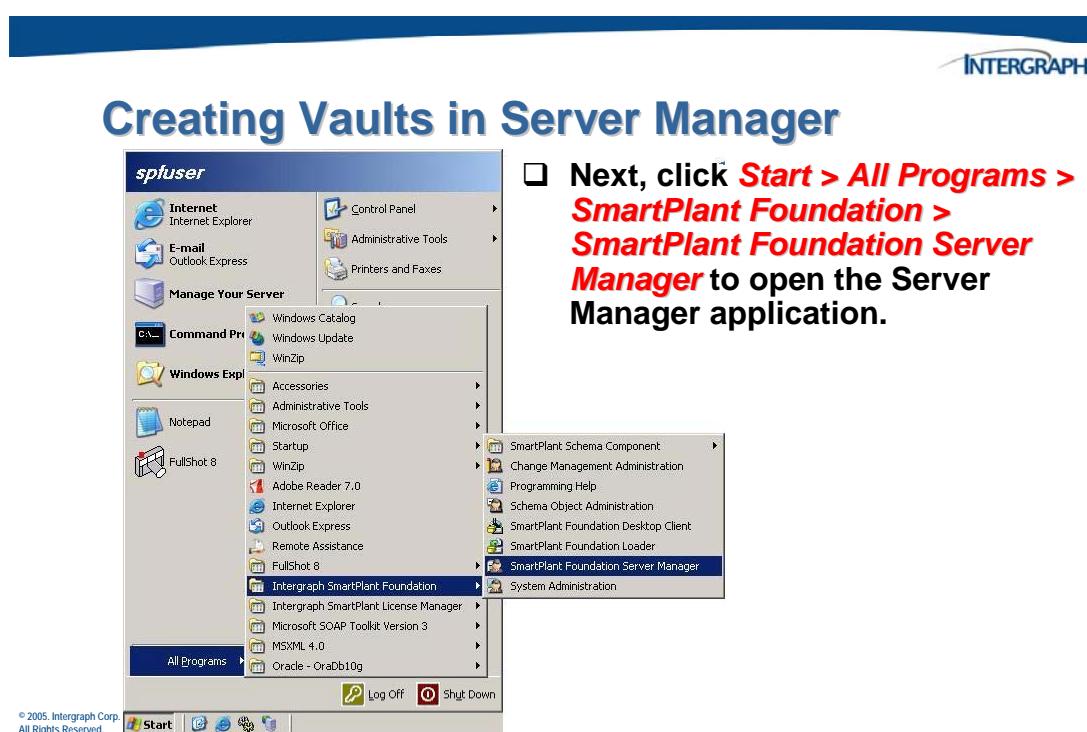
**Vault objects have these characteristics:**

- Vault name**
- Vault description**
- Host name (relates to Host)**
- Virtual directory (FTP alias)**
- FTP UserID**
- FTP Password**

After installing SmartPlant Foundation, vaults must be created by the administrator. These vaults are used in organizing files and assigning user permissions. Since these vaults use a virtual directory for their location, the FTP virtual directories must be set up prior to creating vaults.

## 7.6.1 Creating Vaults in SmartPlant Server Manager

Before you can create a new vault in System Administration, you have to create a physical folder and virtual directories. These are now created with the new Server Manager application.

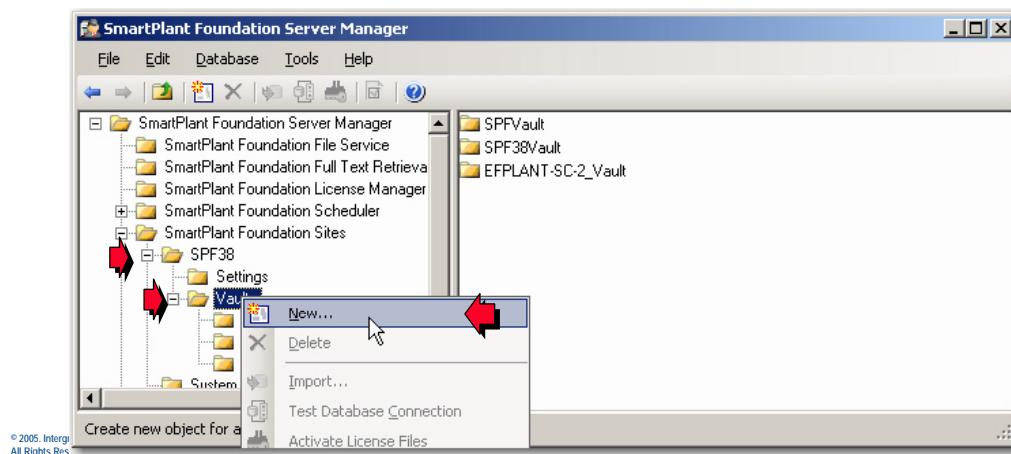


Locate your site in the Server Manager and open the node to display the *Vaults* node. When you right-click on the *Vaults* node, a *New* command is available.



## Creating Vaults in Server Manager

- In the Server Manager application, open the site in which you want to create the new vault. Right-click on **Vaults**, and click the **New** command.

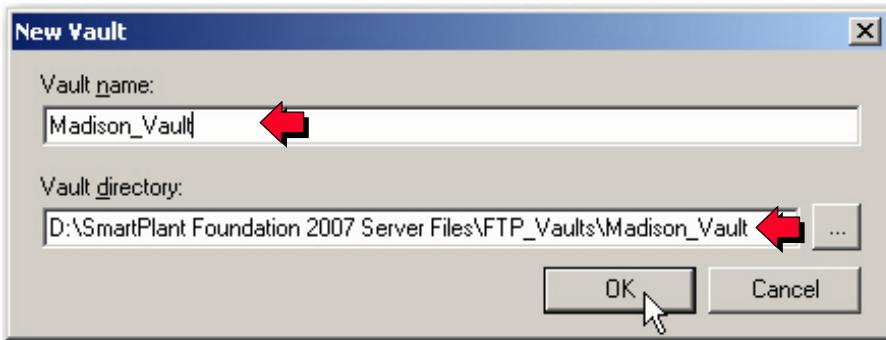


Provide the name of the new vault and the path.



## Creating Vaults in Server Manager

- In the **New Vault** dialog box, provide the name and path of the vault folder you want to create.

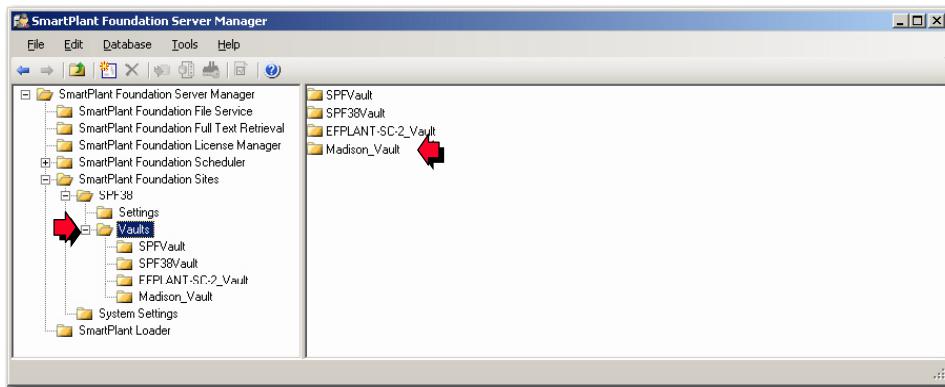


This will create both the folder, in the specified location, and all necessary virtual directories.

The new vault now appears in the list of vaults under the site.

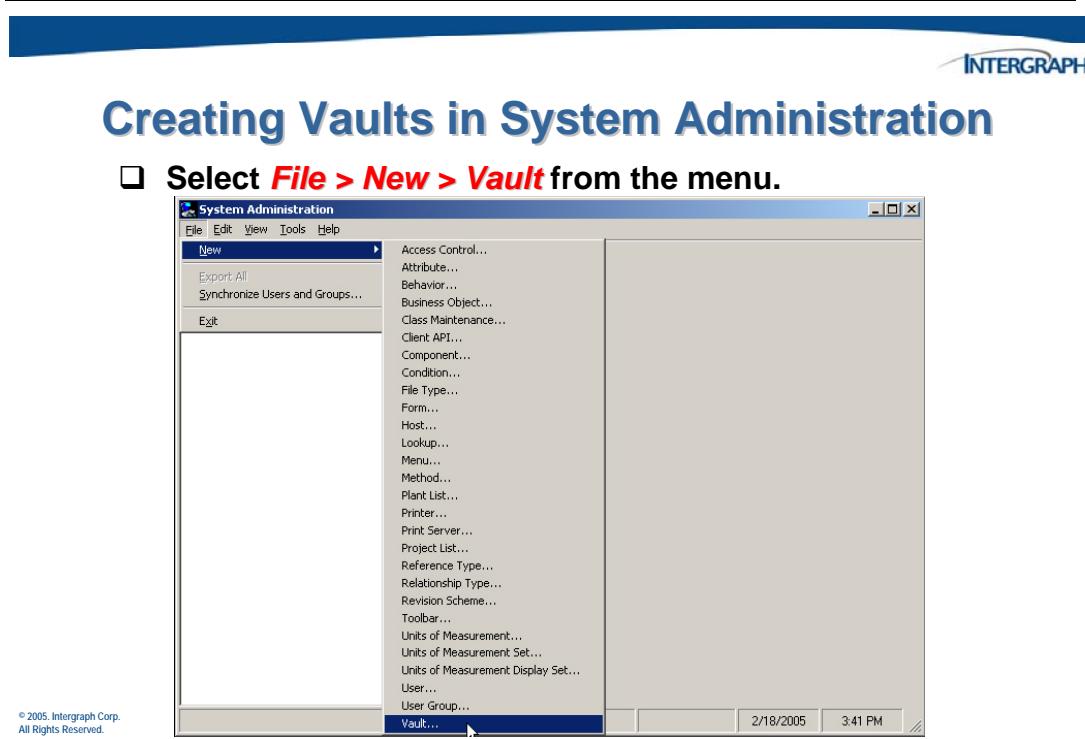
## Creating Vaults in Server Manager

- The new vault will now appear in the vault list under the site.

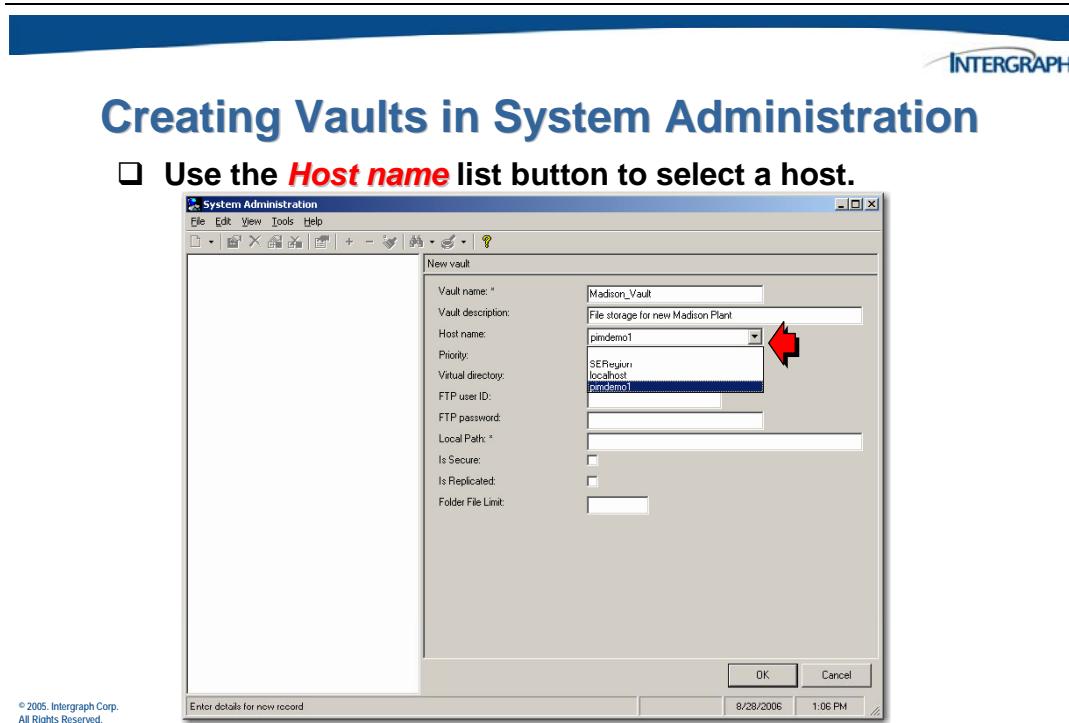


## 7.6.2 Creating Vaults in System Administration

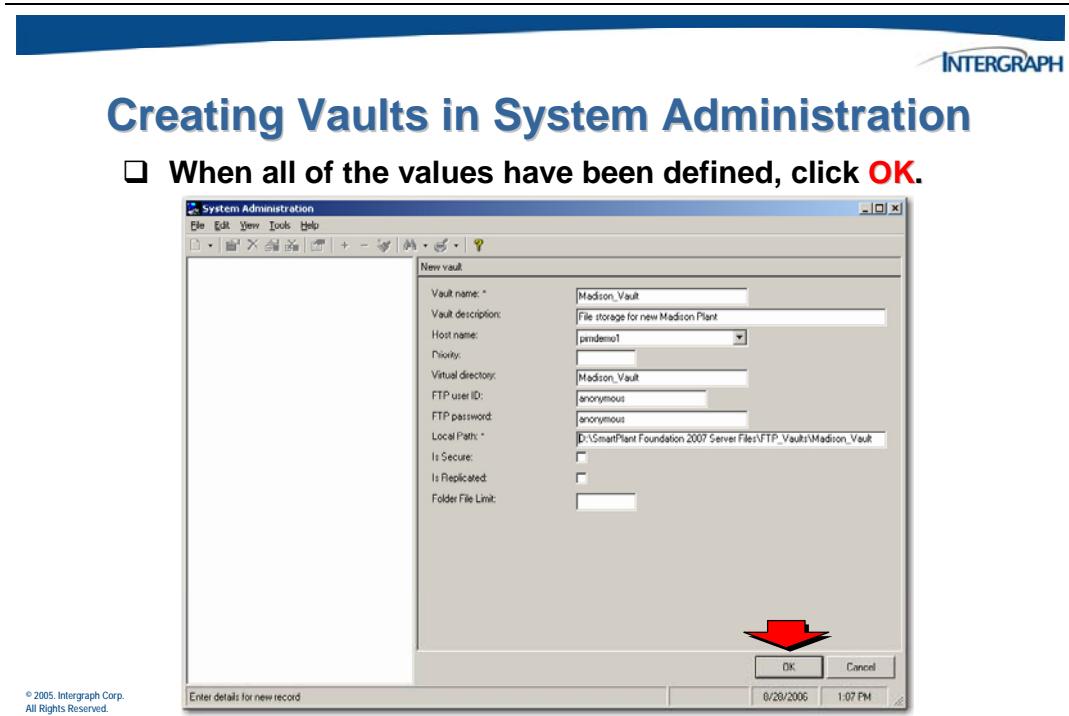
To create a new vault:



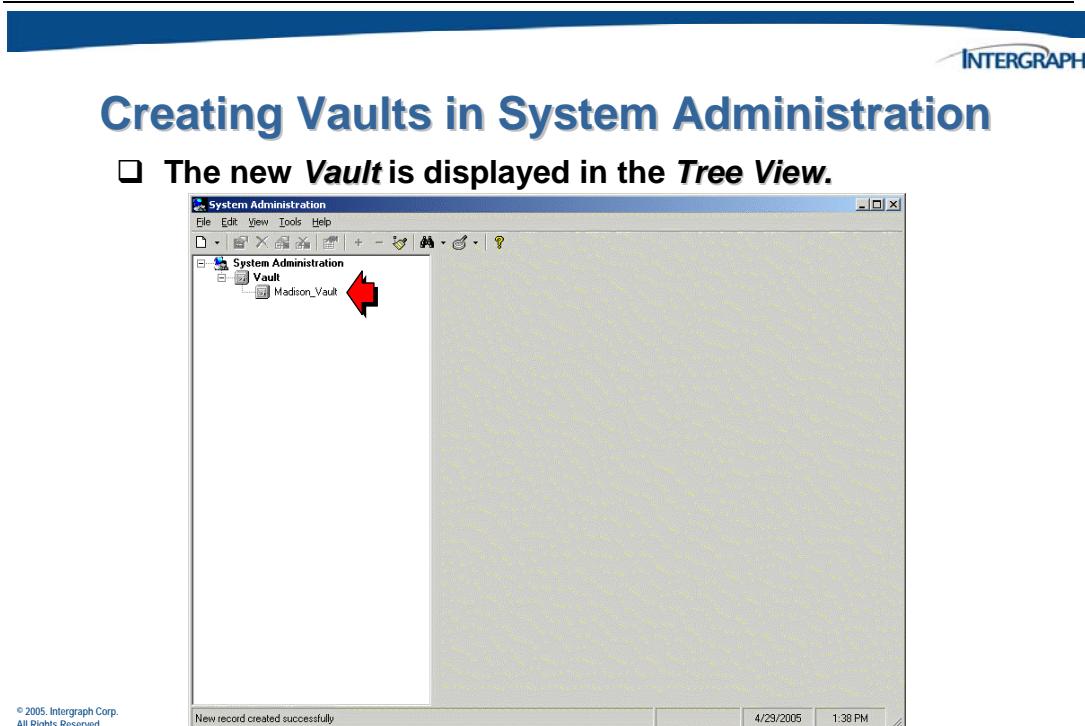
The *New vault* form will appear.



Continue to enter the necessary attribute values to create the new vault.



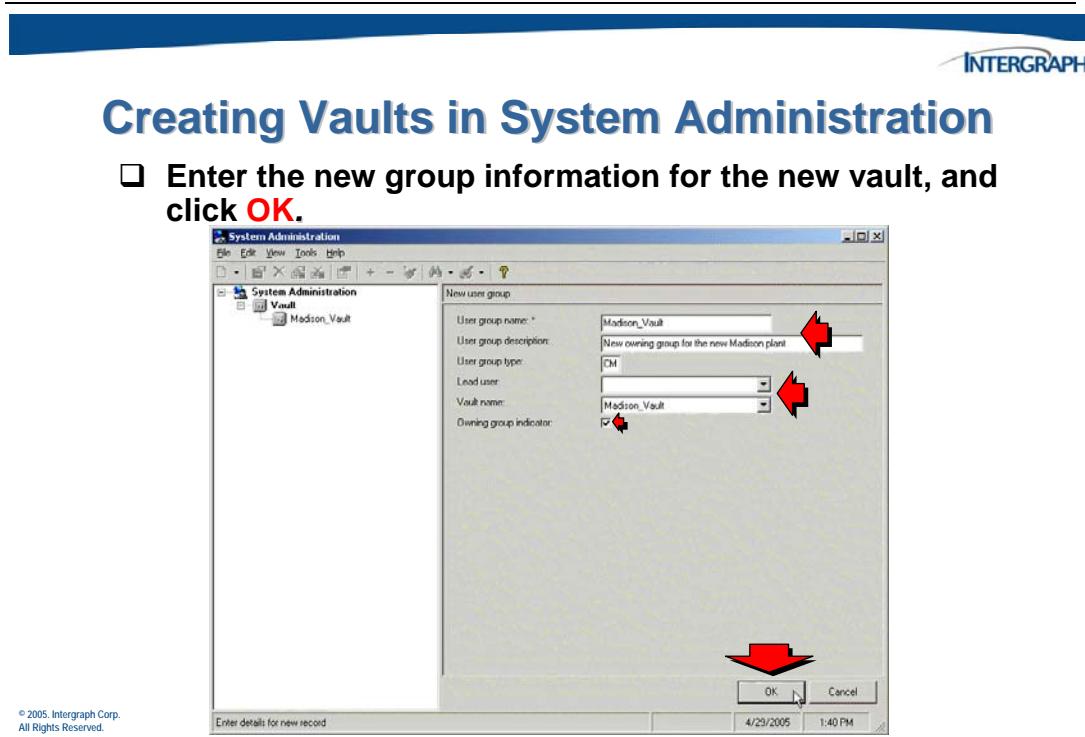
The *Virtual directory* should match the value that was entered during the creation of the virtual directory in IIS.



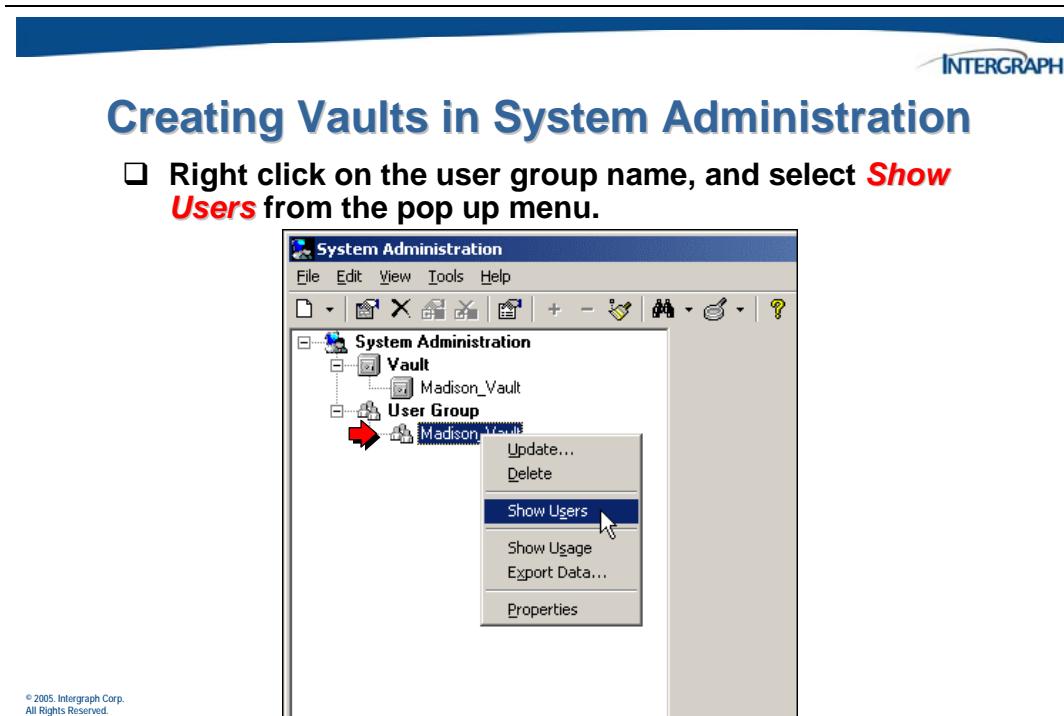
Next, create a new user group to control access to this new vault. We will use this vault and user group later in a later chapter when we discuss creating a new Plant Breakdown Structure (PBS).

In order to publish a new PBS, any new plants for which the PBS is published must have a vault with the <plant\_name>\_vault naming convention. In addition to the new vault, a new group using the same naming convention must exist.

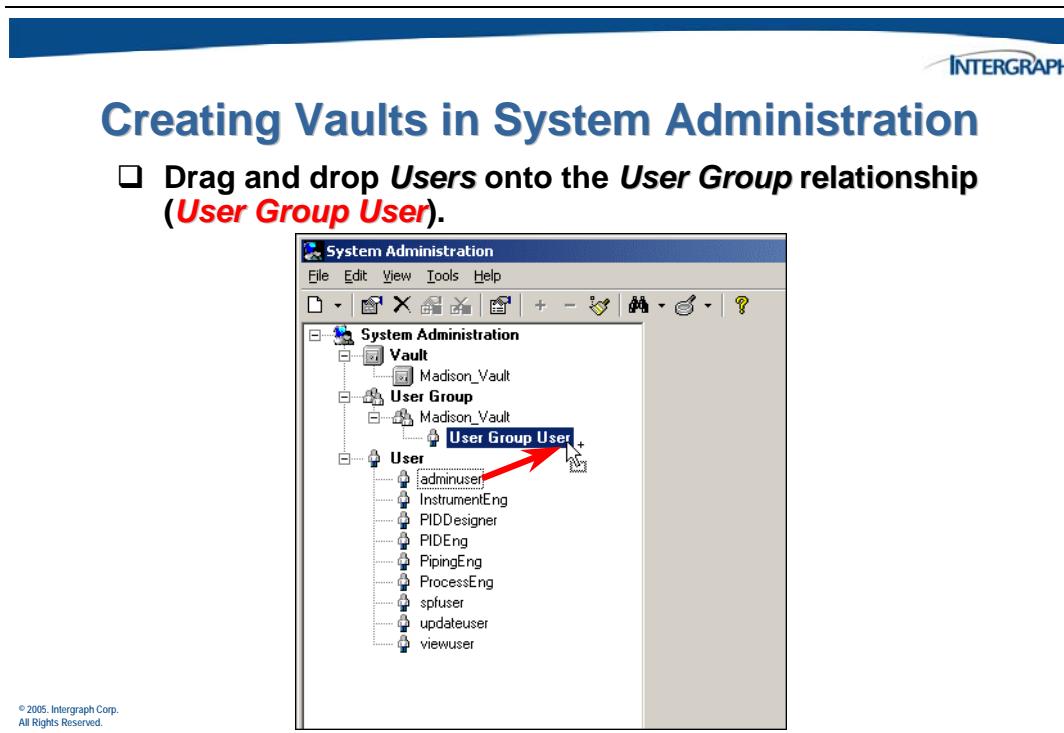
Select the **File > New > User Group** command from the menu.



Make sure the *Owning group indicator* is enabled. Next, add the appropriate users to the new vault group.



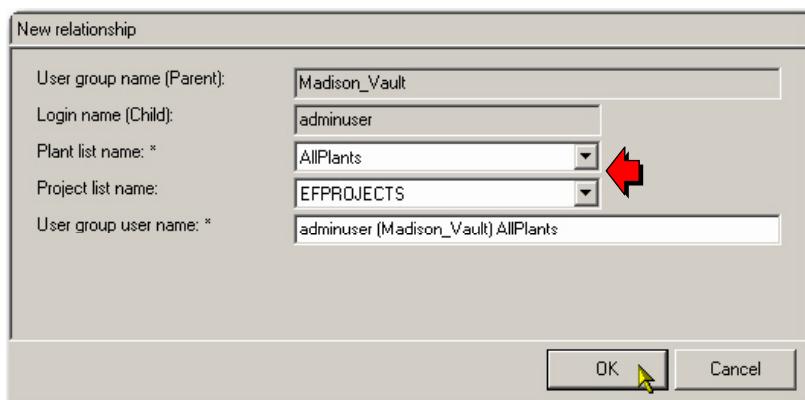
The *Tree View* will expand to show the **User Group User** relationship.



The *New Relationship* form will appear in the right pane.

## Creating Vaults in System Administration

- ❑ In the *New Relationship* form, use the list button to select a *Plant list name* and a *Project list name*.

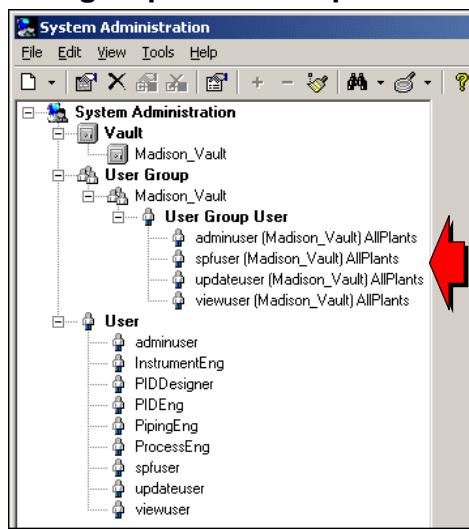


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Click **OK** to create the new relationship.

## Creating Vaults in System Administration

- ❑ The new user group relationships are displayed in the *Tree View*.



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## 7.7 Activity 1 – Creating Users, User Groups, Hosts and Vaults

The objective of this activity is to create **User** logins and a **UserGroup** and then to relate the user to the model user groups. You will also continue the administrative configuration of SmartPlant Foundation by creating **Host** and objects.

### Objectives:

In this activity you will use the **EFPLANT-SC-2** model. You will create a *User* with SysAdmin rights and several *Users* with non-SysAdmin rights

**If you are not currently logged into your machine:**

1. Log on to your operating system:

*spfuser* with no password

2. Start the *System Administration Utility* by selecting *Start > All Programs > Intergraph SmartPlant Foundation > System Administration*.

3. When the *Login* dialog window appears, use the *User name* **adminuser** with no password, and click on **OK**.

When you create new objects, they are placed in the *Tree View* pane of the System Administration window.

4. Create four new user accounts: From the System Administration menu, select *File > New > User*. A *New user* form will appear.

After entering the values for each new user, click **OK**.

#### Admin user

<input type="checkbox"/> Login name * -	<i>alex</i>
<input type="checkbox"/> Password -	leave blank
<input type="checkbox"/> Full name-	<i>Alex Admin</i>
<input type="checkbox"/> Company Name -	leave blank
<input type="checkbox"/> Email Address -	<i>alex</i>

- Warning dialog count - leave blank
- Maximum SQL limit - leave blank
- Inbox refresh - leave blank
- Expand to - leave blank
- Days between password changes -leave blank
- Default configuration - leave blank
- Business object maintenance - **enable this box**
- Form maintenance - **enable this box**
- Core maintenance - **enable this box**
- User maintenance - **enable this box**
- Left company - leave blank
- UOM display set name - leave blank
- Signoff expiration - take the default
- Show hidden files - leave blank
- User type - **Full**

### Update user

- Login name \* - *van*
- Password - leave blank
- Full name- *Van Viewer*
- Company Name - leave blank
- Email Address - *van*
- Warning dialog count - leave blank
- Maximum SQL limit - leave blank
- Inbox refresh - leave blank
- Expand to - leave blank
- Days between password changes -leave blank
- Default configuration - leave blank
- Business object maintenance - leave blank
- Form maintenance - leave blank
- Core maintenance - leave blank

- User maintenance - leave blank
- Left company - leave blank
- UOM display set name - leave blank
- Signoff expiration - take the default
- Show hidden files - leave blank
- User type - **Full**

**Update user**

- Login name \* - *eddie*
- Password - leave blank
- Full name- *Eddie Editor*
- Company Name - leave blank
- Email Address - *eddie*
- Warning dialog count - leave blank
- Maximum SQL limit - leave blank
- Inbox refresh - leave blank
- Expand to - leave blank
- Days between password changes -leave blank
- Default configuration - leave blank
- Business object maintenance - leave blank
- Form maintenance - leave blank
- Core maintenance - leave blank
- User maintenance - leave blank
- Left company - leave blank
- UOM display set name - leave blank
- Signoff expiration - take the default
- Show hidden files - leave blank
- User type - **Full**

**Update user**

- Login name \* - *mark*
- Password - leave blank

<input type="checkbox"/> Full name-	<b>Mark Markup</b>
<input type="checkbox"/> Company Name -	leave blank
<input type="checkbox"/> Email Address -	<b>mark</b>
<input type="checkbox"/> Warning dialog count -	leave blank
<input type="checkbox"/> Maximum SQL limit -	leave blank
<input type="checkbox"/> Inbox refresh -	leave blank
<input type="checkbox"/> Expand to -	leave blank
<input type="checkbox"/> Days between password changes -	leave blank
<input type="checkbox"/> Default configuration -	leave blank
<input type="checkbox"/> Business object maintenance -	leave blank
<input type="checkbox"/> Form maintenance -	leave blank
<input type="checkbox"/> Core maintenance -	leave blank
<input type="checkbox"/> User maintenance -	leave blank
<input type="checkbox"/> Left company -	leave blank
<input type="checkbox"/> UOM display set name -	leave blank
<input type="checkbox"/> Signoff expiration -	take the default
<input type="checkbox"/> Show hidden files -	leave blank
<input type="checkbox"/> User type -	<b>Full</b>

5. Create a new group called the *WrkFlow* group. Use the **File > New > User Group** command and the following information:

<input type="checkbox"/> User group name * -	<b>WrkFlow</b>
<input type="checkbox"/> User group description -	<b>WrkFlow Group</b>
<input type="checkbox"/> User group type -	<b>CM</b>
<input type="checkbox"/> Lead user -	leave blank
<input type="checkbox"/> Vault name -	leave blank
<input type="checkbox"/> Owning group indicator -	leave blank

Click **OK** after entering the values for the new group.

6. Use the Find command to locate and display the default SmartPlant Foundation user groups.
  - Select **Tools > Find > User Group** from the menu.
  - In the *Find User Group* dialog, enter the wild card character, and click **OK**.
7. Verify that the **VIEWONLY** and **UPDATE** User Groups have ‘CM’ in the User Group Type entry and **EFPLANT-SC-2\_VAULT** as the Vault name.
8. You are now going to add the users that you have created to the **VIEWONLY** and **UPDATE** groups to allow them system functionality.
  - Right click on the two group names and select **Show Users** to view the relationship.
  - Drag and drop your user objects to the default group objects relationship.
    - *alex* to the **VIEWONLY** group
    - In the *New relationship* form for user *alex*, enter the following:
      - Plant list name - **EFPLANTS**
      - Project list name - **EFPROJECTS**
      - User group user name - **alex (VIEWONLY) EFPLANTS**
    - *alex* to the **UPDATE** group
    - In the *New relationship* form for user *alex*, enter the following:
      - Plant list name - **EFPLANTS**
      - Project list name - **EFPROJECTS**
      - User group user name - **alex (UPDATE) EFPLANTS**

10. Create a new vault in SPF Server Manager: Minimize the System Administration window and start the SPF Server Manager application. Set up a new vault to be used in preparation for creating a new Plant Breakdown Structure in a later chapter.
  - Find your site (SPF38), and open that node.
  - Right-click on the **Vaults** node, and select *New* from the pop-up menu.
  - For the vault name, enter **Madison\_Vault**.
  - The physical path to use for this new virtual directory is **D:\SmartPlant Foundation 2007 Server Files\FTP\_Vaults\Madison\_Vault**. This should be displayed by default once you have provided the name.
  - Click **OK** and close the Server Manager.
11. In the System Administration window create a new Vault by selecting **File > New > Vault**. In the *New vault* form that appear, provide the following information:
  - Vault name \* - **Madison\_Vault**
  - Vault description - **Files storage for new Madison Plant**
  - Host name - **pimdemo1**
  - Priority - **0**
  - Virtual directory - **Madison\_Vault**
  - FTP user ID - **anonymous**
  - FTP password - **anonymous**
  - Local Path - **D:\SmartPlant Foundation 2007 Server Files\FTP\_Vaults\Madison\_Vault**
12. Create a new group called the *Madison\_Vault* group. Use the **File > New > User Group** command and the following information:
  - User group name \* - **Madison\_Vault**
  - User group description - **New owning group for the new Madison plant**
  - User group type - **CM**
  - Lead user - leave blank
  - Vault name - **Madison\_Vault**
  - Owning group indicator - **enabled**

Click **OK** after entering the values for the new group.

13. You are now going to add users to the *Madison\_Vault* group to allow them system functionality.

- Right click on the group name, *Madison\_Vault*, and select **Show Users** to view the relationship.
- Drag and drop your user objects to the default group objects relationship.
  - *adminuser* to the *Madison\_Vault* group
  - In the *New relationship* form for user *adminuser*, enter the following:
    - Plant list name - **AllPlants**
    - Project list name - **EFProjects**
    - User group user name - **adminuser (Madison\_Vault)**  
**AllPlants**

Repeat this procedure with the other Users, *updateuser* and *viewuser*. Verify in the *Tree View* pane that a relation between the user and group has been created.

- *updateuser* to the *Madison\_Vault* group
- In the *New relationship* form for user *updateuser*, enter the following:
  - Plant list name - **AllPlants**
  - Project list name - **EFProjects**
  - User group user name - **updateuser (Madison\_Vault)**  
**AllPlants**
- *viewuser* to the *Madison\_Vault* group
- In the *New relationship* form for user *viewuser*, enter the following:
  - Plant list name - **AllPlants**
  - Project list name - **EFProjects**
  - User group user name - **viewuser (Madison\_Vault)**  
**AllPlants**

14. OPTIONAL: Create a *User without* System Admin access and relate that user to just the **ViewOnly** group.

15. OPTIONAL: Create a new user, but do not add them as a member to any user group. Log into the Desktop Client as that user. What do you see?

When you finish this activity, you may take a short break.

## 7.8 SmartPlant Foundation Loader

The SmartPlant Foundation Loader can be used to load data into both the admin and data databases using a specially formatted text file. While the SmartPlant Foundation Loader is covered thoroughly in the *SmartPlant Foundation Configuration and Administration II* class, in this section we will look at using the SmartPlant Foundation to load basic administration data in the admin database.

The mode of the Loader can be set once per load file. The mode should be the first active statement in the file. The options are **Create**, **Update** and **Merge**. You can set the Loader using the following syntax:

- **Method|Create**
- **Method|Update**
- **Method|Merge**

The **Create** mode is used only to create new objects. If any data collisions are detected and an error occurs, you are informed that the object is not loaded.

The **Update** mode is used to update existing objects. If any objects to be updated are not found and an error occurs, you are informed that the object is not loaded.

The **Merge** mode updates an existing object or creates the object if it does not already exist. If no other mode is explicitly set, **Merge** is the default mode for the Loader.

For our purposes in this class, we will be using the Merge mode.

## SPF Loader

- Loads data from load files to the SPF database in batch mode
- Reload and log files are generated
- The system administration (configuration) database can be loaded by using a *System Admin* load file

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## Starting SPF Loader

- Click Start > All Programs > *Intergraph SmartPlant Foundation* > *SmartPlant Foundation Loader*.

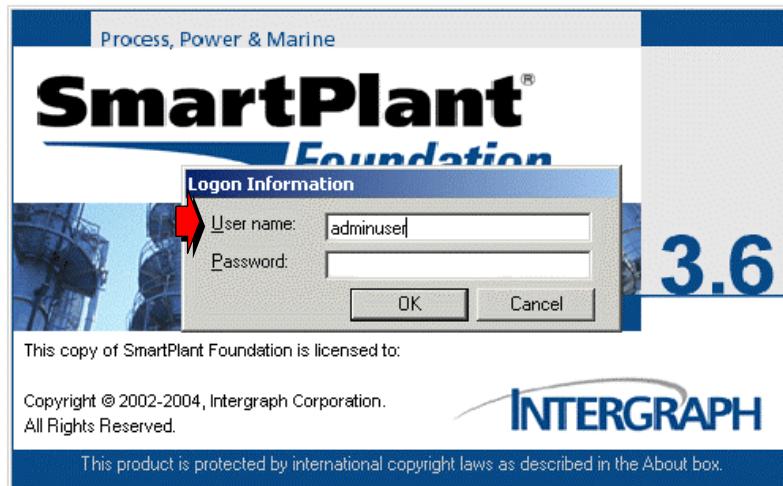


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## Starting SPF Loader

- Enter the login user name and optional password.



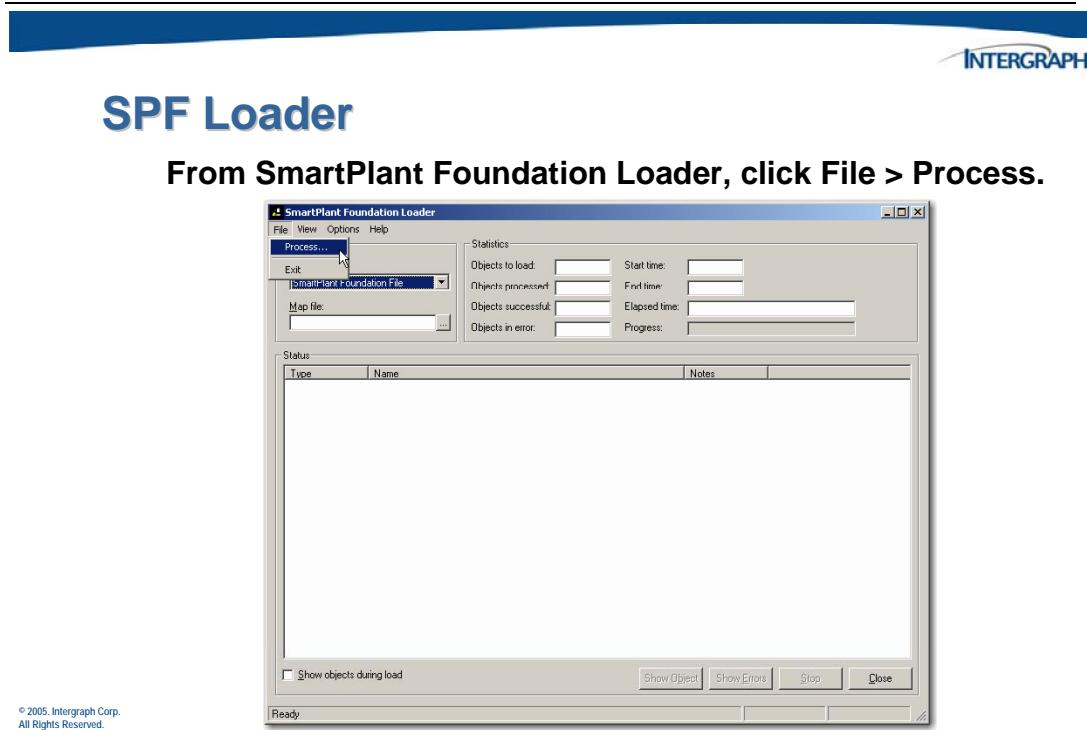
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## 7.8.1 Using the Loader to Create Plants

As shown earlier in this chapter, plants are created in SmartPlant Foundation using load files and the SmartPlant Foundation Loader. Here you see the same sample load file we saw earlier in this chapter for creating a new plant.

To create this plant in the database, we create this load file and then process it using the SmartPlant Foundation Loader, as shown here.

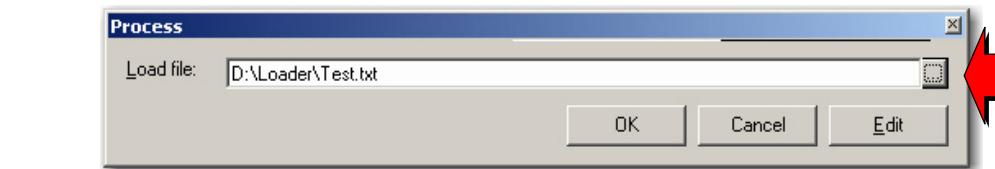


The Process dialog box appears.

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**Click Browse on the Process dialog box that appears.**



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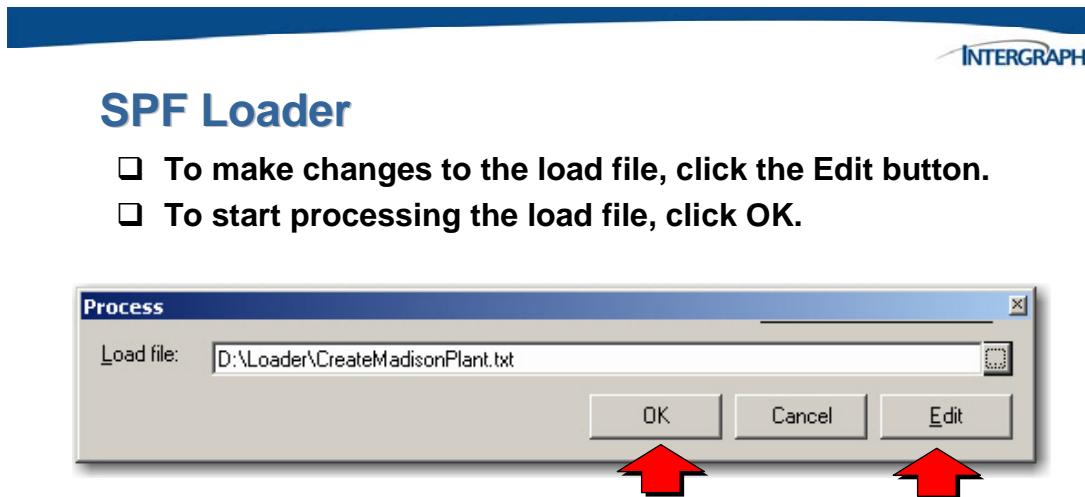
**Find the load file that you want to run, and click Open.**

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---

If you need to make any changes to the load file before you process it, you can open it for editing by clicking the Edit button on the Process dialog box. When the load file is ready to be processed, click the OK button to start loading the new information in the database.

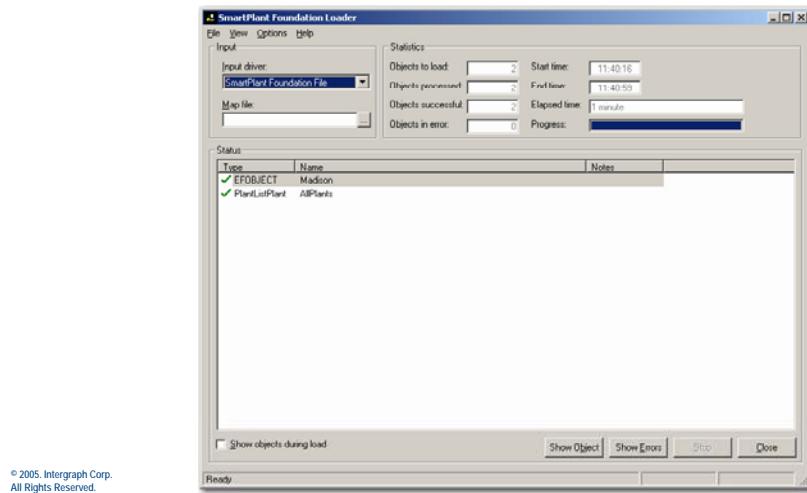
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## SPF Loader

**When processing is finished, the results appear in the main SmartPlant Loader window.**



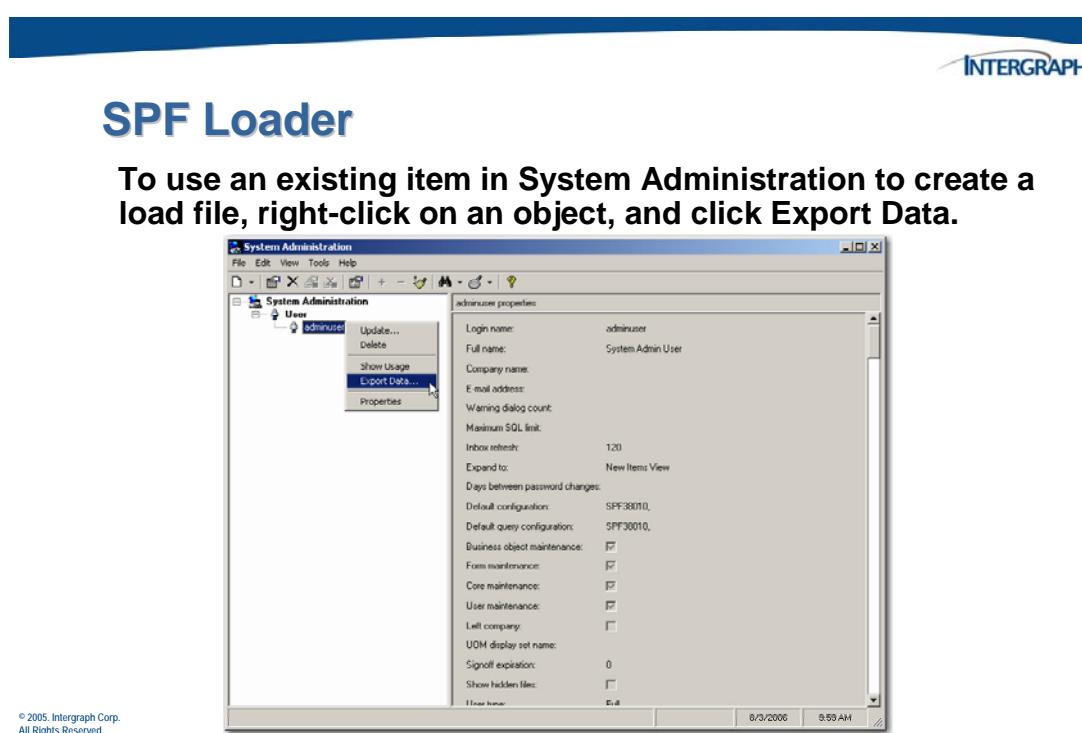
## 7.8.2 Creating Loader Templates from System Administration

We just created a new plant by creating a new load file that defined it and running them through the SmartPlant Foundation Loader. But you can also create load file using, as a template, information that is already in the database.

For example, if you wanted to create a new user, you could create load file that defines all the necessary properties for the new user, or you could copy the information out of the System Administration application and use to as a basis for defining a new user.

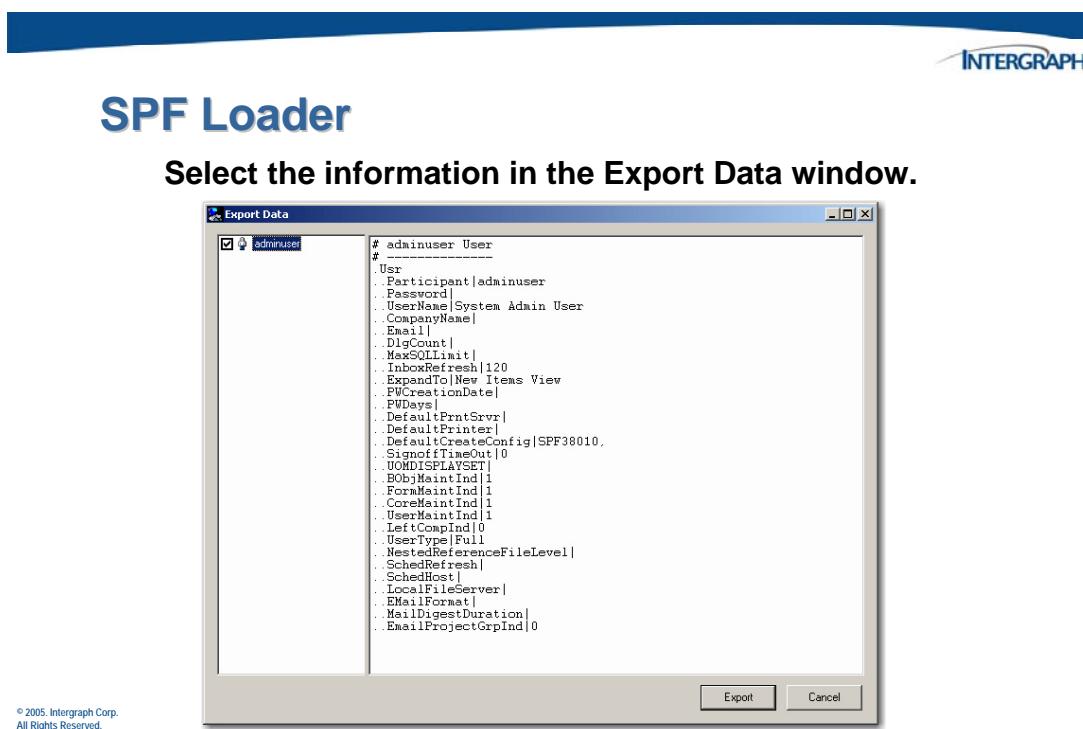
To do this, open the System Administration application and find an example of the item you want to create. In our example, we wanted to create a new user, so we used the Find feature to find a user already in the database.

Note, to save work when editing the new load file, choose an example as similar to the new object as possible. For example, if you want to create a new user with lots of administrative privileges, choose as a template a user with many of those permissions, rather than a user with no or few permissions.

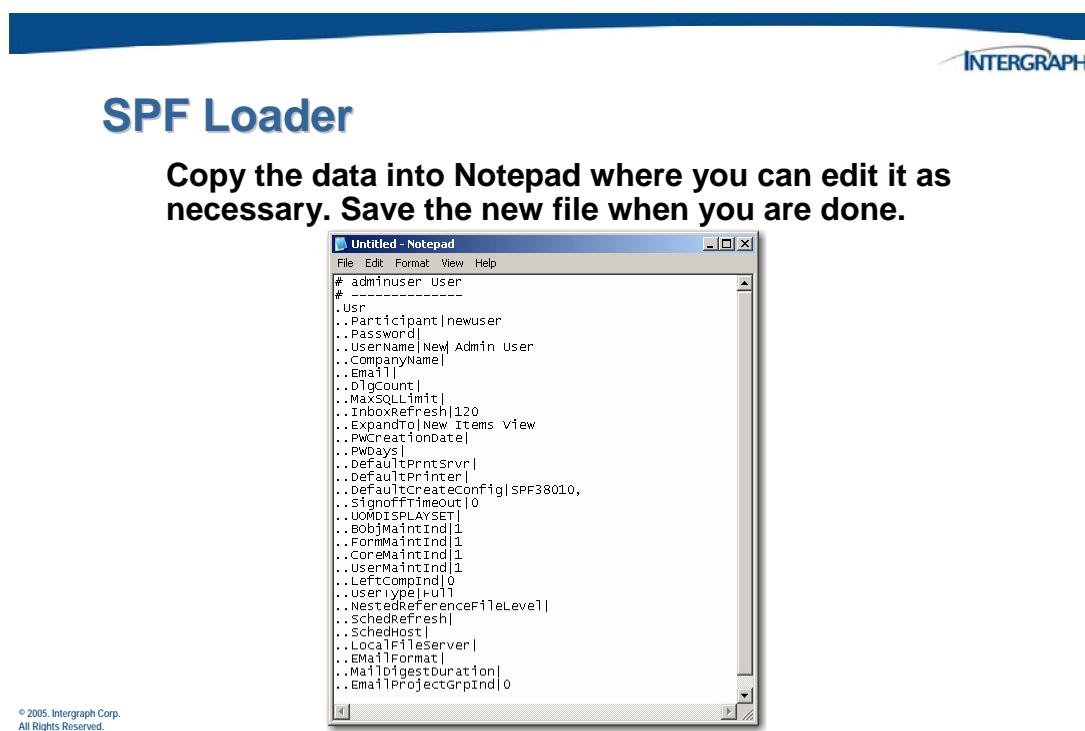


Clicking Export Data opens the Export Data dialog box with the property information for the selected object.

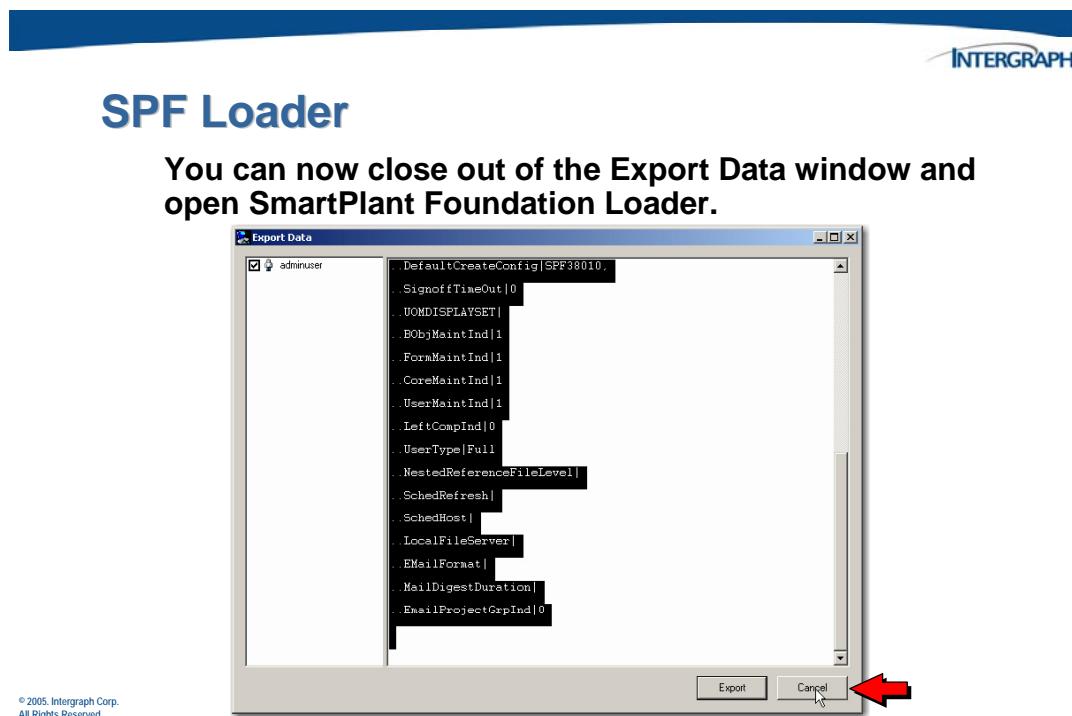
---



Select the data in the data pane on the right, and copy the information. You may then paste it into an application such as Notepad where you may edit the data for the new object you are creating. When you are finished making changes, save the file in a location where you can find it later.

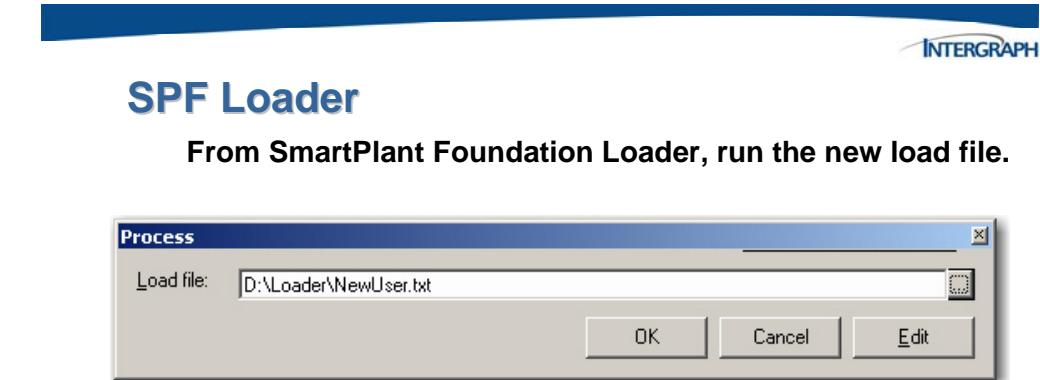


Once you have copied the data, you may close the Export Data dialog box.



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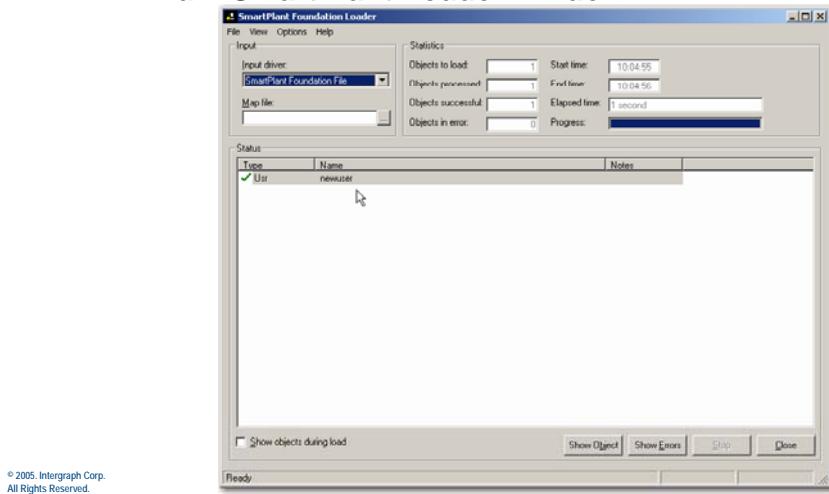
Now use the SmartPlant Foundation Loader to add the new user to the database.





## SPF Loader

When processing is finished, the results appear in the main SmartPlant Loader window.

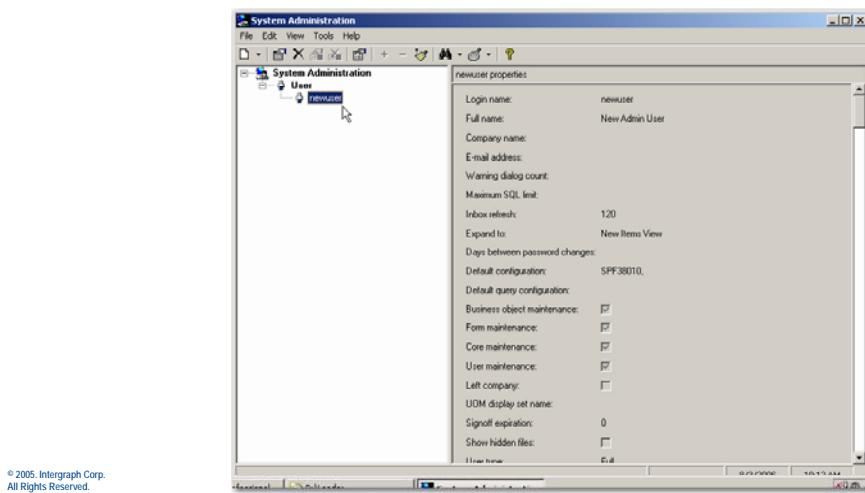


Once you receive the green check mark in the SmartPlant Foundation Loader interface, you can return to the System Administration application to confirm that the new user now appears there. Use the Find or Query features to look for your new user.



## SPF Loader

In System Administration, confirm the new user was added to the database.





## 7.9 Activity 2 – Using the SmartPlant Foundation Loader

The objective of this activity is to use the SmartPlant Foundation loader to create a new plant and project. Additionally, you will extract object information from the System Administration application and use it to create a load file.

**If you are not currently logged into your machine:**

1. Log on to your operating system:

*spfuser* with no password

2. Open Notepad, and create a load file to add a new Plant. Refer to section 7.3 for an example. Save your file where you can find it later.
3. Start the SmartPlant Foundation Loader by selecting **Start > All Programs > Intergraph SmartPlant Foundation > SmartPlant Foundation Loader**. Login as adminuser.
4. Find a file to process: Click **File > Process**.
5. Find the load file to create a new plant. View the file before running it, and then use the file to create the new plant.
6. Go to the System Administation utility and verify the new plant is there.
7. In the System Administration application, find a user to use as a template to create a new user.
8. Export the data for that user. Put the information into Notepad, and make changes to create a user for yourself. Save the new load file for creating your user account.
9. Return to the SmartPlant Foundation Loader application, and run the load file to create your user account.

10. Confirm that your new user was created in System Administration.

## 7.10 File Types

As files are registered into SmartPlant Foundation, they are identified by their file extension and labeled accordingly, which makes the files easier to locate. **File Types** are used to set up this configuration.

When a file is registered in the system, the user can set the file as a non-editable or a non-viewable file. A non-editable file, such as a scanned image, cannot be checked out for editing. A non-viewable file is not visible in the client interface, but can be used to store information relevant to the business object. An XML file stores data, but cannot be accessed by client users.

---



### File Types

**File Types** are used to control the editing, viewing, and printing of files.

**File Type objects have these characteristics:**

- File type name**
- File type description**
- File extension**
- Default application**
- Viewable and editable flags**

---

The configuration of the file type provides options for setting files as non-editable or non-viewable so that the user cannot change the status of the file when they register the file in SmartPlant Foundation. These options are commonly set for file types registered in SmartPlant Foundation via the Framework application.

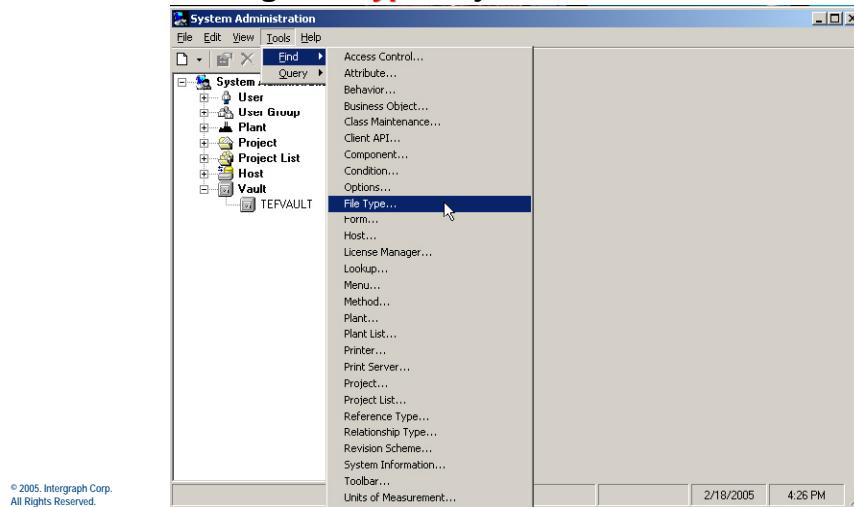
File types have default icons assigned according to the file extension. To create a new icon for a file type, create a .gif file using the same name as the original file type. Then, place the new icon in the SmartPlant Foundation directory path: <your installation directory>\SPFASP\Icons. Web Client users must clear their cached files in order to view the new icons.

To review a list of default *File Types*, use the **Query** or **Find** functions.

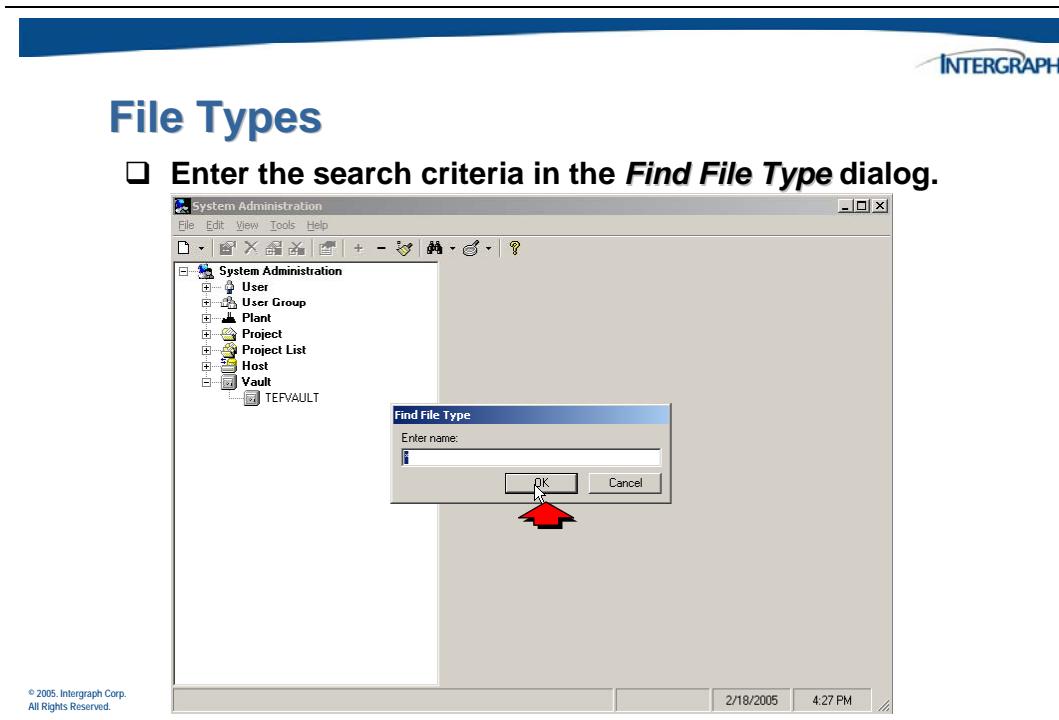


## File Types

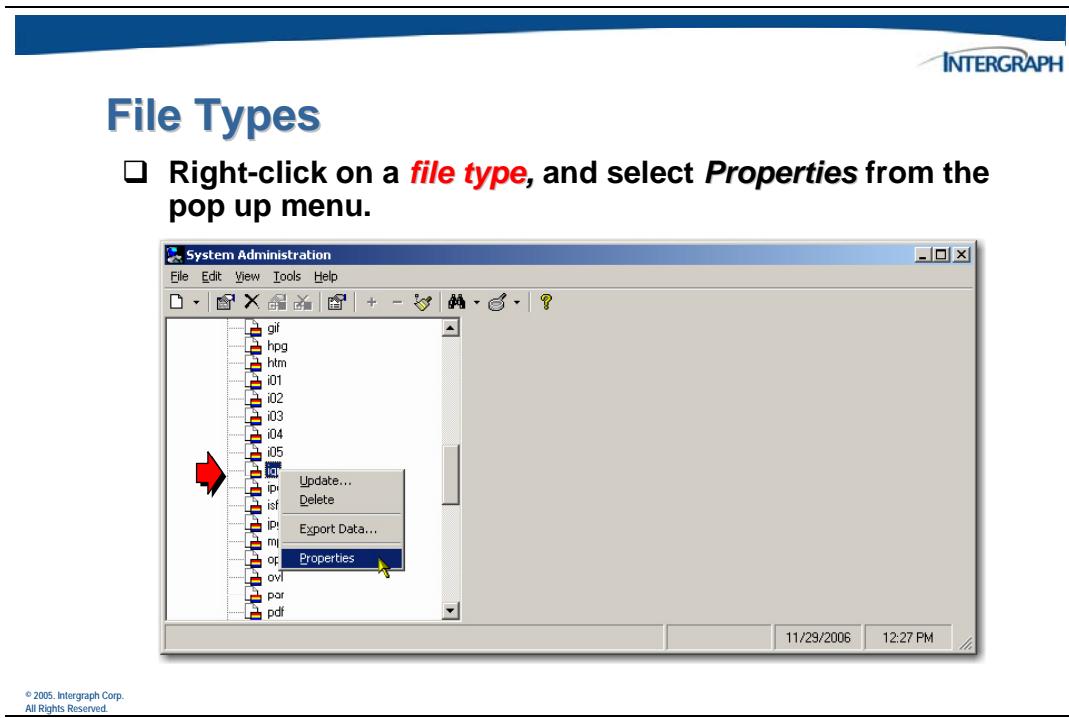
- Select **Tools > Find > File Type** from the menu to see the existing **File Type** objects.



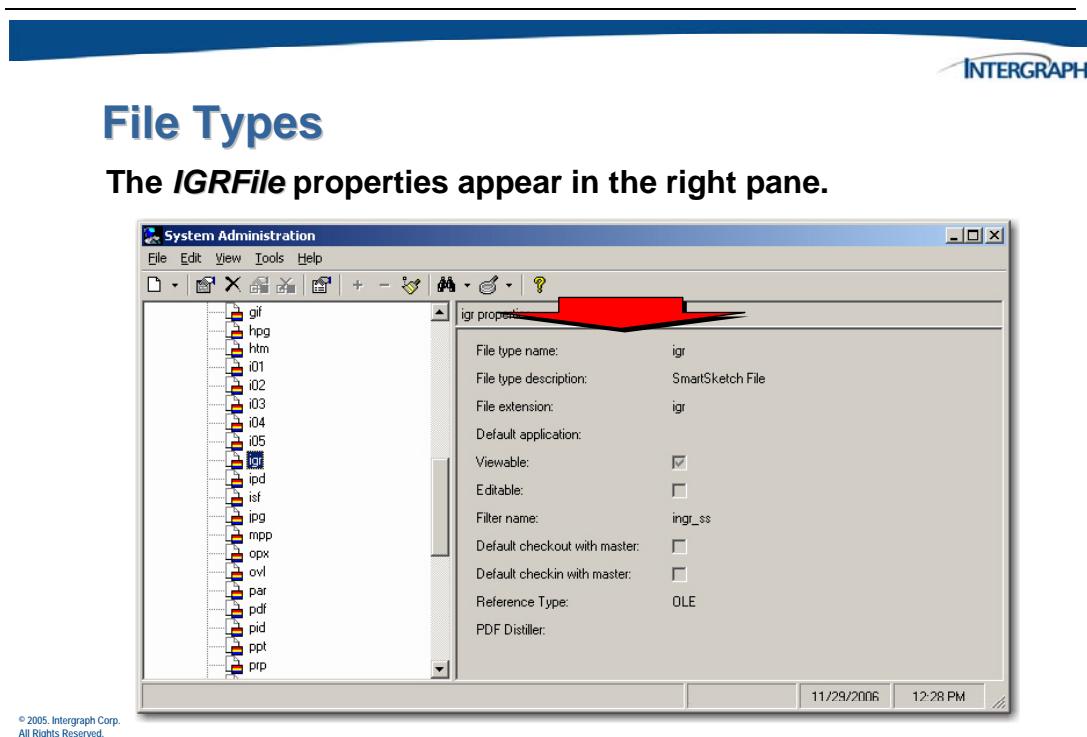
The *Find File Type* dialog will appear.



A list of *File Types* will appear in the Tree View.



This selection will display the properties for the selected *File Type*.



## 7.11 Creating Printers and Print Servers

Batch printing in SmartPlant Foundation allows users to identify a number of documents that have one or more attached files and print the attached files at a specific date and time. Only those attached files that are marked as view-only are printed.

---



### Printers

**Printers** are used for automated printing of viewable files.

Valid file types are associated with the printer by dragging and dropping a file type object onto a printer object.

Printer objects have these characteristics:

- Printer name**
- Printer description**
- Off-line indicator**
- Command (full path of printer)**

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The following fields are used to define a printer object:

- Printer name** - Contains the name for the printer.
- Printer description** - Contains a brief description of the printer.
- Off-line indicator** - Use this check box to disable the printer so that it cannot be selected in the client.
- Command** - Contains the full path to the printer or plotter.

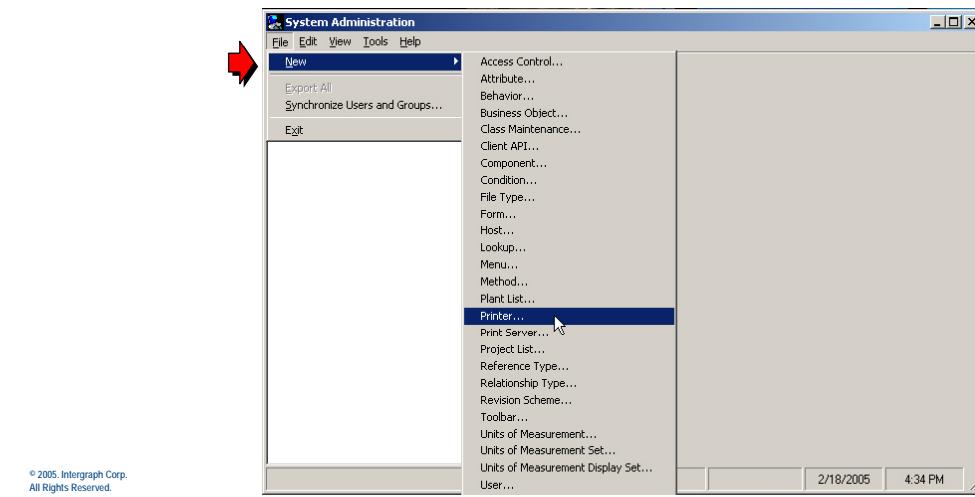
To provide the most flexibility for batch printing, you must create several objects, including print servers, printers, and file types, in System Administration. Then, you can create relationships among the print servers, printers, and file types.

The following sections will demonstrate how to create and relate these types of objects.



## Creating Printers

- ❑ Choose the **File > New** command, and select **Printer** from the list.

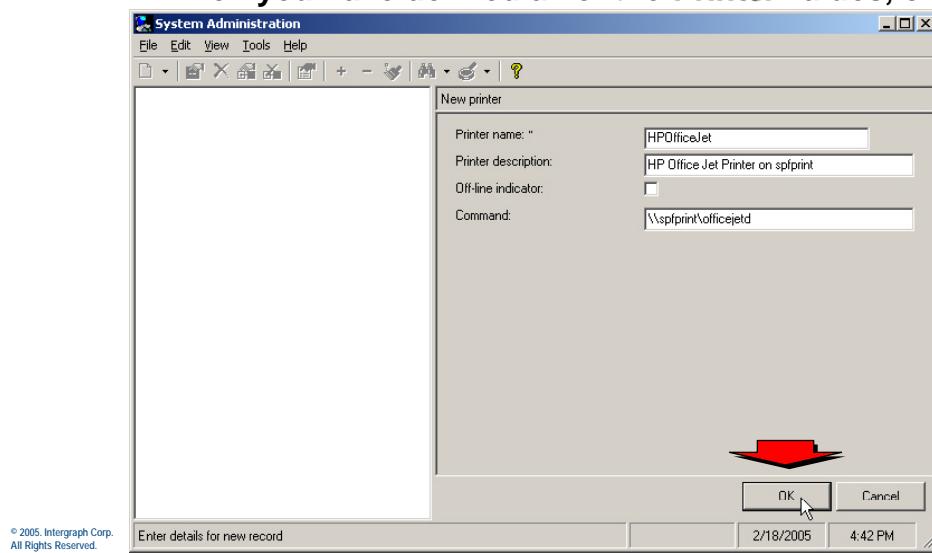


The *New printer* form will appear.



## Creating Printers

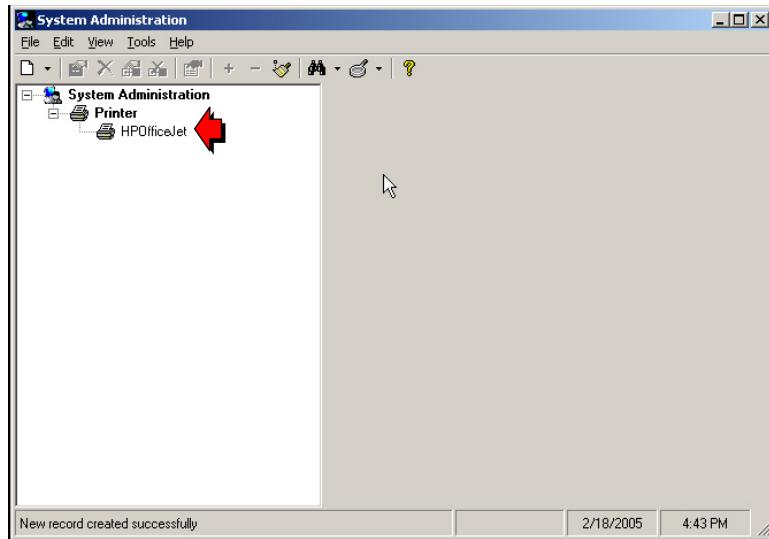
- ❑ When you have defined all of the **Printer** values, click **OK**.



## Creating Printers



- The new *Printer* appears in the *Tree View*.



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---

## 7.11.1 Print Servers

**Print Servers** in SmartPlant Foundation are set up to support batch-printing functionality. Software is loaded onto the print server host and accessed via the URL defined in the Print Server object. A **vault must be defined** on the print server host and identified on the print server object in order to receive the files to be printed.

---



### Print Servers

**Print Servers** are used to support batch printing functionality.

**Printers** and **File Types** are associated to print servers by using a drag and drop operation.

**Print Server objects** have these characteristics:

- Print server name**
- Print server description**
- Print server URL**
- Print server vault name (relates to Vault)**
- Default printer (relates to Printer)**

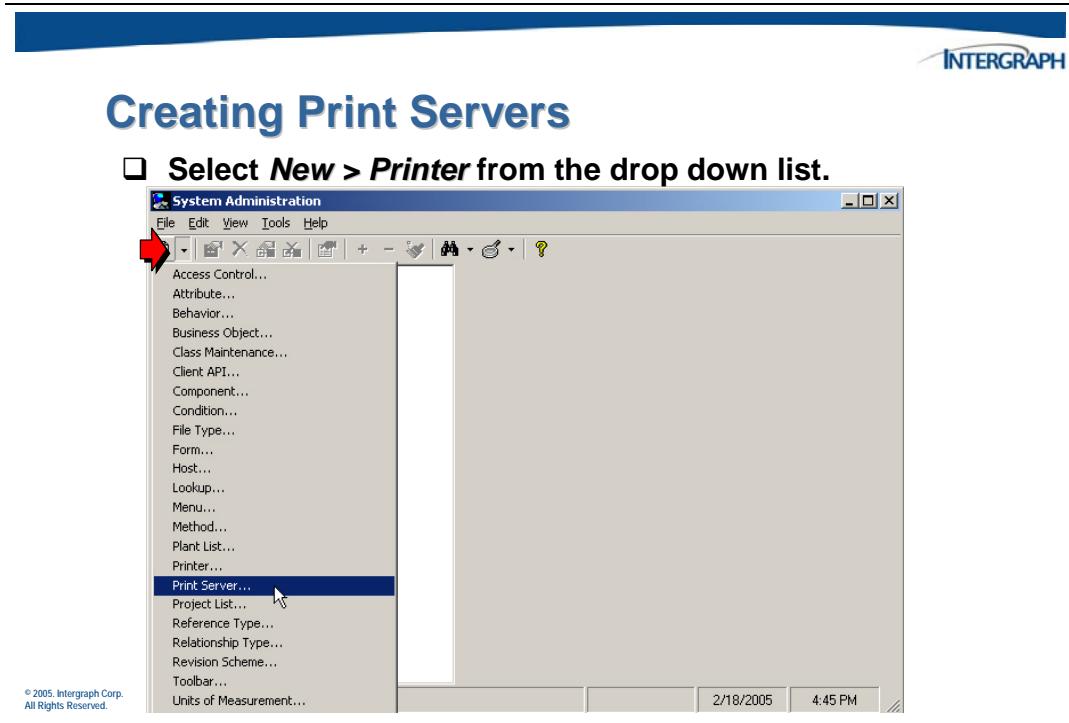
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---

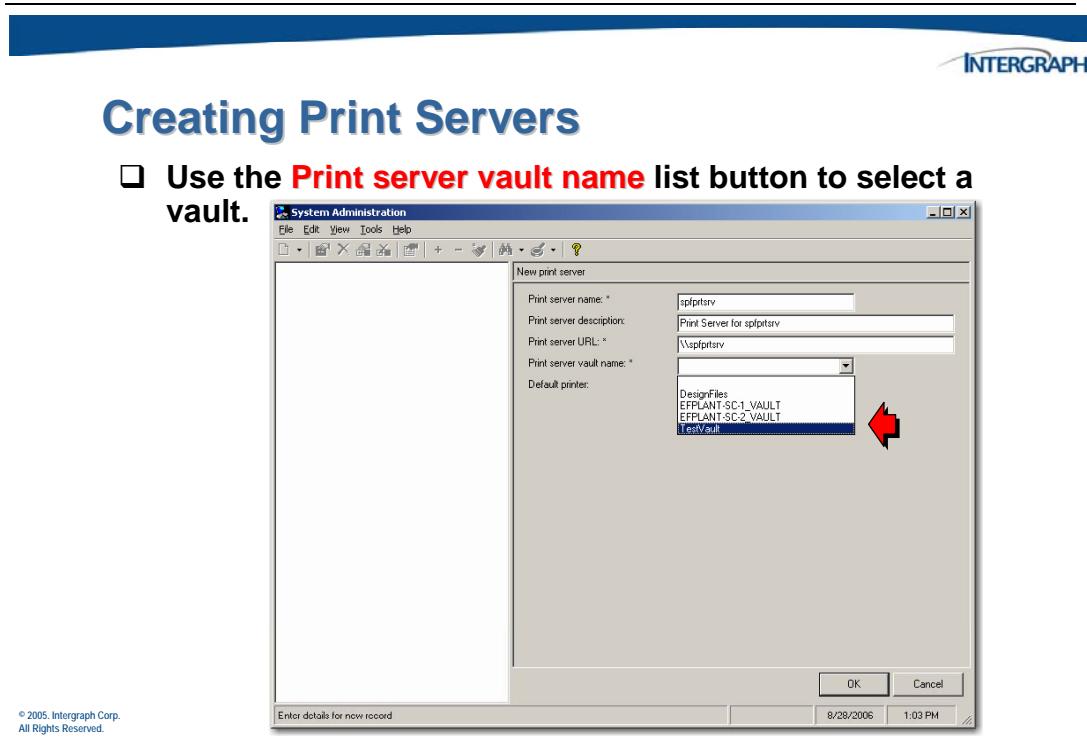
The following fields are used to define a print server object:

- Print server name** - Contains a unique and descriptive name for the print server.
- Print server description** - Contains a brief description of the print server.
- Print server URL** - Contains the URL path for the print server.
- Print server vault name** - Select a vault name from the available list.
- Default printer** - Not populated until a relationship has been created between a printer and a print server. You can, however, select a default printer when you update a print server object by using this list box.

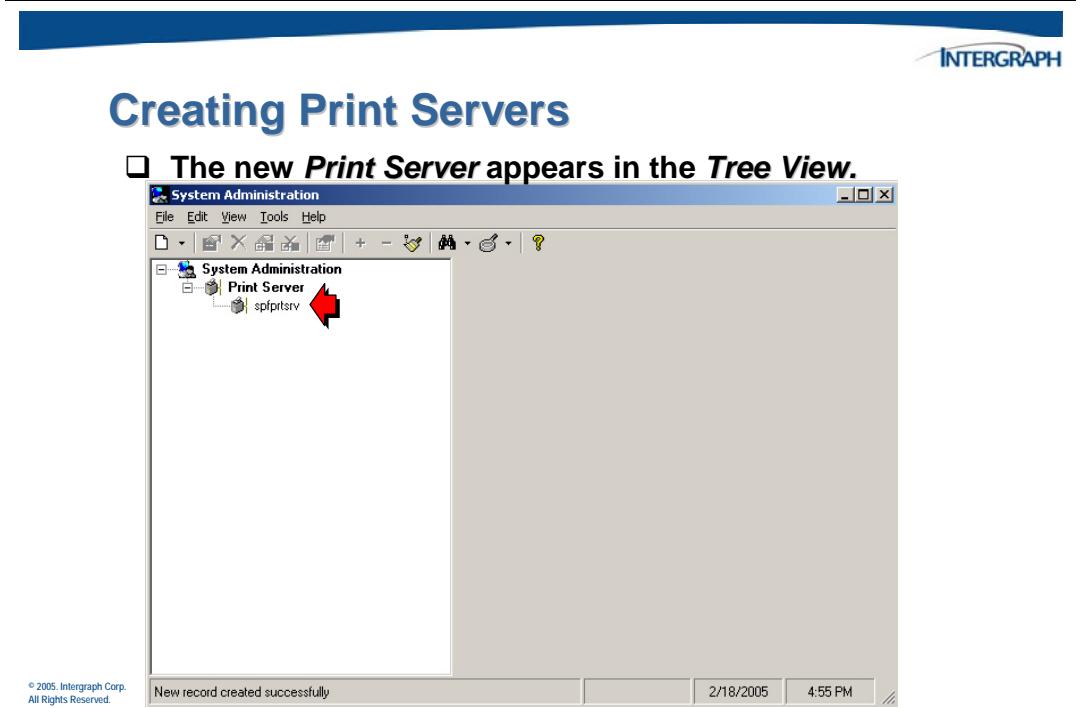
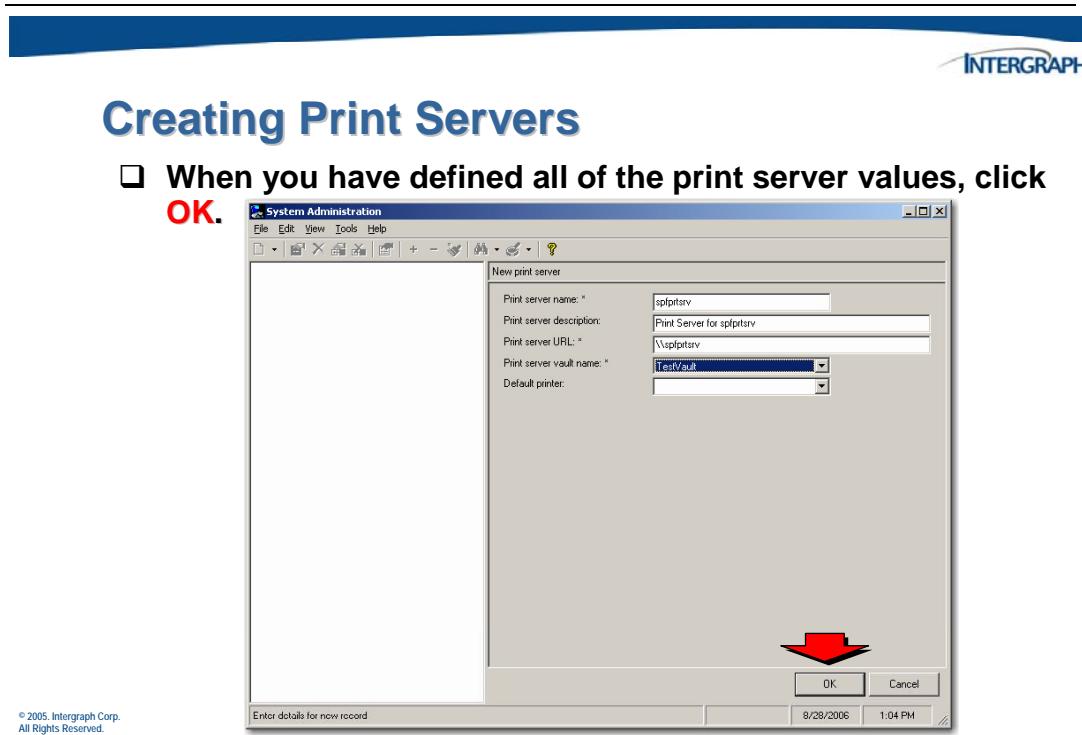
To create a *Print Server* object, follow these steps:



The *New print server* form will appear in the right pane.



Enter the necessary attribute values for the new *Print Server*.

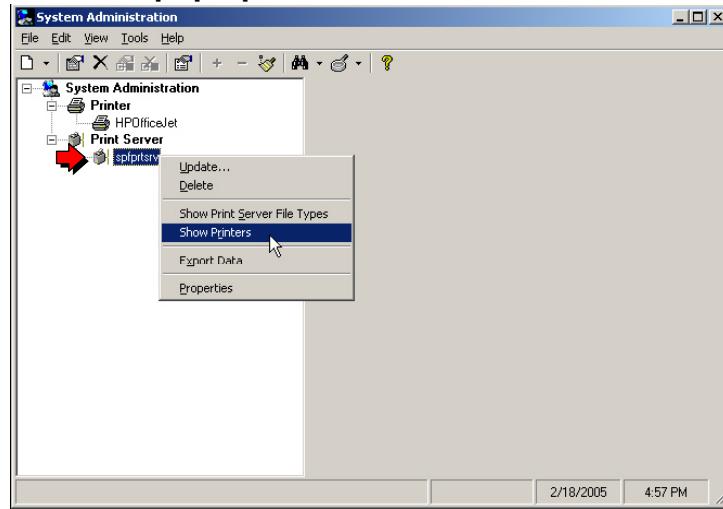


By creating relationships between file types, print servers, and printing applications, you can specify which print server, printer, and printing application the software should use when it prints files of a particular type.

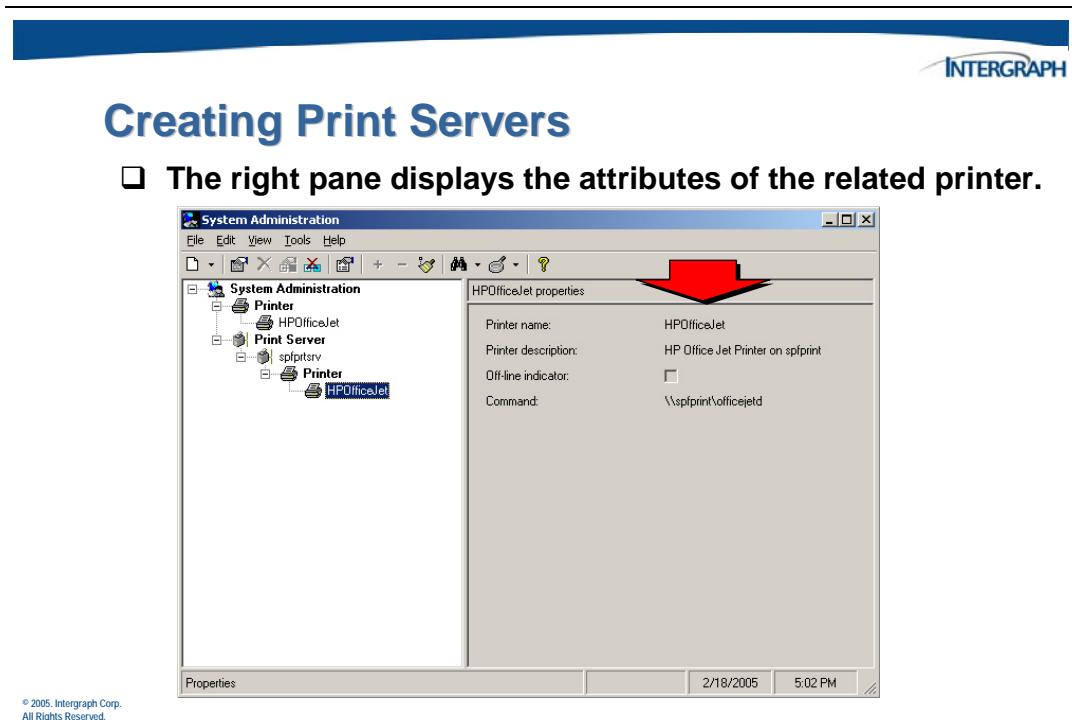
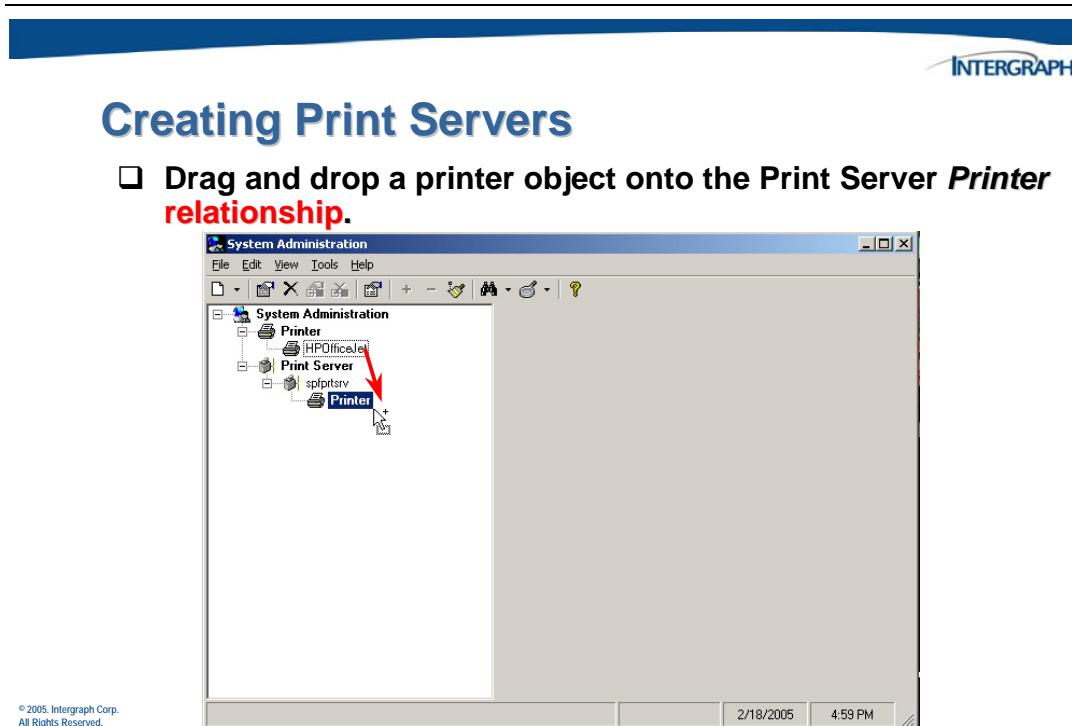


## Creating Print Servers

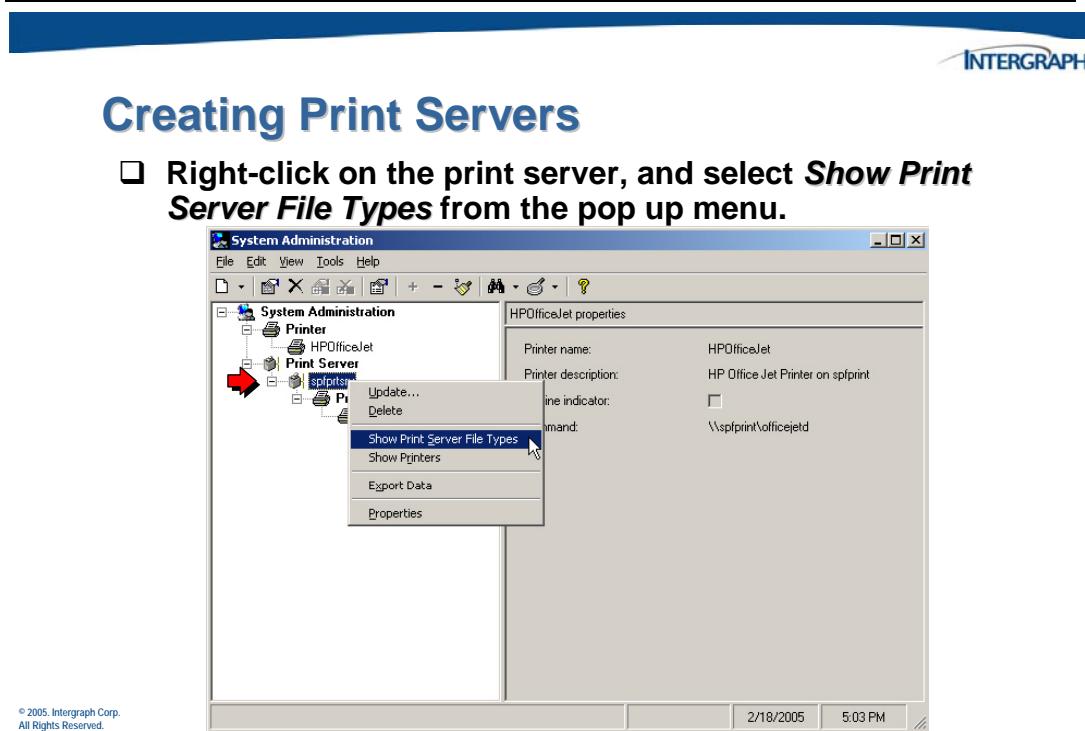
- Right-click on the *Print Server*, and select **Show Printers** from the pop up menu.



The Tree View will expand to show the *Printer* relationship.



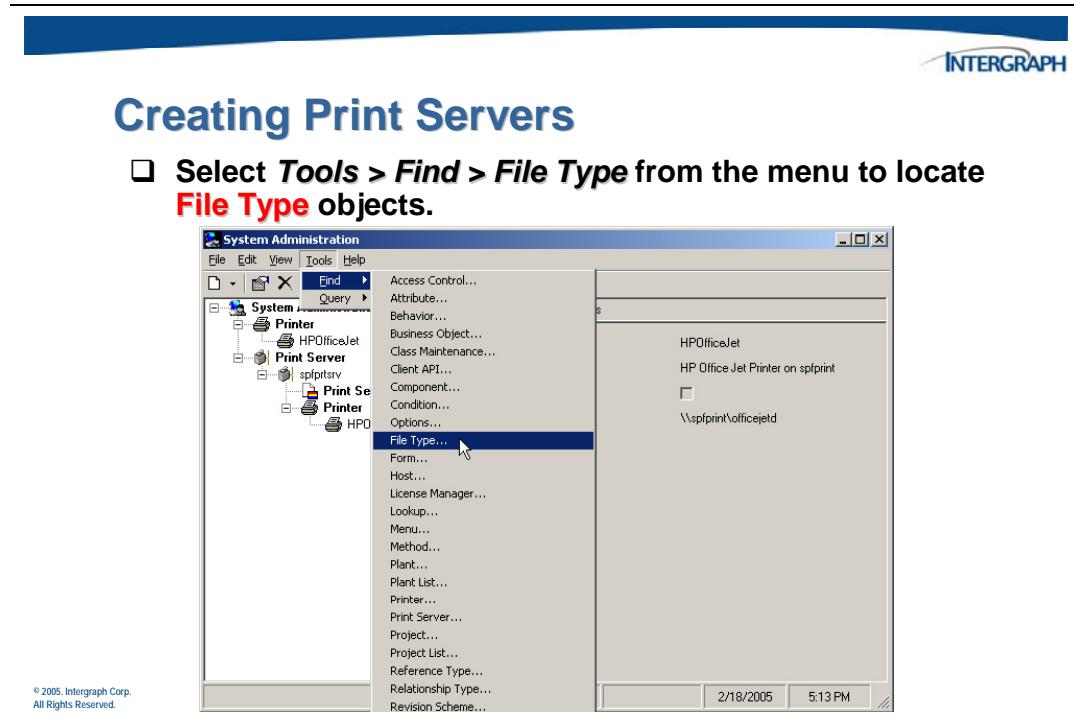
You can create relationships between file types and printers so that specific printers print file types by default. You can also specify default printers for print servers and individual users. The user can always override the default print server, printer, and printing application during batch printing in the Web Client.



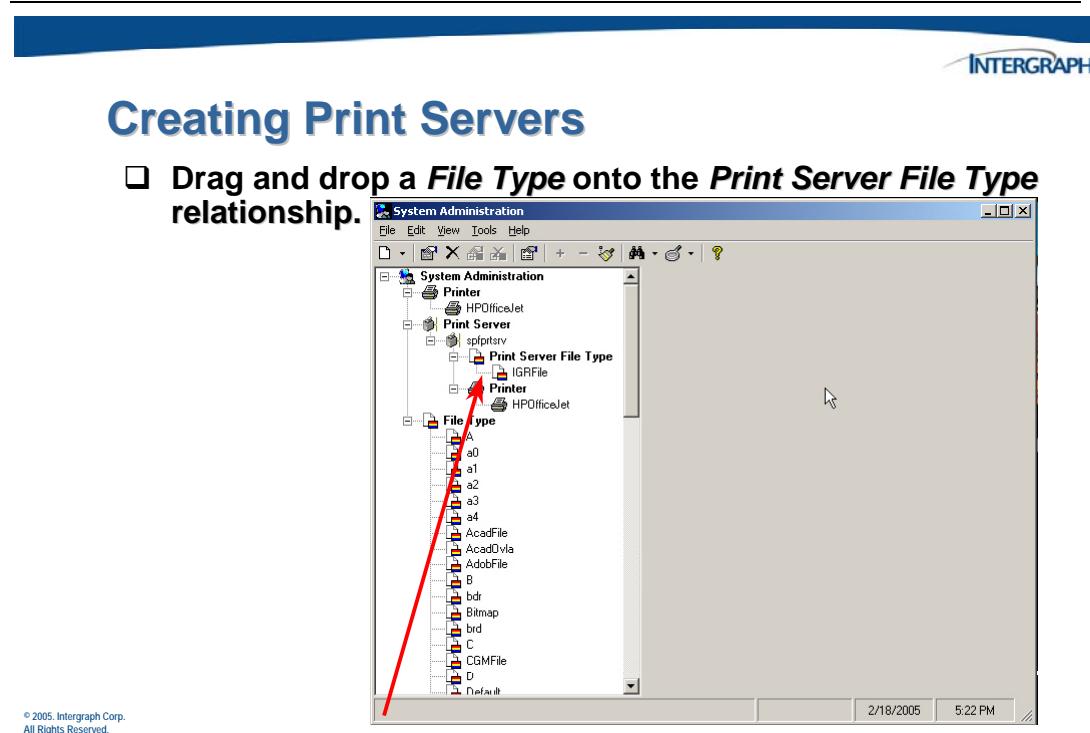
---

This will display the relationship to use in a drag and drop operation.

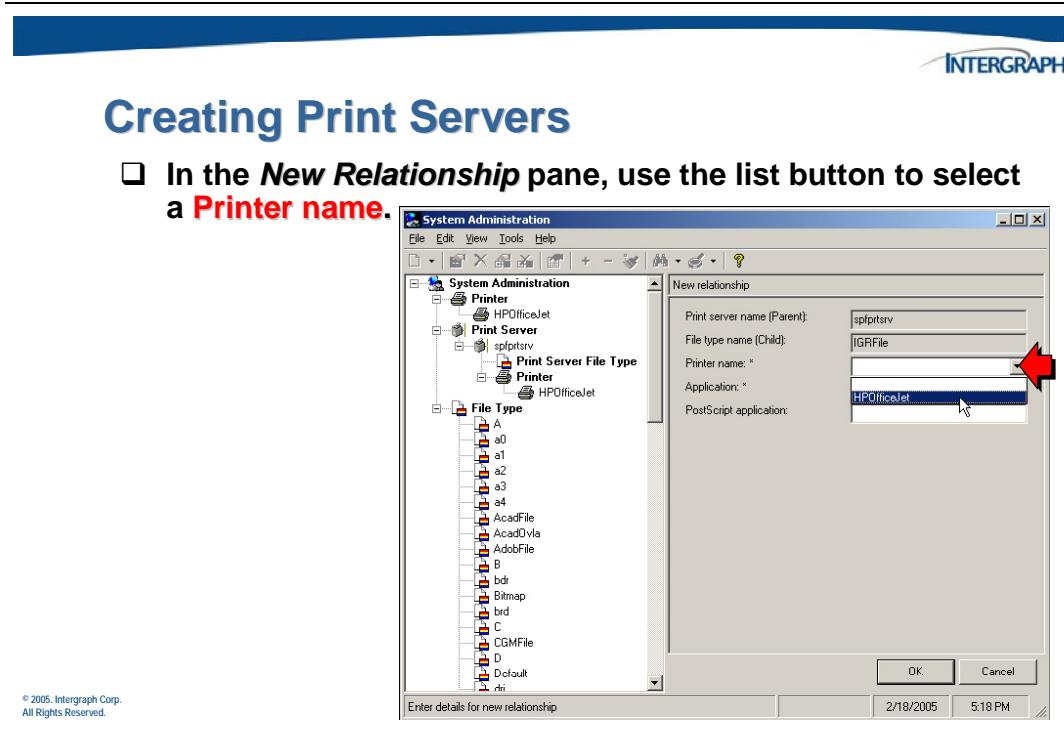
Next, find the file types to associate with the print server.



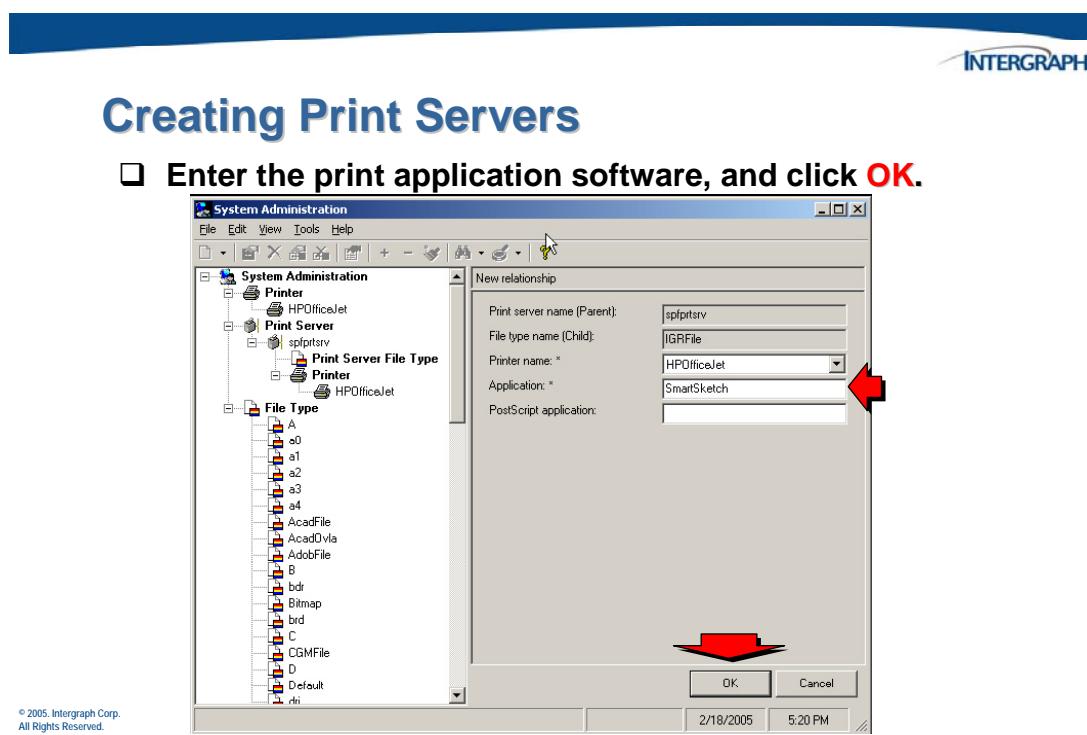
Click to select a file type to be associated.



The *New relationship* form will appear.



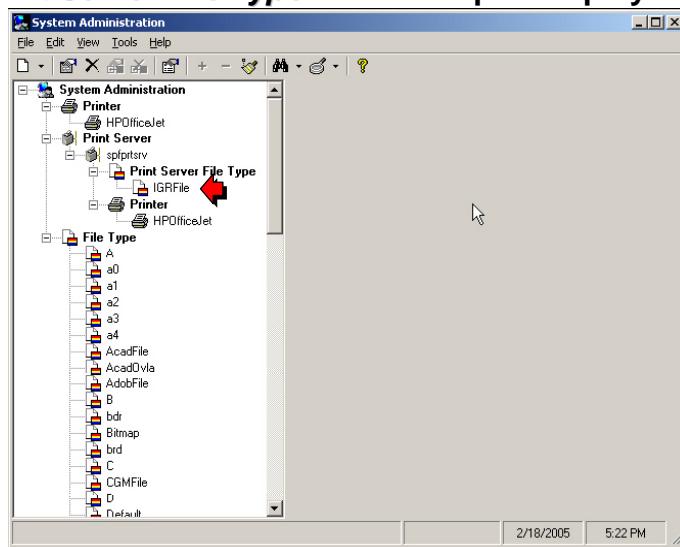
Complete the relationship form with the applicable information.





## Creating Print Servers

The **Print Server File Type** relationship is displayed in the **Tree View.**



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## 7.12 Activity 3 – SmartPlant Foundation Utilities

The goal of this activity is to familiarize you with starting the different SmartPlant Foundation utilities. You will start a SmartPlant Foundation session and use the mouse, menus and Help. You will be doing this with the Desktop Client and the System Administration interface. The CM Admin interface will be covered in a later activity.

1. Log on to your operating system (not SmartPlant Foundation) as *spfuser* with no password (if not already logged in).

### Desktop Interface

2. Use the *Start > All Programs > Intergraph SmartPlant Foundation > SmartPlant Foundation Desktop Client* menu hierarchy to start the SmartPlant Foundation *Desktop Client*.
3. When the **Login** screen appears, use the **User name** *alex* and leave the Password blank. Verify that the **Server** field displays your machine name. When the User name field has been entered, click **OK** or press *Enter*.

---

**Note:** A password will not appear in the field as you key it in but will be represented by asterisks.

---

4. Now log on as the OPTIONAL user you created in the last exercise. Note the differences in the Clients menus/toolbars and other commands.

### System Administration Interface

5. Use the *Start > All Programs > Intergraph SmartPlant Foundation > System Administration* menu hierarchy to start the SmartPlant Foundation *System Administration* module.

6. When the **Login** screen appears, use the **User name** *alex* and leave the Password blank. When the User name field has been entered, click **OK** or press *Enter*.
- 

**Note:** A password will not appear in the field as you key it in but will be represented by asterisks.

---

7. Once you are logged in to the *System Administration* interface, examine the different areas of the window.
9. Use the **Query** toolbar command to locate business objects.

- Select the **Query** command down arrow .
- From the displayed list, choose *User*.
- When the *Query user* screen displays, enter \* in the *Login name:* field.

What happens to the *Tree View* display?\_\_\_\_\_

---

10. Use the pop-up (right mouse button) menu to display objects properties.

- Right click on the *adminuser User* object.
- Select the **Properties** command from the pop up menu.

What happens to the *List View* display?\_\_\_\_\_

---

11. Reset the *Tree View* back to its original state.

- Select the **Clear Tree** command from the tool bar.

Now what happens to the *Tree View* display?\_\_\_\_\_

---

12. Use the **File > Exit** command from the menu to exit out of the SmartPlant Foundation *System Administration* interface.

13. Login as one of the other users you have created. What happens?
  
14. Once you have exited from SmartPlant Foundation, you may take a short break until the other students have finished this activity.

**Summary:**

In this activity you accessed the SmartPlant Foundation system using the various interfaces and familiarized yourself with the windows menus and mouse.



# 8

C H A P T E R

---

## SmartPlant Foundation License Management



## 8. SmartPlant Foundation License Management Overview

Each user that is going to access the server must have a license. With SmartPlant Foundation you must have token licenses.

Token License Manager licenses and controls user access to all token-based applications. You gain access to token-based applications by activating a token. All tokens have a timed access period that predefines the system access time. Tokens are available to all system users by way of a token pool. This token pool is part of the Token License Manager and resides on the primary SmartPlant Foundation Server.

Two categories of tokens are available: daily and perpetual. Daily tokens are available to all system users. They have a predefined timed access period of 1 workday (12 consecutive hours). Perpetual tokens are available only to a select group (which you define) of system users and do not expire.

**Note:**

- While the software does keep track of what node tokens were checked out on, tokens are NOT tied to a host name. There are no restrictions to link tokens to specific hosts.

Token License Manager uses a third-party application developed by Globetrotter Software. This software includes **Flexlm License Manager** and **FlexMeter**. Flexlm handles general check out/check in functions necessary for licensing. It also keeps track of information about the checked out license, such as user name, time remaining, and so on. FlexMeter keeps track of the number of daily licenses that are available in the license pool.



## License Management

SPF requires **License Management** in order to run the SPF client interfaces.

The licensing model is centered on the concept of a *token* license. The license manager will handle two categories of tokens:

- Perpetual Tokens
- Daily Tokens

---

The license manager will handle two categories of tokens: perpetual and daily. The SmartPlant Foundation server module performs the checkout and checkin of the licenses. License checkin/checkout is automatic and invisible to the system users.



## Perpetual and Daily Tokens

- Perpetual** licenses (token) will be based on a username/password combination and do not expire.
- Daily** tokens provide “timed access” to the system software.
  - Daily tokens are valid for a duration of 12 consecutive hours after the initial client login.

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---



## Token License Manager

Token License Manager uses a third-party application developed by Globetrotter Software. This software includes **Flexlm License Manager** and **FlexMeter**.

- Flexlm** handles general check out/check in functions necessary for licensing. It also keeps track of information about the checked out license, such as the user name of the user, the time remaining, and so on.
- FlexMeter** keeps track of the number of daily licenses that are available in the license pool.

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## 8.1 Perpetual Tokens

Perpetual license tokens are based on a username/password criterion and do not expire. The user name associated with each perpetual token will be placed in the license option file (perpet.dat). Once the user logs into the SmartPlant Foundation system, which is done by providing a unique user name/password from one of the SmartPlant Foundation clients, the SmartPlant Foundation server checks the perpet.dat file to see if that user has access to a perpetual. If so, that license is checked out to the node where the user is working. If the user does not have access to a perpetual license, then a daily token will be checked out.

Flexlm will keep track of the username, node, and time that the license was checked out for each perpetual license. The user will be able to check out a perpetual license from any node in the network providing the same user is not already using a perpetual license. Only one simultaneous, identical logon is allowed for each perpetual license.

You are allowed to configure the license file with the exact number of perpetual token licenses purchased. You must define a user for each purchased perpetual license. If you purchased extra perpetual tokens (more than you currently have users who need them), then you may assign perpetual tokens to non-existent users, so long as each perpetual token is assigned to some user name. You are able to update the license file with additional licenses, if subsequently ordered.

---



### Perpetual Tokens

- Perpetual licenses (token) are based on a username/password criterion and do not expire.**
- When the user logs into the SPF system, the system checks to see if that user is assigned a perpetual token. If so, the server checks out that token.**
- Only one simultaneous, identical logon is allowed for the Perpetual License.**
- Flexlm will keep track of the username, node, and time that the license was checked out for the perpetual license.**
- The user will be able to check out a perpetual license from any node in the network, providing the same user is not already using a perpetual license on another machine.**

## 8.2 Daily Tokens

If the user logging in to an SPF client has not been assigned a perpetual license, then they will check out a daily license token. This category of license is valid for a duration of 12 consecutive hours after the initial client login. A user cannot simultaneously log in to the system on multiple machines using the same token. However, if the token has been checked out, but it is not active, the same token can be reused by the same user at other times within the 12 hour period.

If the user is not actively using the system, or if the user logs out, time is still being consumed until it expires 12 hours after the initial checkout.

When a daily license token is checked out, a token will be depleted from the daily token file. If there are no tokens left in the daily token file, then access will be denied.

This type of license does not require that the daily license have a particular user associated with it in the license file in the same way as the perpetual license. Any user who is not assigned a perpetual token can check out a daily token.

FlexMeter will track the number of these daily licenses.

The daily token file is tied to a hostid, which provides input to the tool used to create the daily token file. Relating the daily token file to a hostid is a security measure so that the daily token file cannot be copied and used on other license server systems.

The daily token file can be used only on a license server system that has the same hostid that was put in the daily token file on creation. Daily token license files are created only by the Intergraph order-processing center.

---

**Note:** Upon exhaustion of the 12-hour daily token period, no notification will be displayed to the user, but another daily token will be checked out if the user is logged into the system at the time of expiration.

---



## Daily Tokens

- Daily tokens are valid for a duration of 12 consecutive hours after the initial client login.
- If the token has been checked out but is not active, the same token can be reused by the same user again within the initial 12 hours.
- If the users are not actively using the system or the user logs out, time is still being consumed until it expires 12 hours after initial checkout.
- When a daily license token is checked out, one token is depleted from the daily token file.
- If there are no tokens left in the daily token file, then access will be denied to all daily token users. Access to the system is restricted to those using perpetual tokens.

## 8.3 Token Pool

The token pool is an accumulation of perpetual and daily tokens. These tokens are an accumulation of data stored in the license file and the meter file. An example of the Flexlm license file is provided below:



### Token Pool

The **Token Pool** is an accumulation of perpetual and daily tokens. These tokens are an accumulation of data stored in the license file and the meter file. The following is an example of the Flexlm license file:

```
----- Begin tknpool.dat -----
SERVER aimtrnr DISK_SERIAL_NUM=7d10a12 8575
          host-name           port-number
DAEMON Token D:\LicenseManager\Token.exe D:\LicenseManager\perpet.dat
          Token-daemon-path-including-name   path-to-perpet.dat
FEATURE SPF_perpetual Token 1.000 1-jan-0 5 EC1E489F1DFAD5296FC0 \
          SIGN=5554C1ECB1126594
FEATURE SPF_daily Token 1.000 1-jan-0 16000 4CAEE86F95008CE5F387 \
          SIGN=00E69E4E38DC6DB4
----- End tknpool.dat -----
```

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One perpetual license will be delivered with each token manager to allow for installation of the software. The user associated with the initial perpetual license will be “super\_user”. Flexlm cannot handle spaces in usernames, so the license checkout and checkin routines will replace any spaces in username with an underbar “\_”. Any additional perpetual licenses will have to be ordered and will be placed in the license file as an INCREMENT line.

The daily token pool consists of a single encrypted file that holds the number of available tokens, serial number of the file, and the current lock number of the counter. The lock number and serial number are used in the generation of the update keys used to initialize/update the token file. The actual number of daily licenses that will be checked out is controlled by the vendor daemon (daily.exe) and will be dependant on the number of daily tokens available in the daily token license file (daily.dat).

### 8.3.1 License Option File

The license option file (perpet.dat) is a file where the valid users for the perpetual license are kept. You modify this file to assign perpetual tokens to specific users. The number of users specified in this file should match the total number of perpetual licenses specified in the license file (tknpool.dat). The total number of perpetual licenses is an accumulation of the number of licenses specified in the FEATURE and INCREMENT lines for the perpetual feature in the license file.



#### Licenses Option File

**An example license option file (perpet.dat), where you define which users will use perpetual tokens:**

```
----- Begin perpet.dat -----
# First define the group 'Perpetual'
GROUP SPF_perpetual adminuser
GROUP SPF_perpetual updateuser
GROUP SPF_perpetual user0
GROUP SPF_perpetual bill
GROUP SPF_perpetual mitch
# Then INCLUDE the group
INCLUDE SPF_perpetual GROUP SPF_perpetual
----- End perpet.dat -----
```

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---

In this example there are five users that are specified as being able to use a perpetual license: *adminuser*, *updateuser*, *user0*, *bill* and *mitch*. Any request for a perpetual license by a user other than those defined here will be denied.

## 8.4 Obtaining SmartPlant Foundation User Licenses

A license file containing licenses to cover **all** users who will be using the SmartPlant Foundation system must be obtained before configuring the license manager server.



### License File

**Before using License Management with SPF, a license file must exist.**

**Once you have your license file, you can proceed with the implementation of the *FLEXIm* product, which is used to administer and enforce SPF license limits.**

**SPF customers may call a toll-free number to request an SPF Token license file:**

**1- 800 - 766 - 7701**

**This information should be included on an information sheet provided with your software kit.**



## License File

To obtain your Token License file after initial order of your Token Application software or to re-order, you must complete the Token File Request form found at the following location:

[http://www.intergraph.com/pds/worksheet/  
spfdntokens/](http://www.intergraph.com/pds/worksheet/spfdntokens/)

**Submit the completed form to Intergraph Customer Services for processing.**

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## License File

Intergraph employees can point their web browser to the following URL for full instructions on requesting an SPF license:

[http://ppm-omsc.intergraph.com/SWDelivery/  
directa%20spf.asp](http://ppm-omsc.intergraph.com/SWDelivery/directa%20spf.asp)

The form must be completed, and a note included with the request to indicate the number of perpetual and daily licenses that are needed.

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## Obtaining Your SmartPlant Foundation Token License File

To obtain your SmartPlant Foundation Token License file after the initial order of your SmartPlant Foundation Application software, you must complete the SmartPlant Foundation Token File Request form and submit it to Process, Power & Offshore Order Management and Service Center for processing. The e-mail address and fax number can be found on the request form. Normal turn-around time for processing the request and your receipt of the SmartPlant Foundation Token License file is five (5) business days or less.

All information on this form should be completed, if possible. The form information designated in **bold text** is mandatory. If you have questions or require assistance in completing this form, feel free to call Process, Power & Offshore Order Management and Service Center at 1-800-766-7701, or your local Intergraph office.

## How To Re-Order SmartPlant Foundation Tokens

To order additional SmartPlant Foundation Tokens, whether Perpetual and/or Daily, a SmartPlant Foundation Token File Request form must be completed in conjunction with your software order and must be submitted to Process, Power & Offshore Order Management and Service Center for processing. The e-mail address and fax number can be found on the request form. You may contact your Intergraph Sales Representative, or call Process, Power & Offshore Order Management and Service Center at 1-800-766-7701 for assistance in your re-ordering needs.

All information on this form should be completed, if possible. The form information designated in **bold text** is mandatory. If you have questions or require assistance in completing this form, feel free to call Process, Power & Offshore Order Management and Service Center at 1-800-766-7701, or your local Intergraph office.

A new SmartPlant Foundation Token License file will be delivered from Intergraph to match the SmartPlant Foundation Token requirements contained in your order. Normal turn-around time for processing the request and your receipt of the SmartPlant Foundation Token License file is five (5) business days or less.

## How To Change The Host ID For Your SmartPlant Foundation Token License File

The SmartPlant Foundation Token License file is matched to the Host ID number of the hardware server on which this file resides. If this file is moved to another hardware server, it will not be recognized. If you want to move the SmartPlant Foundation Token License file to another hardware server, you must obtain a new License file that is matched to the new Host ID for that server. To accomplish this, a SmartPlant Foundation Token File Request form must be completed and submitted to the Process, Power & Offshore Order Management and Service Center for processing.

A new SmartPlant Foundation Token License file will be delivered from Intergraph to match the SmartPlant Foundation Token requirements contained in your order. Normal turn-around time for processing the request and your receipt of the SmartPlant Foundation Token License file is five (5) business days or less.

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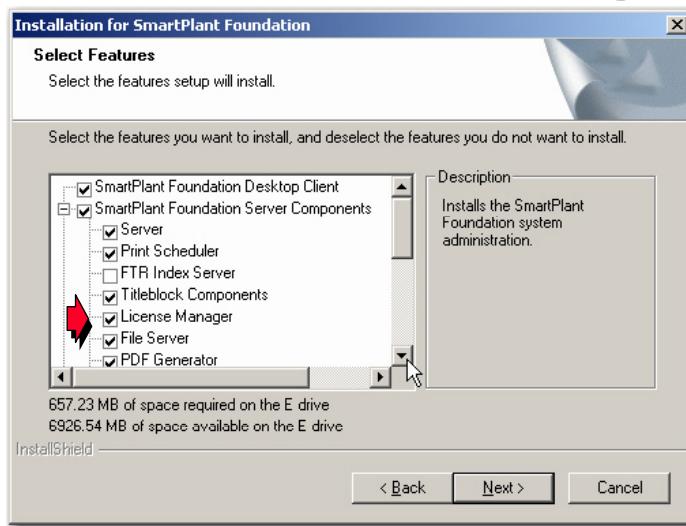
**Note:** In the following examples, we are going to demonstrate setting up a new installation of a SmartPlant Foundation license server.

---



## License File

- ❑ During installation, select the **License Manager** option.



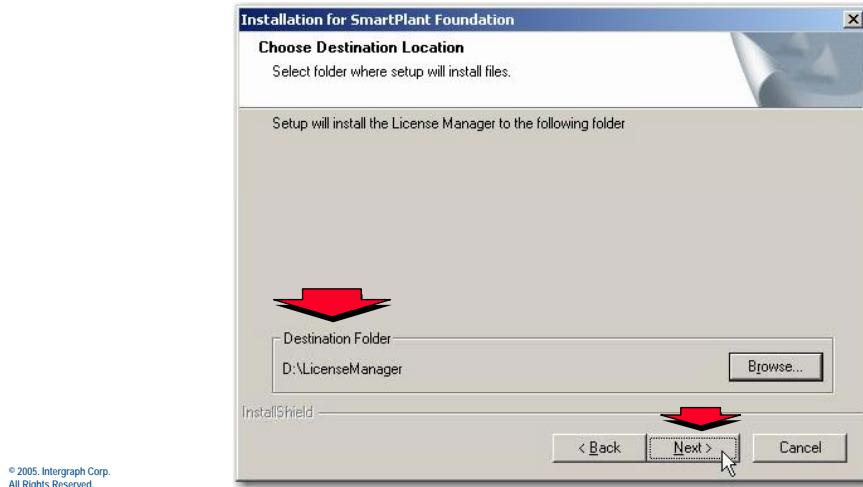
---

During the installation of the SmartPlant Foundation server, the option to install the SmartPlant Foundation License Manager can be selected.



## License File

- Once the License Manager folder location has been set, the necessary files are copied during the installation.

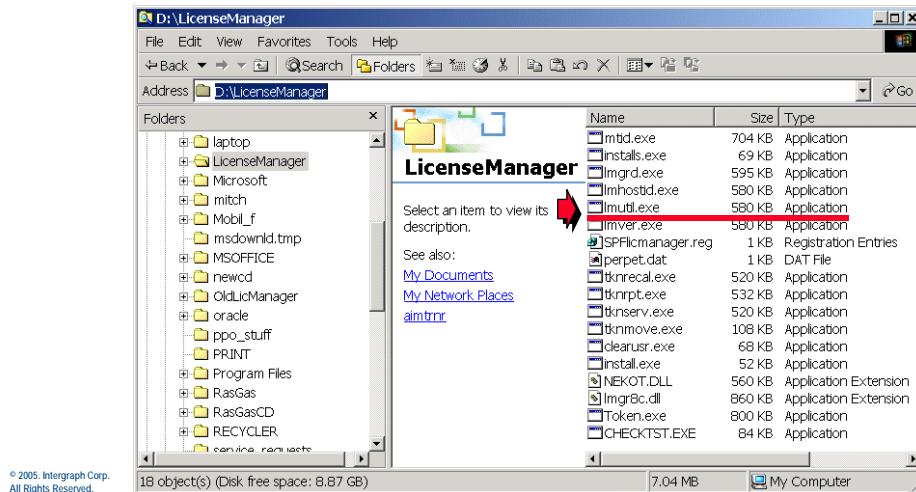


During the installation of the License Manager software, 18 files are placed in the specified license manager folder.

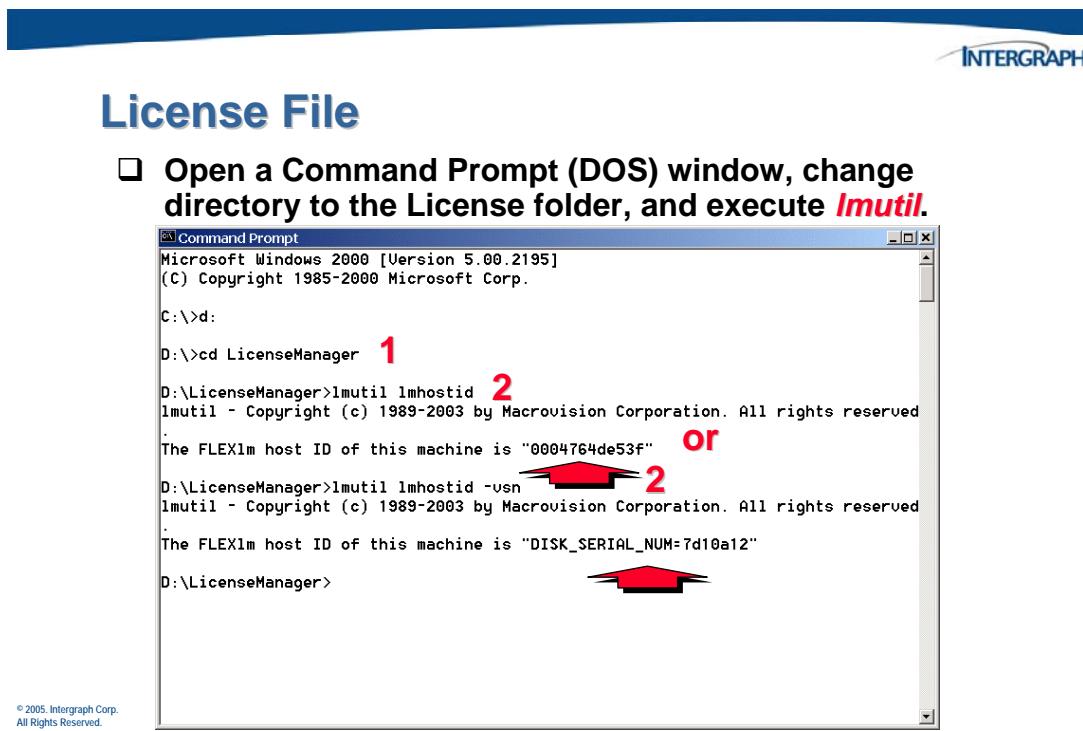


## License File

One of the files unzipped is the FLEXIm License Utility (lmutil.exe).



In order to obtain a SmartPlant Foundation User License, you must specify the License Manager Host Identification (*lmhostid*) number for the host where the license server will be installed. One of the files placed in the License Manager folder is the License Manager Utility (*lmutil*). This utility is used to determine the *lmhostid* for the current host (server) machine.



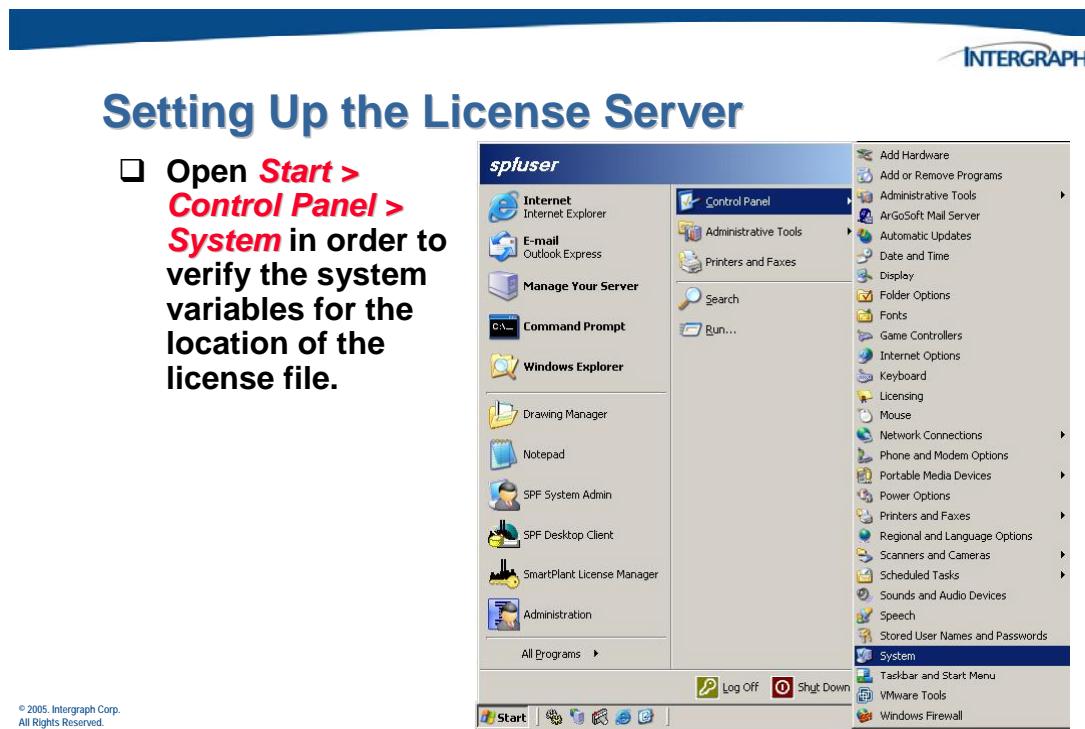
---

If the server uses a single network card, the command syntax *lmutil lmhostid* will return the *lmhostid*, which is equivalent to the network card MAC address. However, if the server has multiple network cards, then the command syntax *lmutil lmhostid –vsn* will return the disk serial number for the drive.

Once the *lmhostid* has been identified, include it as part of the request for your SmartPlant Foundation Token License.

## 8.5 Setting Up the License Server

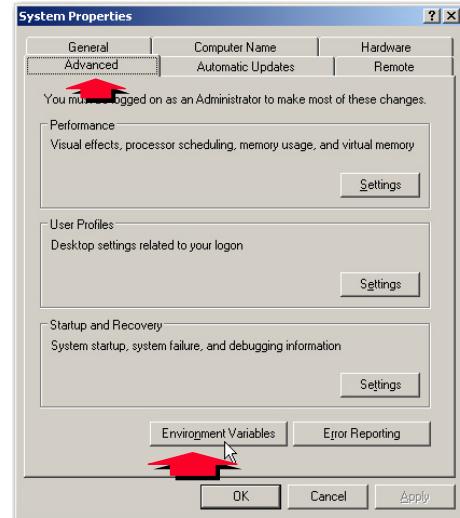
Before starting the license server, a system level variable indicating the location of the license file must be verified. This variable is set automatically, but you should confirm that the proper location was set.





## Setting Up the License Server

- Select the **Advanced** tab and then click the **Environment Variables** button.

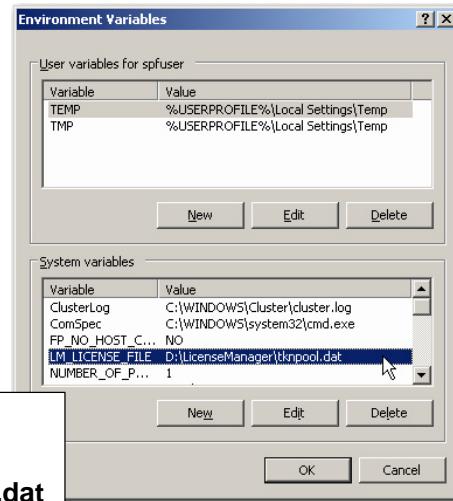


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## Setting Up the License Server

- Verify that the system variable, **LM\_LICENSE\_FILE**, points to the tknpool.dat file.



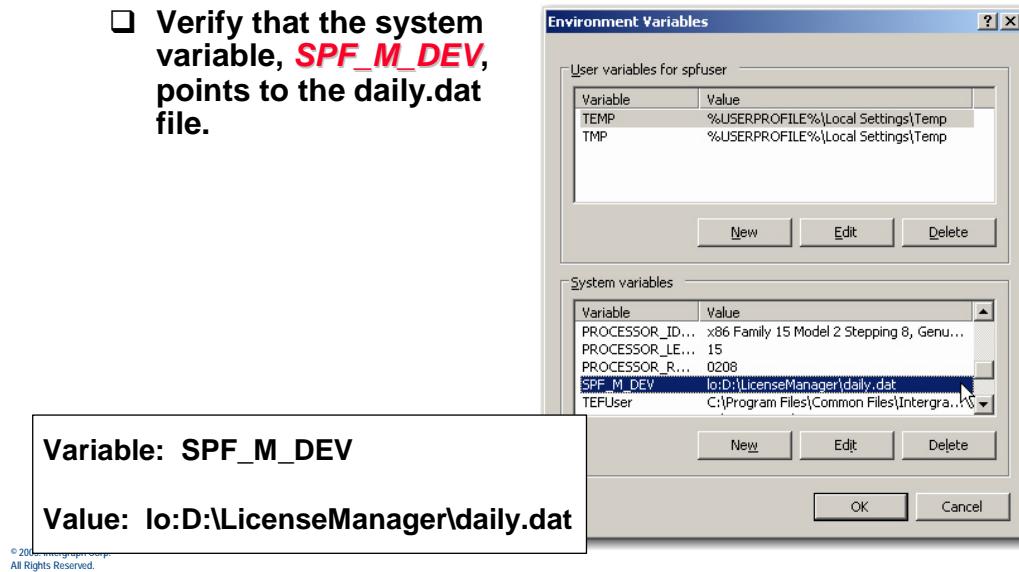
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**Note:** The variable value for LM\_LICENSE\_FILE should point to the location where you saved your license file.



## Setting Up the License Server

- Verify that the system variable, **SPF\_M\_DEV**, points to the daily.dat file.

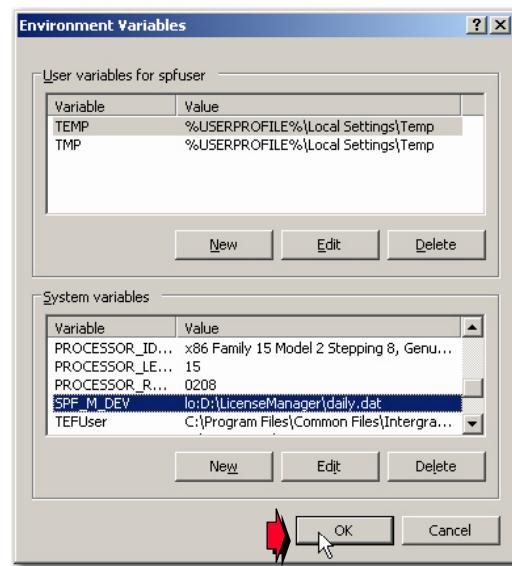


Also make sure the variable SPF\_M\_DEV specifies the location of the daily token file, **daily.dat**.



## Setting Up the License Server

- After you have verified the **LM\_LICENSE\_FILE** and the **SPF\_M\_DEV** system variables, click **OK** to close the **Environment Variables** dialog window.



## 8.5.1 Token Exhaustion

Once you have completely depleted your daily token pile, no users will be able to log into an SPF Client application unless they have been assigned a perpetual token. To prevent this, the software allows you to set up two warnings that will be fired off when the pool is depleted to certain points. These points are defined through entries in the registry.

---



### Token Exhaustion

**The following token variables are defined in the *registry* file:**

- LOG** – The location of the log file that stores information about token usage that is parsed by the token report utility and token recall utility.
- TOKEN1** – The number of tokens in the pool when the first notification will be sent.
- TOKEN2** – The number of tokens in the pool when the second notification will be sent.



## Token Exhaustion

The following token variables are defined in the *registry* file:

- USER** – The name of the system administrator or user, maybe someone in purchasing, who will receive the notification e-mail that will be sent by the application. Email is sent via the mailsend.exe, located in %MTI\_ROOT%\bin.
- FILE** –The location and the name of the file to be mailed to the specified system administrator or user.

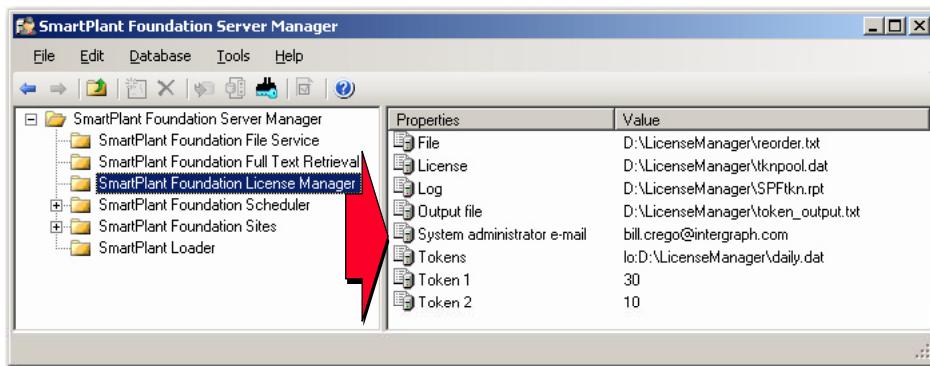
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The variables **LOG**, **TOKEN1**, **TOKEN2**, **USER**, and **FILE** must be set in the system registry. This can be done using the SmartPlant Foundation Server Manager.



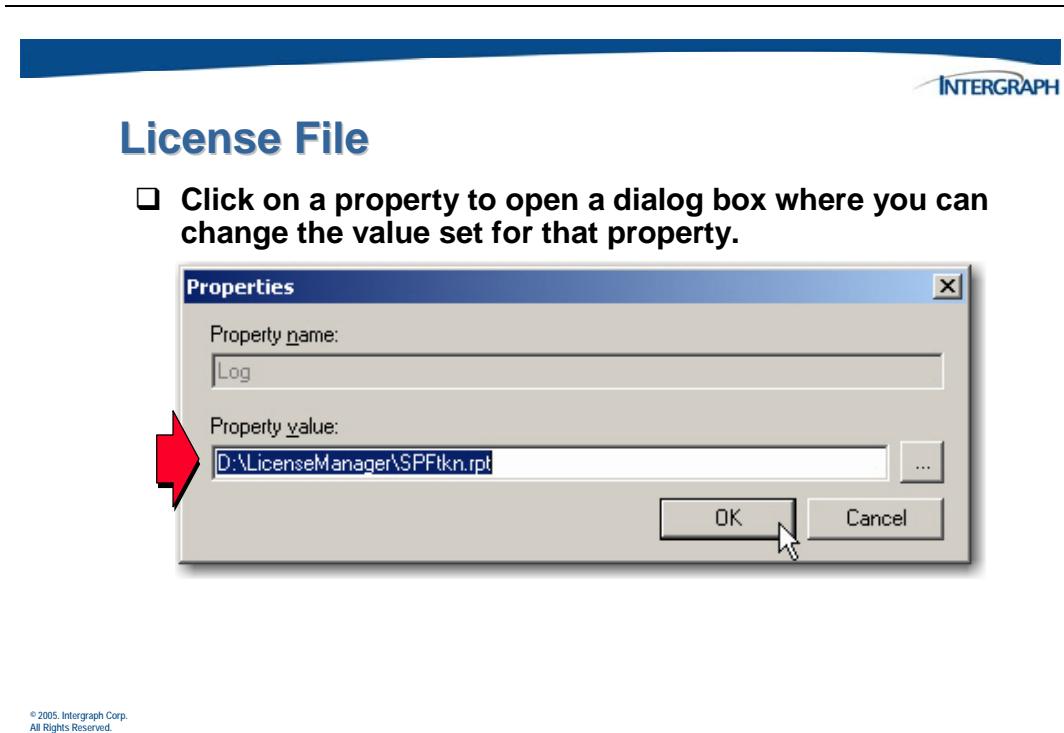
## License File

- These settings can be modified from within the SmartPlant Foundation Server Manager.



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To make changes to the values displayed in the Server Manager interface, double-click on the property name to open a dialog box, like the one shown below.



## 8.5.2 Activate the License Files

Next, you must decrypt the files that Intergraph sends you.

---



### Activate License Files

- After you send Intergraph the license request form, Intergraph will send you two encrypted files that you will need to use the License Manager.**
  - Tknpool.dat
  - Daily.dat
- You will need to decrypt these files with a serial number in order to use them.**

Use the SmartPlant Foundation Server Manager application to decrypt the files delivered by Intergraph. Once decrypted, you will need to edit portions of the Tknpool.dat file.

Never edit the daily.dat file that is delivered by Intergraph.



## Activate License Files

- ❑ In the SmartPlant Foundation Server Manager application, select **SmartPlant License Manager**, and click on the **Activate License Files** command on the toolbar.

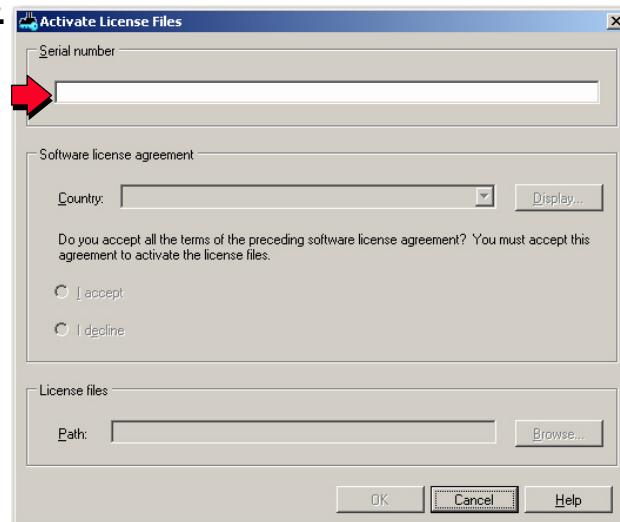


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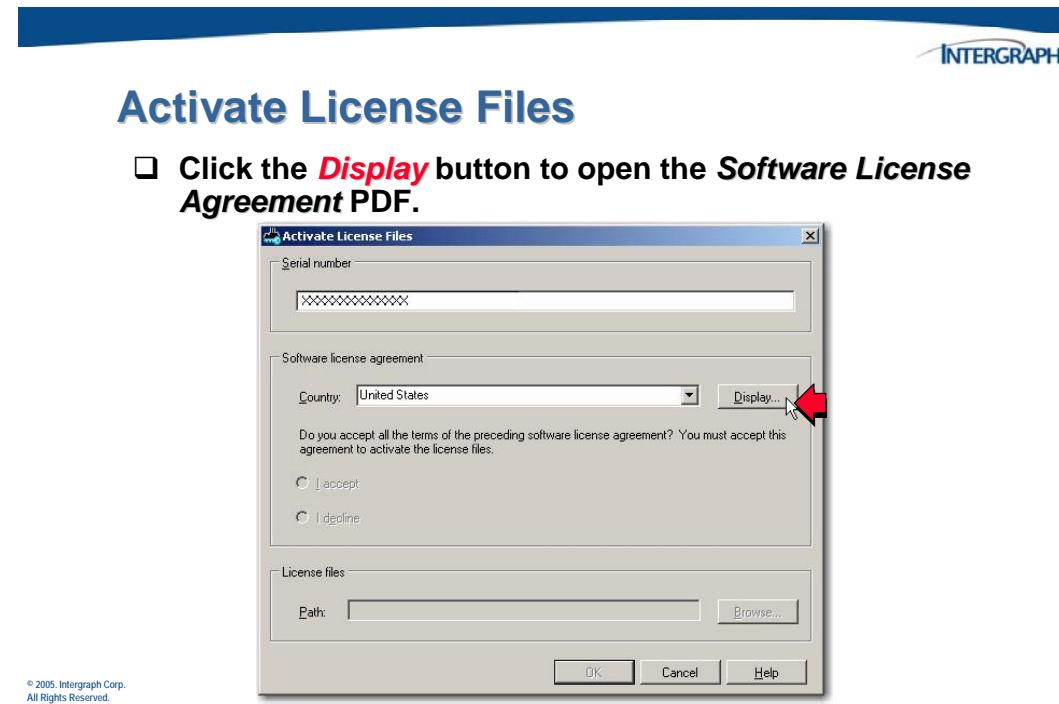
## Activate License Files

- ❑ In the Activate License Files dialog box, enter your **serial number**.

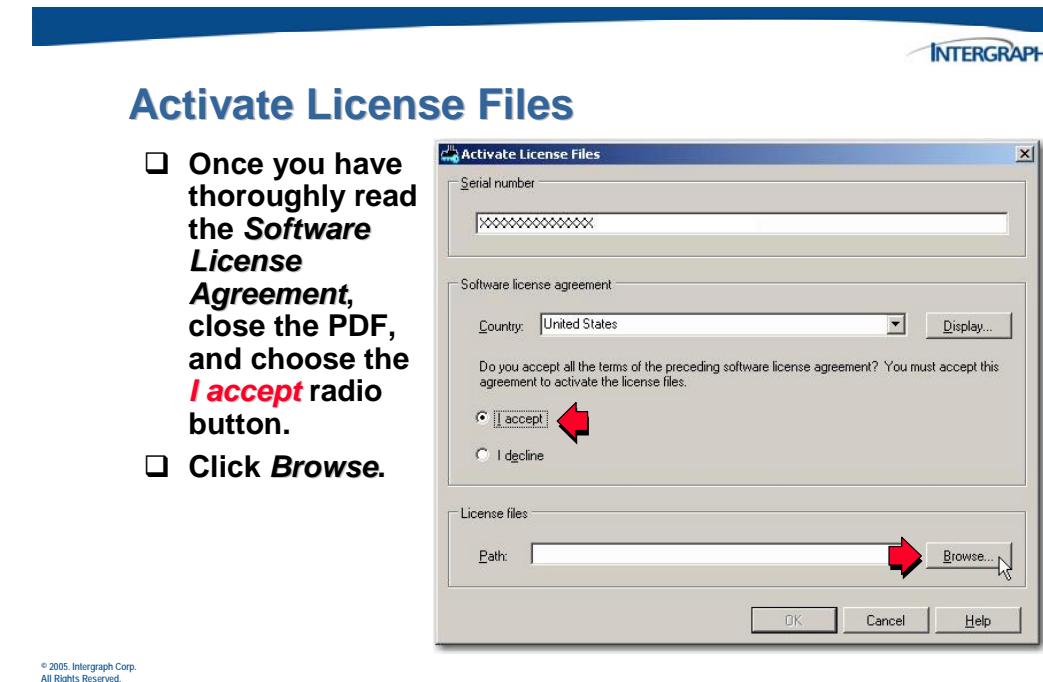


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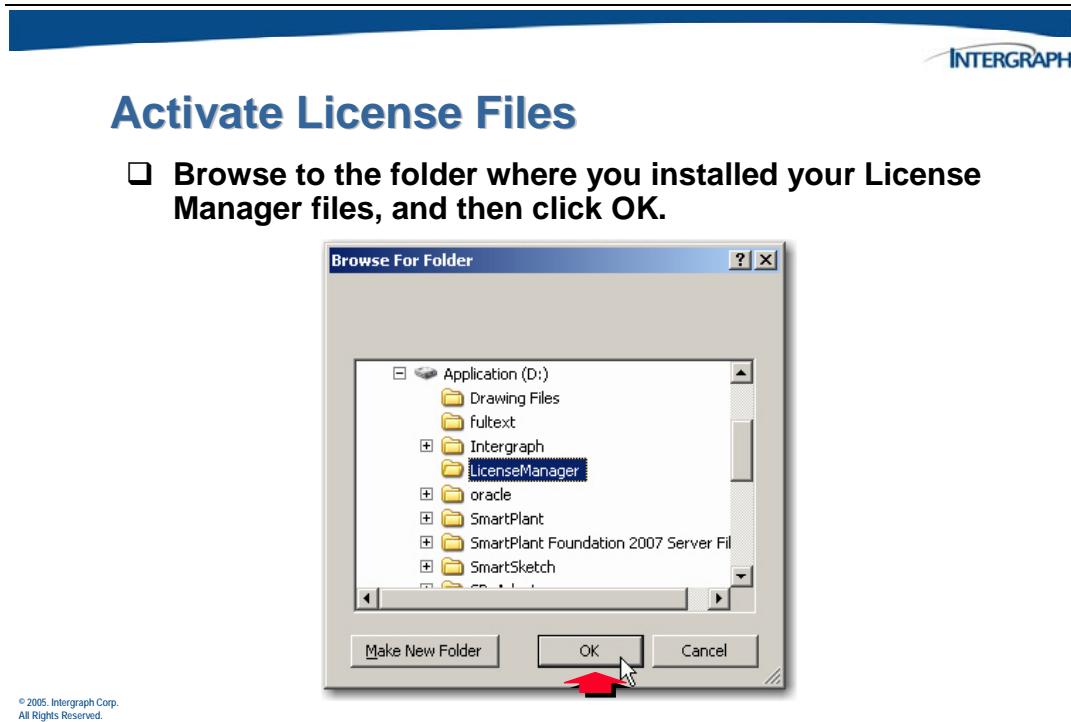
Once you have entered a serial number, the **Country** field is activated. Choose the applicable country, and then click the **Display** button to open the **Software License Agreement** in a PDF format.



If you agree to the terms, choose **I accept**, and then click the **Browse** button.



Find the location where you installed the License Manager files.



Click **OK** to start decrypting the files.



### 8.5.3 Editing License Files

A sample *perpet.dat* file is delivered in the license manager folder. Edit this delivered file to match the number of perpetual licenses that have been ordered. The number of perpetual licenses has been encrypted into the license file (tknpool.dat).

---



#### Setting Up the License Server

- Edit the contents of the *perpet.dat* file to add the users that will be perpetual users.**

```
# First define the group 'Perpetual'  
GROUP SPF_perpetual adminuser  
GROUP SPF_perpetual updateuser  
GROUP SPF_perpetual user0  
GROUP SPF_perpetual bill  
GROUP SPF_perpetual mitch  
# Then INCLUDE the group  
INCLUDE SPF_perpetual GROUP SPF_perpetual
```

---

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---

The preferred method for software delivery to send license information is in an electronic format, either e-mail or floppy. This makes it easy for the license information to be cut and pasted into the correct file and the necessary edits to be made.



## Setting Up the License Server

- Edit the contents of the license file (**tknpool.dat**) you received from Intergraph to include your host name and a unique port-number that you are assigned.
- Change the token-daemon-path to point to the **daily.exe** and the **perpet.dat** file in your license folder.

```
SERVER host-name DISK_SERIAL_NUM=7d10a12 port-number
DAEMON Token token-daemon-path-including-name path-to-
perpet.dat

SERVER aimtrnr DISK_SERIAL_NUM=7d10a12 8575
DAEMON Token D:\LicenseManager\Token.exe
D:\LicenseManager\perpet.dat
```

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In the example above, the entry is shown before the edits are made and then below that, after the edits have been made.



## Setting Up the License Server

- Token License File (con't)

```
FEATURE SPF_perpetual Token 1.000 1-jan-0 5 EC1E489F1DFAD5296FC0 \
SIGN=5554C1ECB1126594
FEATURE SPF_daily Token 1.000 1-jan-0 16000 4CAEE86F95008CE5F387 \
SIGN=00E69E4E38DC6DB4
FEATURE SPF_ens Token 1.000 1-jan-0 0 0C5E482F35C879F44213
HOSTID=ANY
FEATURE SPF_cm Token 1.000 1-jan-0 0 1C6EC88F4A3D22AE3B94 HOSTID=ANY
FEATURE SPF_structure Token 1.000 1-jan-0 0 3CAE685FC8773C93FA15 \
HOSTID=ANY
FEATURE SPF_2D Token 1.000 1-jan-0 0 4CEEF87F336C22AE73AB HOSTID=ANY
FEATURE SPF_3D Token 1.000 1-jan-0 0 4CDEF88F336D22AE72AB HOSTID=ANY
FEATURE SPF_docs Token 1.000 1-jan-0 0 3C8E689F4E4E3669FBEF \
HOSTID=ANY
```

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Below, you will see an example of a complete license file after it has been edited ( edits are shown as bold text).

### Example:

```
SERVER aimtrnr DISK_SERIAL_NUM=7d10a12 8575

DAEMON Token D:\LicenseManager\Token.exe D:\LicenseManager\perpet.dat

FEATURE SPF_perpetual Token 1.000 1-jan-0 5 EC1E489F1DFAD5296FC0 \
SIGN=5554C1ECB1126594

FEATURE SPF_daily Token 1.000 1-jan-0 16000 4CAEE86F95008CE5F387 \
SIGN=00E69E4E38DC6DB4

FEATURE SPF_ens Token 1.000 1-jan-0 0 0C5E482F35C879F44213 HOSTID=ANY

FEATURE SPF_cm Token 1.000 1-jan-0 0 1C6EC88F4A3D22AE3B94 HOSTID=ANY

FEATURE SPF_structure Token 1.000 1-jan-0 0 3CAE685FC8773C93FA15 \
HOSTID=ANY

FEATURE SPF_2D Token 1.000 1-jan-0 0 4CEE87F336C22AE73AB HOSTID=ANY

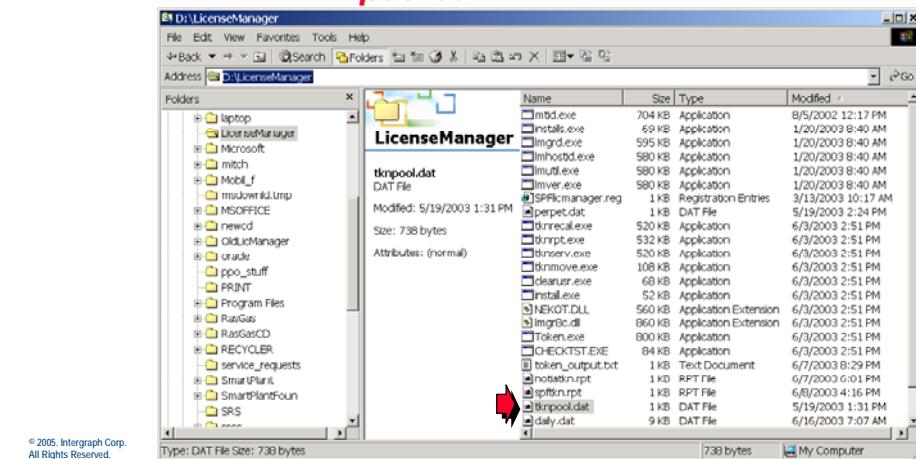
FEATURE SPF_3D Token 1.000 1-jan-0 0 4CDEF88F336D22AE72AB HOSTID=ANY

FEATURE SPF_docs Token 1.000 1-jan-0 0 3C8E689F4E4E3669FBEF \
HOSTID=ANY
```



## Setting Up the License Server

- Save the changed license information as a file in the license folder (\LicenseManager). An example file name would be **tknpool.dat**.

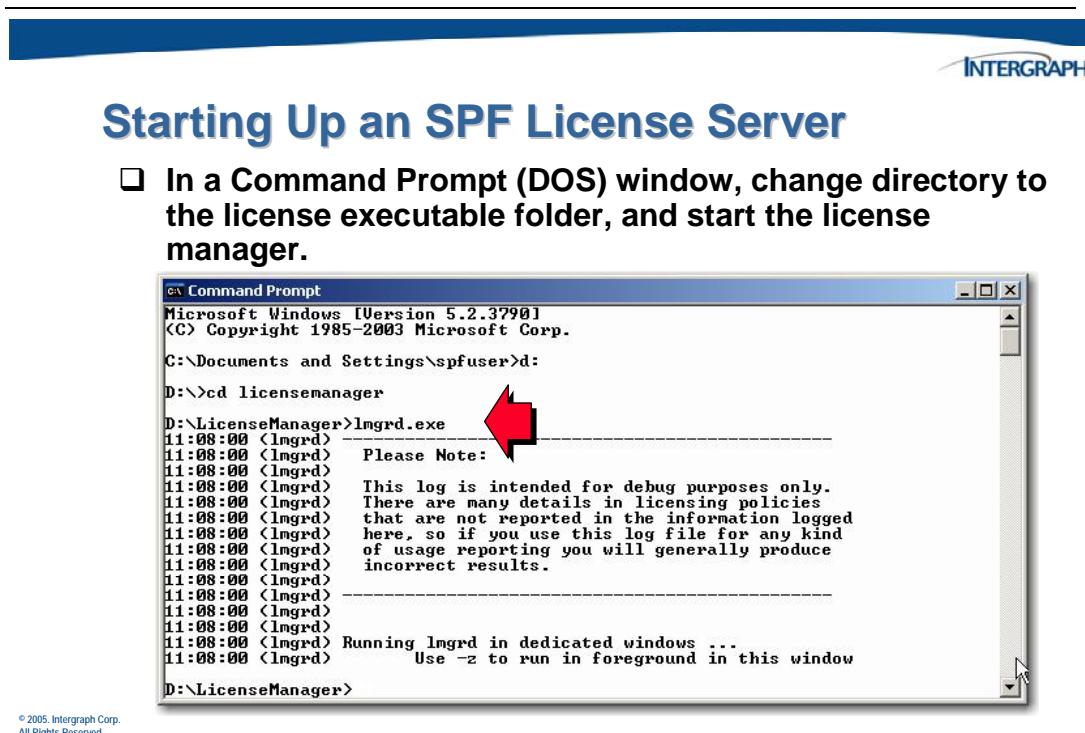


## 8.6 Starting the SmartPlant Foundation License Server

You are now ready to start the license manager server. You should first start the server from a ***Command Prompt*** (DOS) window interactively, to test that the software is configured properly. The license server will run as long as this window stays open, but it will terminate when this window is closed.

After using the interactive command to start the license server and verify that it is running, you should configure the license server to start automatically as an NT service whenever the host is booted. This procedure is discussed later in this section.

After a Command Prompt window has been opened, change directory to the folder that contains all the license server executables and DLLs (\LicenseManager).



The command to manually start the license server is:

D:\LicenseManager>**Lmgd.exe**

**Note:** In these examples, we are assuming that the License Manager files were installed in a folder called LicenseManager on the D drive. If you have selected a different location to install the software, your commands will look different.

If the license manager server starts successfully, the output will be similar to the following:

```
15:51:36 (lmgrd) Please Note:  
  
15:51:36 (lmgrd)  
  
15:51:36 (lmgrd) This log is intended for debug purposes only.  
  
15:51:36 (lmgrd) There are many details in licensing policies  
15:51:36 (lmgrd) that are not reported in the information logged  
15:51:36 (lmgrd) here, so if you use this log file for any kind  
15:51:36 (lmgrd) of usage reporting you will generally produce  
15:51:36 (lmgrd) incorrect results.  
  
15:51:36 (lmgrd)  
  
15:51:36 (lmgrd) -----  
  
15:51:36 (lmgrd)  
  
15:51:36 (lmgrd)  
  
15:51:36 (lmgrd) pid 1936  
  
15:51:37 (lmgrd) Done rereading  
  
15:51:37 (lmgrd) FLEXlm (v8.4a) started on aimtrnr (IBM PC) (6/16/2003)  
  
15:51:37 (lmgrd) Copyright (c) 1988-2003 by Macrovision Corporation. All  
rights reserved.  
  
15:51:37 (lmgrd) US Patents 5,390,297 and 5,671,412.  
  
15:51:37 (lmgrd) World Wide Web: http://www.macrovision.com  
  
15:51:37 (lmgrd) License file(s): D:\LicenseManager\tnkpool.dat  
  
15:51:37 (lmgrd) lmgrd tcp-port 8575  
  
15:51:37 (lmgrd) Starting vendor daemons ...  
  
15:51:37 (lmgrd) Started Token (pid 2052)  
  
15:51:37 (lmgrd) Token using TCP-port 3022  
  
15:51:37 (Token) FLEXlm version 8.4a  
  
15:51:37 (Token) Using options file: "D:\LicenseManager\perpet.dat"  
  
15:51:37 (Token) Server started on aimtrnr for: SPF_perpetual  
  
15:51:37 (Token) SPF_daily      SPF_ens      SPF_cm  
  
15:51:37 (Token) SPF_structure  SPF_2D       SPF_3D  
  
15:51:37 (Token) SPF_docs  
  
15:51:37 (Token) INCLUDE USER_GROUP SPF_perpetual SPF_perpetual
```

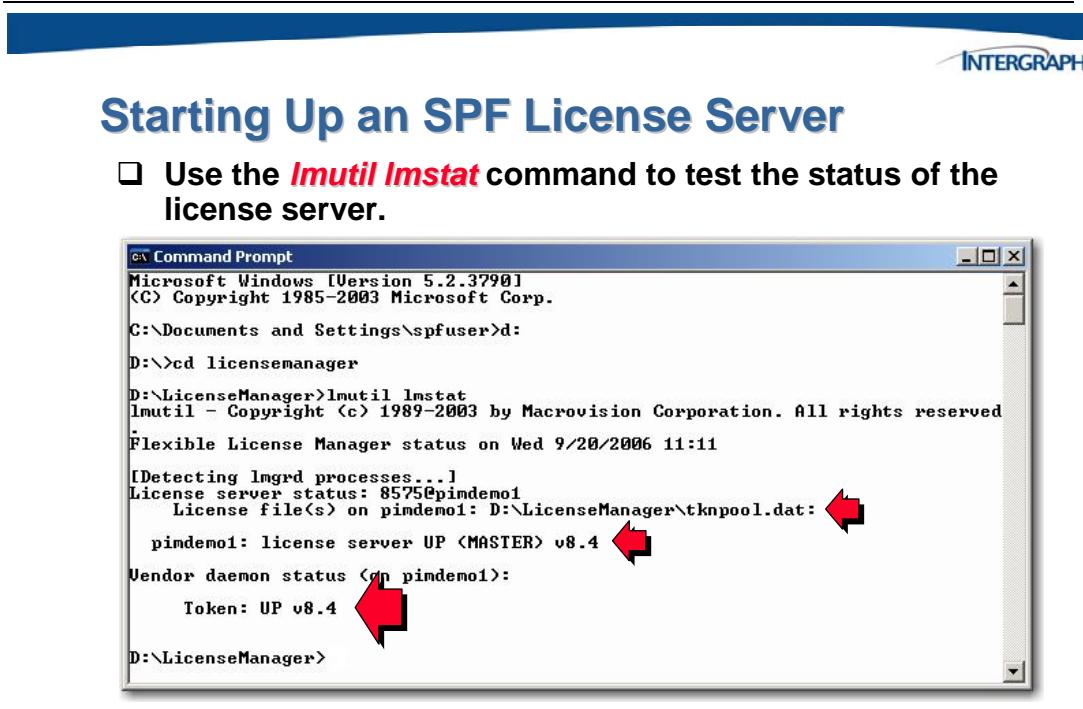
```

15:51:37 (Token) Using the following variables:

15:51:37 (Token) TOKEN_NOTIFY_ONE : 50
15:51:37 (Token) TOKEN_NOTIFY_TWO : 20
15:51:37 (Token) TOKEN_NOTIFY_USER : alexb@ingr.com
15:51:37 (Token) TOKEN_NOTIFY_FILE : D:\LicenseManager\reorder.txt
15:51:37 (Token) TOKEN_LOG_FILE : D:\LicenseManager\spftkn.rpt
15:51:37 (Token) SPF daily token file : <lo:D:\LicenseManager\daily.dat>

```

You can use the **lmutil** command to verify that the *lmgd* license manager server is running.



The command to manually test the license server is:

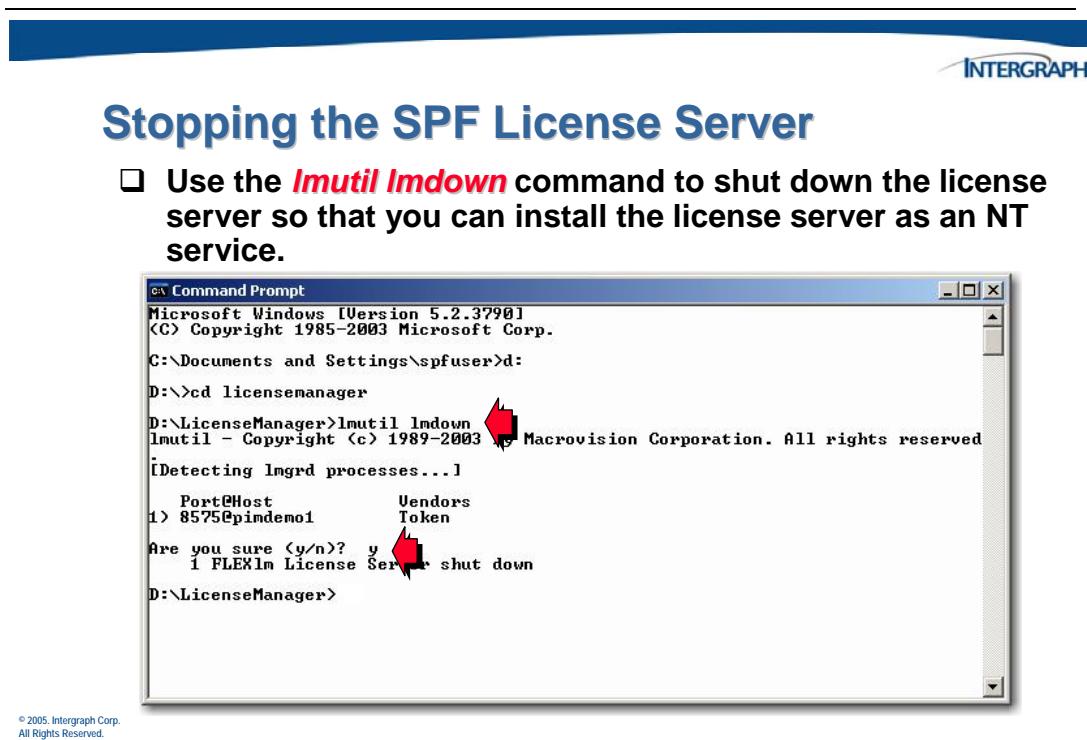
**D:\LicenseManager>lmutil lmstat**

## 8.6.1 Stopping the SmartPlant Foundation License Server

The *lmutil* utility can also be used to shut down the license server once you have tested it from the Command Prompt window. This needs to be done before you register the license server as an NT service.

The command to manually shut down the license server is:

D:\LicenseManager>**lmutil lmdown**



## 8.7 Registering the License Server as a Service

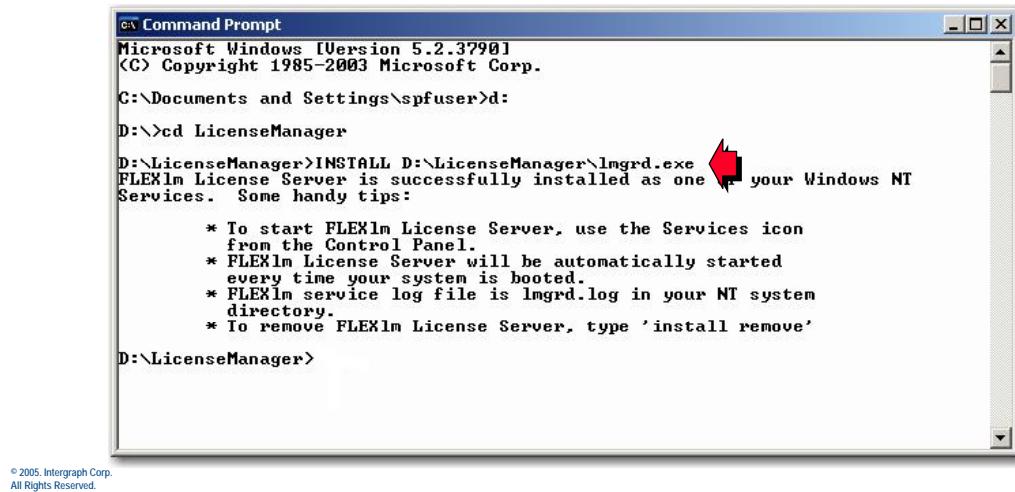
After you have verified that the license server can be started manually, you should set the lmgrd server to start as an NT service. This way, you won't have to worry about keeping a *Command Prompt* window open with the server running.

An *installs.exe* file has been delivered as one of the 18 files that were unzipped to the install folder and can be used to set up your license server as an NT service.

**Step 1**, open a *Command Prompt* window and change the directory (cd) to the *LicenseManager* folder, which is the path specified in the SmartPlant Foundation install.

### Registering the License Server as a Service

The license server can be set up to start as an NT service automatically when the host is booted.



**Step 2**, key in the following command from the *LicenseManager* folder (substituting your directory path where the lmgrd executable is located):

D:\LicenseManager>**INSTALL <path>\lmgrd.exe**

In our example, this would look like the following statement:

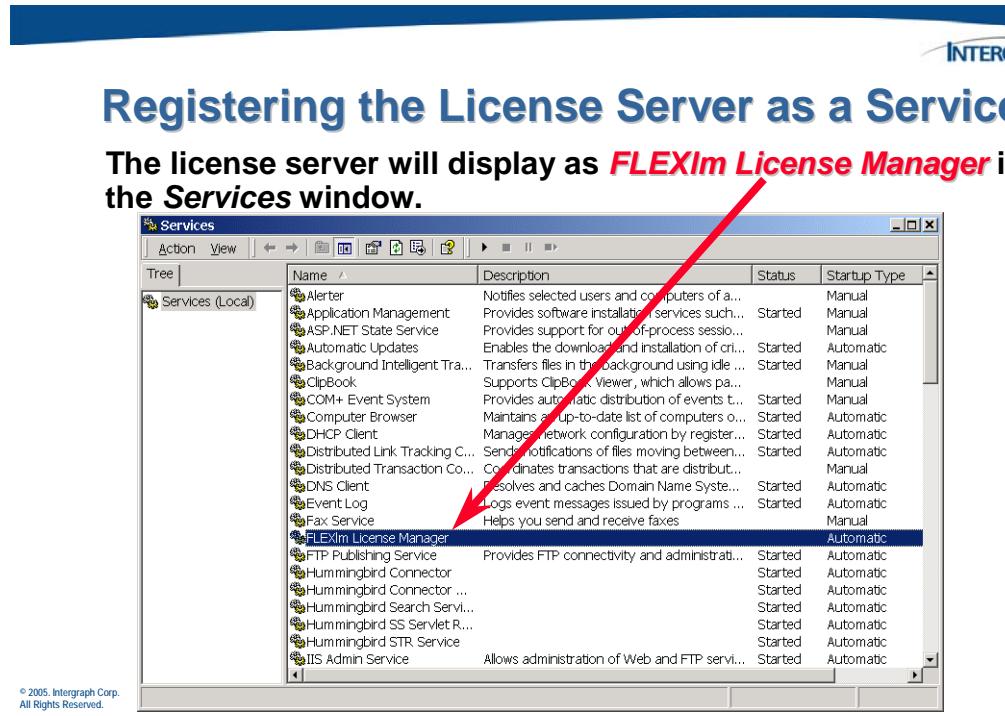
D:\LicenseManager>INSTALL D:\LicenseManager\lmgrd.exe

To remove the license server service, enter the following command from the *install* folder:

D:\LicenseManager>**installs remove**



You will have to manually start the license server the first time. It will start automatically after that each time the system is rebooted.



## 8.8 License Manager Termination

In the event that Flexlm terminates in any fashion (system crash, manual shutdown, etc.) the licenses that are lingering are recoverable through the contents of the daily token log file (specified in config.cfg). A utility, “tknrecal.exe”, is provided that will parse the log file and determine what licenses should be checked out again based on how much of the linger period is left. This “tknrecal.exe” utility will have to be run immediately after license manager startup. Any daily license that is re-checked out after being released with the tknrecal.exe should not consume additional tokens from the token meter.



### License Manager Termination

**In the event that Flexlm is terminated accidentally, the licenses that are lingering are recoverable using the contents of the daily token log file.**

- The **tknrecal.exe** utility will parse the log file and determine what licenses should be released so they can be checked out again.
- This utility will have to be run immediately after license manager server is started.
- The utility **tknserv.exe**, which is **tknrecal.exe** instantiated as a NT service, is delivered with the software.
- The NT service name will be **Token License Manager token recall**.

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---

There is also a utility (tknserv.exe) delivered that is tknrecal.exe instantiated as a NT service. The NT service name will be “Token License Manager token recall”. Usage for this utility is described here:

```
D:\LicenseManager>tknserv
Token License Manager token recall service
tknserv -install      to install the service
tknserv -remove       to remove the service
```

## 8.9 Reporting

The License Management software includes a reporting tool to allow you to keep track of your tokens. You can report on use over a period of time, at the current moment, or even determine how many daily tokens are remaining in your token pool.

---



### Reporting

- When a daily token is checked out, the username and date (including the time) is written to the token log file.
- The name of this log file is controlled through a registry variable (**TOKEN\_LOG\_FILE**).
- The log file can be used as input to the token reporter.
- The token reporter is a command line utility ("**tknrpt**") that will accept a date range on which to report.
- This utility will examine the history of daily and perpetual tokens.
- The **tknrpt.exe** gets its input from the report file.

### 8.9.1 Token Report File

When a daily token is checked out, the username and date (including time) is written to the token log file. This name of this log file is controlled via a *registry* variable TOKEN\_LOG\_FILE. The log file can then be used as input to the token reporter: **tknrpt.exe**.

Below is an example of the report file:

abburns	10/23/2002 10:00
abburns	10/24/2002 11:00
abburns	10/25/2002 12:00
test1	10/23/2002 14:00
test2	10/23/2002 14:00
test3	10/23/2002 15:00
abburns	10/30/2002 16:00
test1	10/30/2002 17:00
test2	10/30/2002 18:00
test3	10/30/2002 19:00

## 8.9.2 Daily Token License Usage History

The token reporter is a command line utility (“tknrpt.exe”) that will accept a date range to report on. This utility will examine the history of daily tokens only. This utility gets its input from the report file. The syntax of tknrpt.exe is provided here:

D:\LicenseManager>tknrpt -n <from\_date> <to\_date>

<from\_date> is the beginning date in MM/DD/YYYY format

<to\_date> is the ending date in MM/DD/YYYY format



### Reporting

The following is an example output of tknrpt:

```
D:\LicenseManager>tknrpt -n 05/05/2005 05/09/2005
DAILY TOKEN USAGE REPORT FOR 05/05/2003 TO 05/09/2003
USER           NODE      TOKENS USED
alex_d          tdd305    4
alex_b          tdb305    4
alex_f          tdf305    4
adminuser       aiminst   3
alex_a          tda305    1
alex_e          tde305    1
Total number of days in period: 4
Total tokens used:               17
Average tokens used per day:     4
```

### 8.9.3 Licenses In Use

The number of licenses in use, along with expiration times and dates of daily license can be displayed with a command line executable; tknrpt.exe -cn. An example of the format of the output is provided below:

## Reporting

### The following is an example output of tknrpt.exe -cn:

D:\LicenseManager>tknrpt.exe -cn

#### DAILY Licenses:

The current number of available daily tokens is : 10975

Total number of allocated daily licenses: 1

USER	NODE	CHECKED OUT	EXPIRES	TIME LEFT	IN USE
alex_a	tda306	05/08/03 09:32	05/08/03 21:32	(11:52)	TRUE

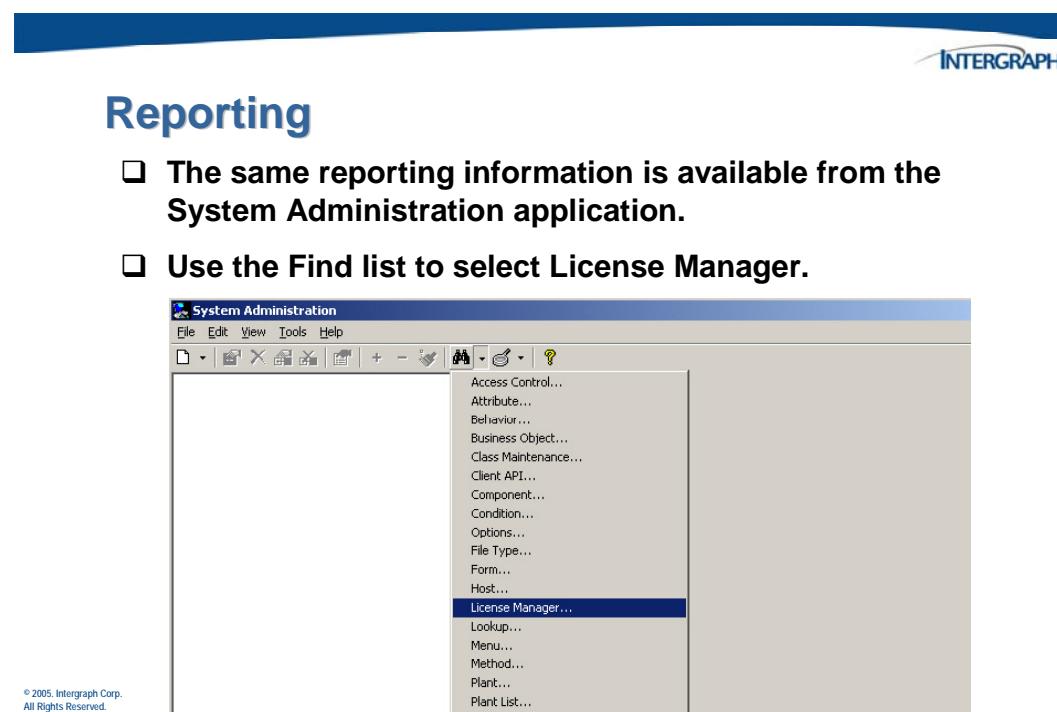
#### PERPETUAL Licenses :

Total number of allocated perpetual licenses: 1

USER	NODE	CHECKED OUT	EXPIRES	IN USE
adminuser	tdd305	05/08/03 09:32	unexpiring	TRUE

## 8.9.4 Reporting in System Administration

In addition to the reporting functionality available from the DOS prompt, there are also some reporting tools available from within the System Administration application.



You can view a list of all daily tokens currently in use.



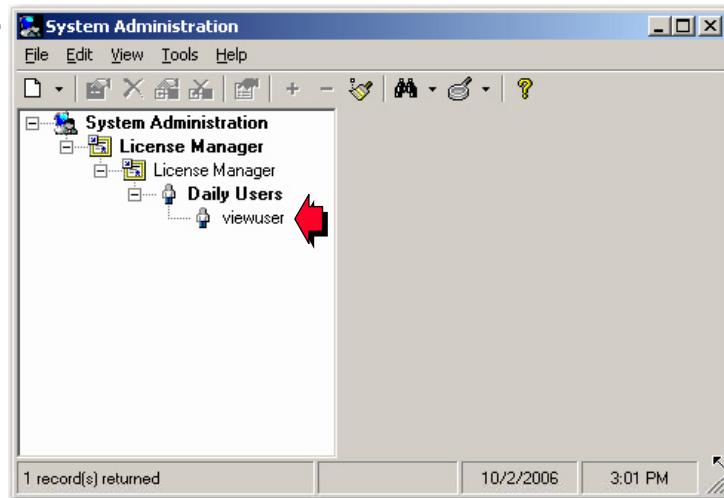
## Reporting

- ❑ Right-click on License Manager and choose the **Show Daily Users** to return a list of all user who currently have a daily token checked out.



## Reporting

- ❑ All users who currently have an active token appear in the list.

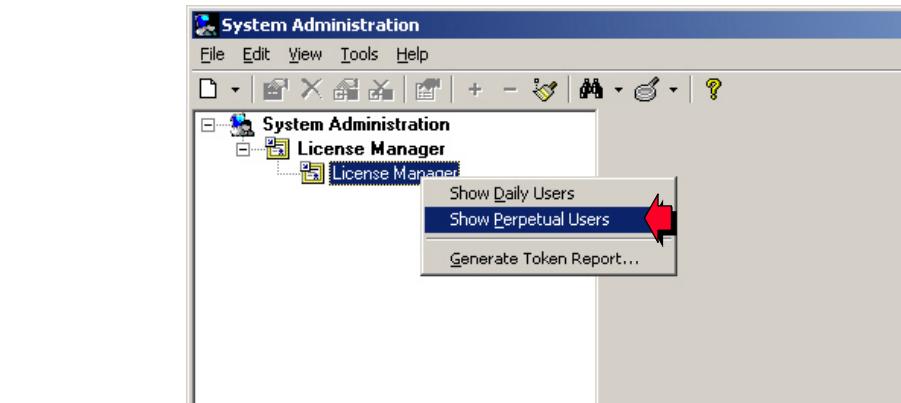


You can also view a list the perpetual tokens that are currently in use.



## Reporting

- Right-click on License Manager and choose the **Show Perpetual Users** to return a list of all user who currently have a perpetual token checked out.

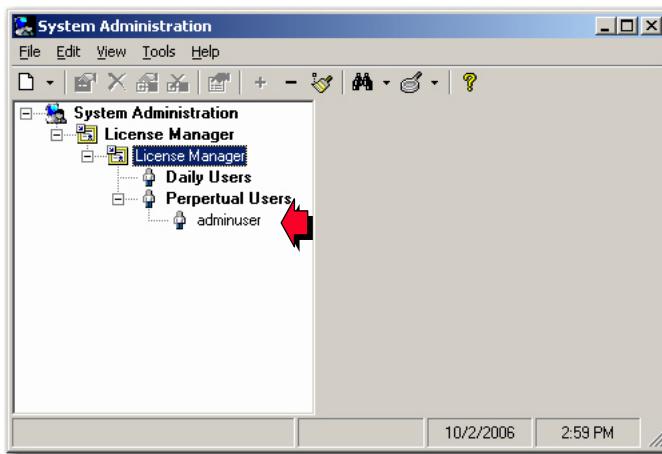


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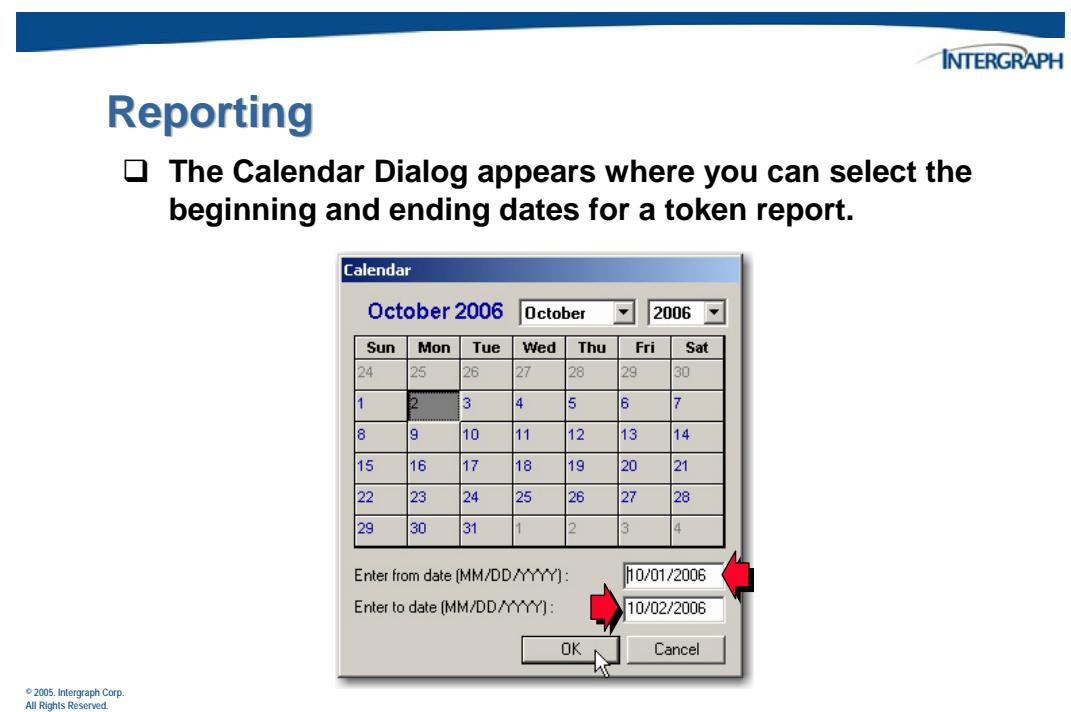
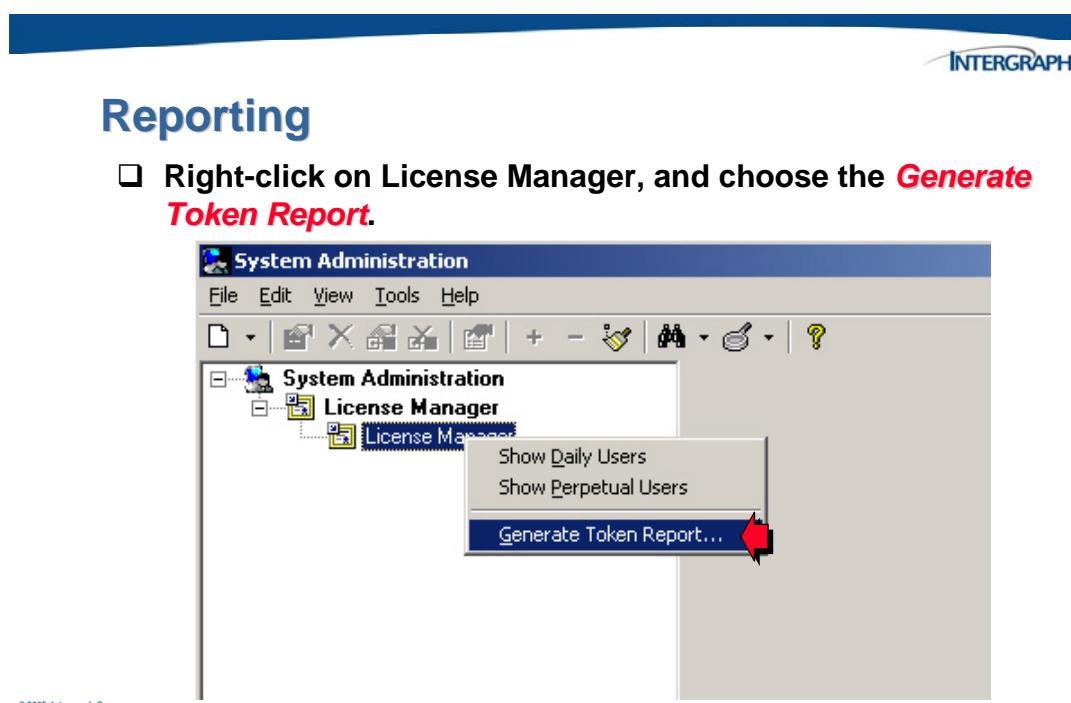
## Reporting

- All users who currently have a perpetual license checked out will appear in the list.



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You can also create a report that provides information about usage over a specified period of time.





## Reporting

- Below is an example of the generated report.

The screenshot shows a Windows application window titled "System Administration". The menu bar includes File, Edit, View, Tools, and Help. The toolbar contains icons for New, Open, Save, Print, and others. The left pane displays a tree structure with "System Administration" expanded, showing "License Manager" and "License Manager". The right pane is titled "Token report - (10/01/2006 to 10/02/2006)". It contains a table with three rows:

User	Node	Tokens Used
pideng	pimdemo1	1
pipeng	pimdemo1	1
viewuser	pimdemo1	1

Below the table, there are summary statistics:

- Number of days in period: 1
- Total number of tokens used: 3
- Average tokens used per day: 3

The bottom status bar shows the date as 10/2/2006 and the time as 3:05 PM.

## 8.10 Clearing Token IN USE Status

When a client is terminated it must tell the license manager that it is done with the license. If the client terminates abnormally, it is not able to tell the license manager that it is finished using the license.

To allow subsequent client logins for the same user when the client has terminated abnormally, a utility, *clearusr.exe*, is provided to reset the status.

Use the following syntax to use this feature:

```
D:\LicenseManager>clearusr -u <user> -h <host>
```



### Clearing Token IN USE Status

**In the event that the client has been terminated abnormally, the “IN USE” status for the token will remain “TRUE”.**

**A utility (*clearusr.exe*) is provided that will set the “IN USE” status back to FALSE.**

***clearusr -u <user> -h <host> -t <license type>***

**Where <user> is the user name of the user who has the license checked out, <host> is the host name of the machine on which the license was checked out, and <license type> is S for SPF or D for Directa.**

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Use “*tknrpt.exe -cn*” to verify the status of the “IN USE” status fields for the licenses.

## 8.11 Using the License Server Remotely

You can use one *License Server* to service multiple SmartPlant Foundation Servers within a LAN. Use this information in this section to set up a remote License Manager Server.



### Using the License Server Remotely

**Use the following steps to set up one License Server to service multiple SPF Servers.**

- Create the following directory on the remote host:  
**c:\LicenseManager**
- Define the following system environment variable on the local host:

**LM\_LICENSE\_FILE=8575@tdb305**

**Where 8575 is the port number of the remote host and tdb305 is the host name of the machine where the license service is being run.**



## Using the License Server Remotely

- If you would like to verify that the local machine can access the License Server, do the following things:
  - Create a **LicenseManager** folder on the local machine.
  - Install the **Imutil.exe** file in that folder.
  - From a DOS prompt, navigate to that **LicenseManager** folder, and run the ***Imutil Imstat*** command.

## 8.12 License Management with SmartPlant Basic Integrator

SmartPlant Basic Integrator is another way to use the SmartPlant environment for integration. Customers who choose to use the SmartPlant Basic Integrator will have access to the functionality that SmartPlant Foundation provides for integrating authoring tools, but will not have access to the features available through SmartPlant Foundation, such as the Desktop Client.

The Basic Intregator is used as an integration point to allow information to pass through from one tool to another, but the general user never accesses the Desktop Client or other SmartPlant Foundation application directly.

As a result of this modified functionality, licensing works differently with SmartPlant Basic Integrator.

The Basic Integrator does not use perpetual tokens at all. All users use daily tokens to publish and retrieve information though the Basic Integrator. The daily.dat file must be in place for the functionality to work, but it does not matter how many tokens are provided in the file. The Basic Integrator comes with unlimited daily tokens to be used for publish and retrieve commands from the authoring tools. No matter how many times users publish and retrieve, the token pool never diminishes, and you never run out of tokens.

Since this application is not using SPF to view and modify information from the tools, most users will never actually access SPF utilities like the Desktop Client. Therefore, only one token at a time may be used to log into the DTC. That means that only one user at a time may access that application for administrative tasks.



C H A P T E R

# 9

---

# SmartPlant Foundation/SmartPlant Installation



## 9. SmartPlant Foundation/SmartPlant Installation

You can install SmartPlant Foundation as a stand-alone application or as part of the SmartPlant environment. When you install SmartPlant Foundation as a stand-alone product, all the standard SmartPlant Foundation data management functionality is available to you, but SmartPlant-specific authoring tool integration is not available.

Before installing SPF, you should make sure the OS user accounts **IWAM** and **IUSR** have been added to the Administrators (NT) Group.

In this chapter, you will find illustrations of the screens and dialog boxes you will use to install and configure SmartPlant Foundation.

## 9.1 SmartPlant Foundation System Requirements

Before beginning an installation of SmartPlant Foundation, confirm that the system requirements have been met.

### Database Server

The database server software can be loaded on a separate machine. Below are the requirements for the database server.



## System Requirements

**To install SmartPlant Foundation, the following hardware/software is required:**

**Database Server**

**Hardware Requirements**

- Dual 3 GHz processor
- 4 GB RAM

**Software Requirements**

- Microsoft Windows Server 2003 Service Pack 1
- Microsoft SQL Server 2005 Service Pack 1  
or
- Oracle Enterprise or Standard Edition 10g Release 2 (R2)

## SmartPlant Foundation Server

The SmartPlant Foundation server software can be loaded on a separate machine or on the same machine as the database server. Listed below are the requirements for the SmartPlant Foundation server.



## System Requirements

**Hardware/software requirements (con't):**

### SmartPlant Foundation Server

#### Hardware Requirements

- 2.8 GHz processor recommended
- 2 GB RAM recommended
- 5 GB free disk space recommended
- 1 GB virtual memory recommended

#### Software Requirements

- Microsoft Windows 2000 Server Service Pack 4 with IIS 5.0  
or
- Microsoft Windows Server 2003 Service Pack 1 with IIS 6.0



## System Requirements

**Hardware/software requirements (con't):**

### SmartPlant Foundation Server

#### Software Requirements

- Microsoft SQL Server 2005 Service Pack 1  
or
- Oracle Enterprise Edition 10g Release 2 (R2) Client
- Microsoft Data Access Components (MDAC) 2.8 SP1
- Internet Explorer 6.0 or later
- Microsoft XML (MSXML) 4.0 SP2
- MSXML Hotfix KB832414
- Microsoft .NET Framework 2.0



## System Requirements

**Hardware/software requirements (con't):**

### SmartPlant Foundation Server

#### Software Requirements

- Adobe Acrobat Reader 7.0 or higher
- Microsoft Excel XP or 2003
- Simple Object Access Protocol (SOAP) 3.0
- SmartPlant Markup 3.8 (required for reference file functionality)



## System Requirements

**Hardware/software requirements (con't):**

### SmartPlant Foundation Server

#### Other Software

- File Transfer Protocol (FTP) Service – For some file transfer operations
- SmartSketch 4.0 or later – For automatic hotspotting with the SmartConverter
- GhostScript or Adobe Distiller – For PDF generation

## SmartPlant Foundation Workstation

Finally, the following requirements apply to machines that will be acting only as workstations for SmartPlant Foundation.

---



## System Requirements

**Hardware/software requirements (con't):**

### SmartPlant Foundation Workstation

#### Hardware Requirements

- 2.8 MHz Pentium 4 processor or higher recommended**
- 2 MB RAM minimum**
- 15 MB free disk space recommended**

#### Software Requirements

- Microsoft Windows 2000 Service Pack 4  
or**
- Microsoft Windows XP Professional Service Pack 2**

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## System Requirements

**Hardware/software requirements (con't):**

### SmartPlant Foundation Workstation

#### Software Requirements

- Internet Explorer 6.0 or later**
- Microsoft XML (MSXML) 4.0 SP2**
- MSXML Hotfix KB832414**
- Microsoft Data Access Components (MDAC) 2.8 SP1**
- Microsoft .NET Framework 2.0**
- Microsoft Excel XP or 2003**
- SmartPlant Markup 3.8 (required for reference file functionality)**

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## 9.2 Installing Database and Prerequisite Software

Before installing SmartPlant Foundation, load the Relational Database Management System (RDBMS) database networking component software on your database server. In the following example, **Oracle** will be used for the database server.



### Prerequisite Software

**Load the Relational Database Management System (RDBMS) database networking component software on your database server.**

- For Oracle databases, you must install Oracle10g Server and Client on the database server.
- On Oracle database servers, use Oracle Net Manager to create a database alias that SmartPlant Foundation can use to communicate with the database.

## 9.3 Reference Documentation

SmartPlant Enterprise products now include installation spreadsheets to use as checklists during installation and configuration. The spreadsheets correspond to the product installation guides and are delivered with each product. The checklist for SmartPlant Foundation, **SPFInstall\_Checklist.xls**, is available on the installation CD when you begin the installation. Before you begin the installation, you should open this checklist and use it to guide you through the process of installing SmartPlant Foundation and the SmartPlant software.

SmartPlant Foundation also delivers a master spreadsheet, SmartPlantEnterpriseInstall\_Checklist.xls, that includes all the other spreadsheets delivered, making integrated systems and multiple product installations easier. The spreadsheets contain columns for customers to note their specific information for their later reference and for communicating with Support about configuration issues.

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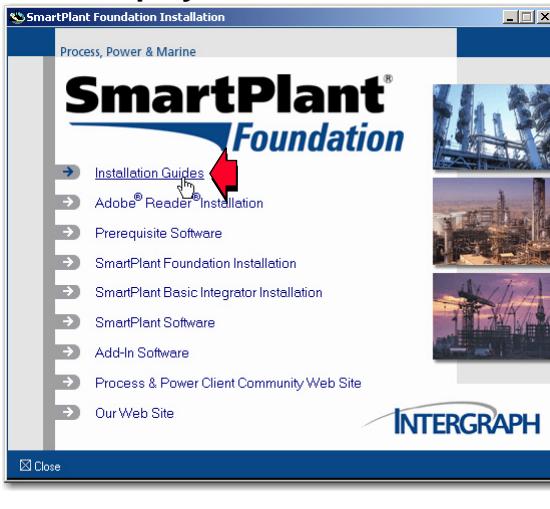
### Documentation

- Two different pieces of documentation will be useful when installing the software:**
  - The SmartPlant Foundation Installation Checklist.
  - The SmartPlant Foundation Installation and Setup Guide.
- The Installation and Setup guide provides detailed steps for all procedures you will use to install the software and setup the basic functionality.**
- The checklist provides high-level information about the installation steps with references to specific procedures in the Installation and Setup guide for more detail.**
- The checklist also has space for you to add notes that pertain specifically to installations at your site.**



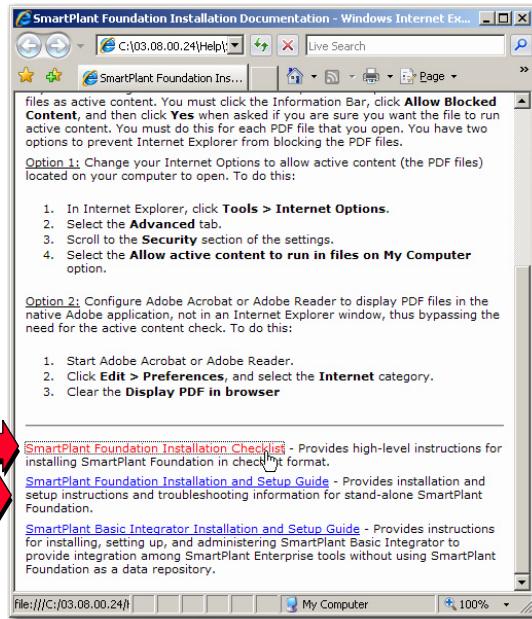
## Documentation

- To access the documentation, click the **Installation Guides** link on the autoplay screen.



## Documentation

- Choose to open the checklist in Excel spreadsheet format or the Installation and Setup guide as a PDF file.



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## 9.4 Installing SmartPlant Foundation

Once the your database software is installed, you are ready to install the prerequisite software and then SmartPlant Foundation.

### Notes:

- The **.NET framework** software is required for the SPF Desktop Client and must be loaded before installing SPF.
- If the FTR component is going to be selected as part of the installation, the **FTR Runtime** engine must also be loaded first.

Insert the SmartPlant Foundation CD into your CD-ROM drive or connect to the remote share containing the delivery media.



### SmartPlant Foundation Installation

The following instructions will guide you through the installation of SmartPlant Foundation.

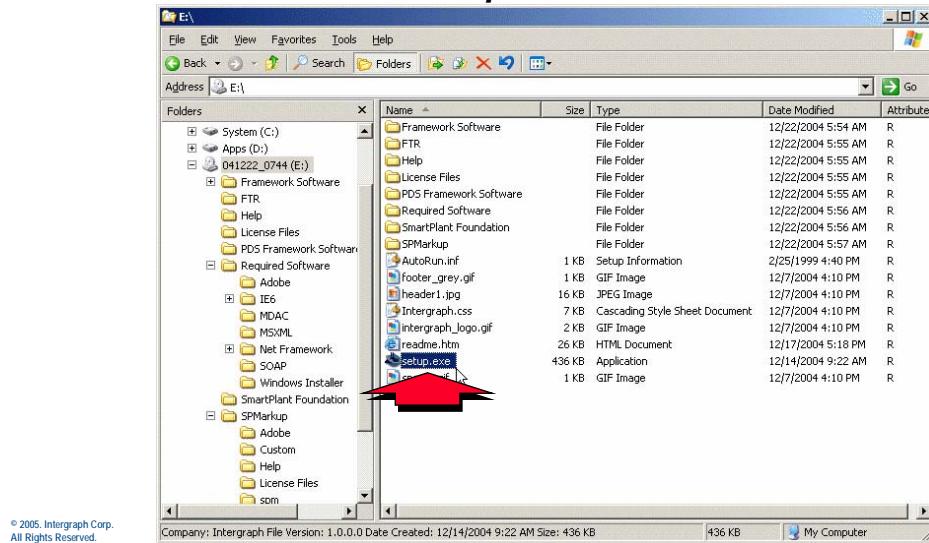
If the autoplay screen does not appear when you load the software CD, use the following steps to access the autoplay.

1. Start Microsoft Windows and open Windows Explorer.
2. Locate the file **setup.exe** from the software delivery media.



## SmartPlant Foundation Installation

Double-click on **setup.exe**



The SmartPlant Foundation installation screen will appear.



## Prerequisite Software

Load the additional prerequisite software on the SmartPlant Foundation server:

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Several applications are required on machines that will function as a SmartPlant Foundation server, however, most of these are delivered on the SPF CD.



## Prerequisite Software

**Load the additional prerequisite software on the SmartPlant Foundation server:**

- Windows Internet Explorer (**IE**) 6.0\*
- Windows Installer 2.0\*
- Microsoft **XML 4.0**, service pack 2 \*
- MSXML Hotfix KB832414\*
- Microsoft Data Access Components (**MDAC**) 2.81 \*
- Simple Object Access Protocol (**SOAP**) Toolkit 3.0 \*
- Microsoft .NET Framework 2.0 \*

\* available on the SmartPlant Foundation CD

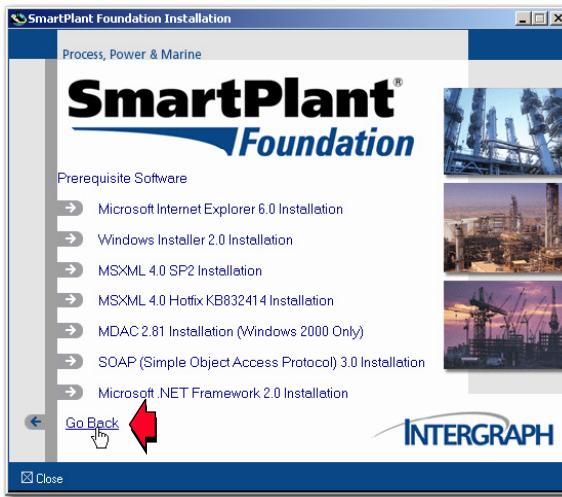
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Once the prerequisite software has been loaded, you are now ready to install SPF.



## Prerequisite Software

- Click **Go Back** once you have installed the prerequisite software.



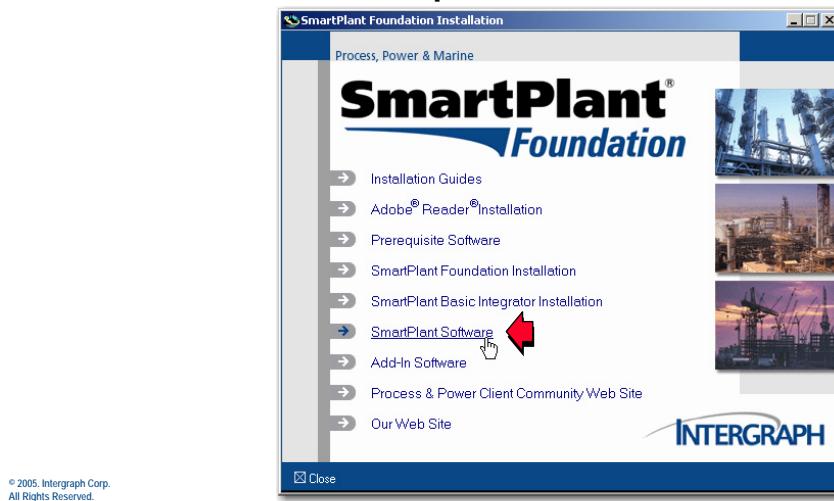
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## 9.4.1 Schema Component Installation

Prior to installing SmartPlant Foundation, the **SmartPlant Schema Component** must be installed. If you attempt to install the SPF software without first installing the SmartPlant Schema Component, you will encounter a warning message.

### SmartPlant Schema Component Installation

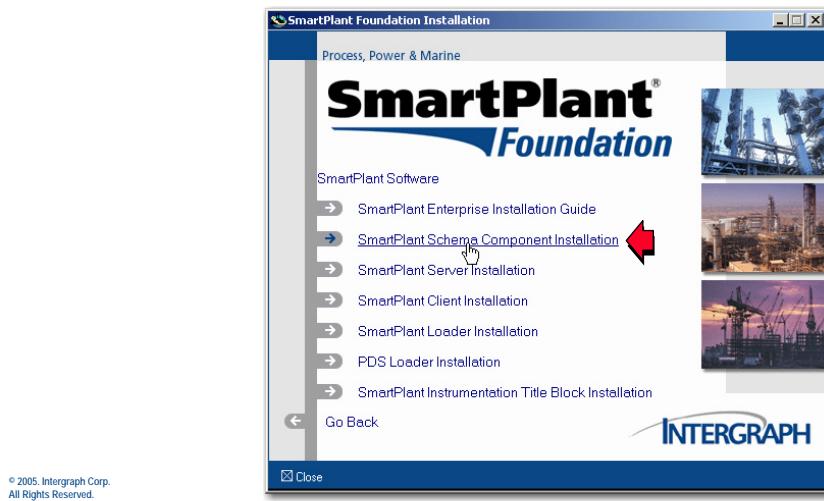
- Click **SmartPlant Software** to install required SmartPlant components.





## SmartPlant Schema Component Installation

- Click **SmartPlant Schema Component Installation** to install the SmartPlant schema and the Schema Editor.

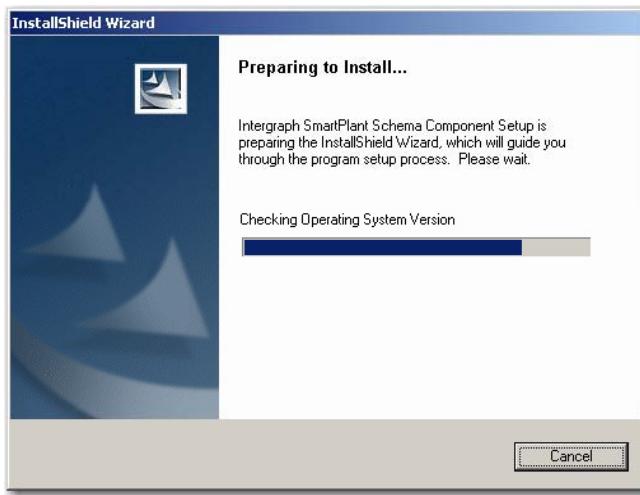


The *SmartPlant Schema Component* Installer screen appears, and the InstallShield Wizard starts.



## SmartPlant Schema Component Installation

The **SmartPlant Schema Component** InstallShield Wizard starts the installation.





## SmartPlant Schema Component Installation

- The **Welcome** screen is displayed. Click **Next** to proceed with the installation.

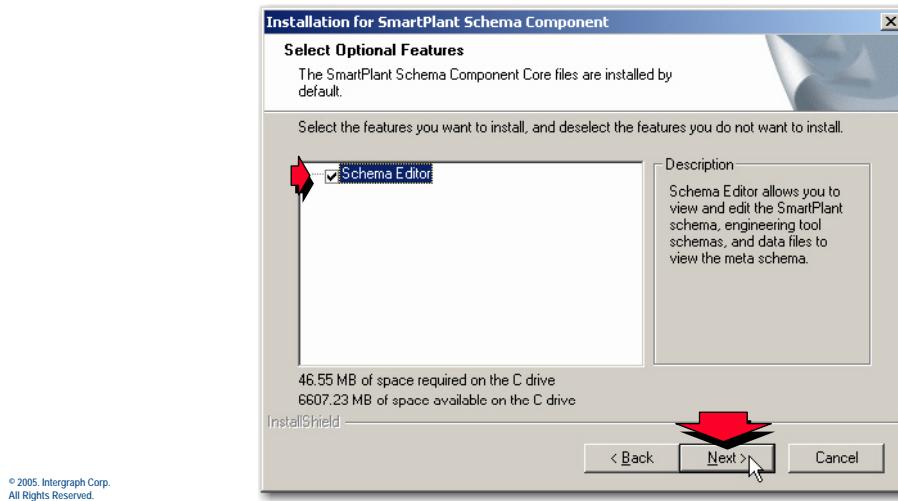


The **Select Optional Features** dialog box appears. You want to install the Schema Editor.

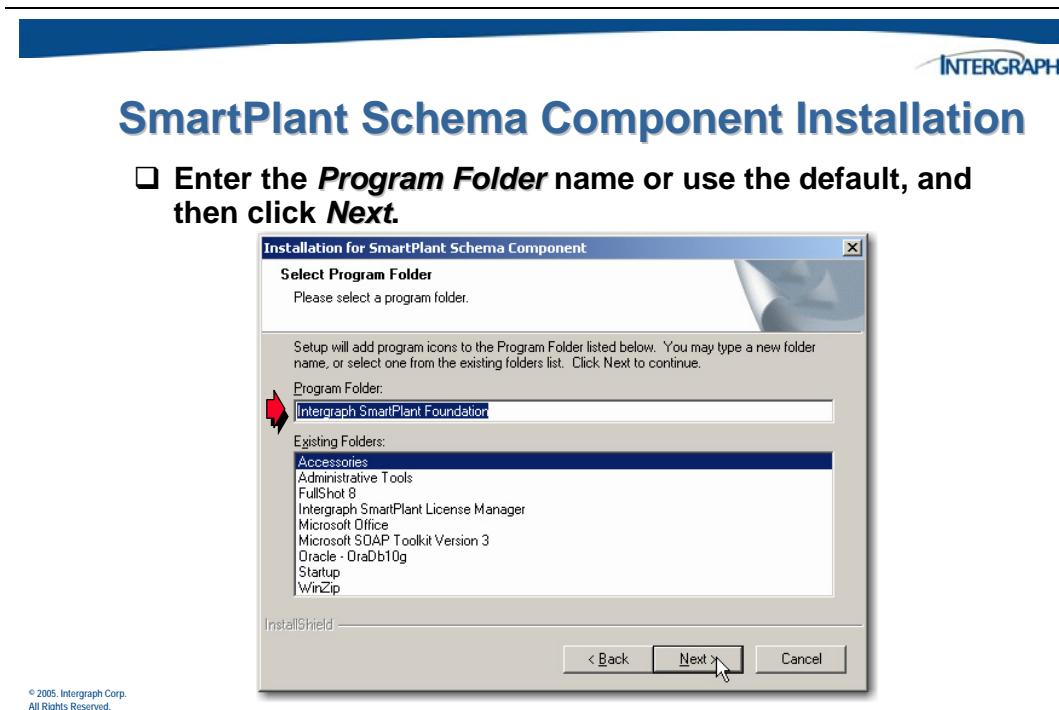


## SmartPlant Schema Component Installation

- Select the **Schema Editor** check box to include the Schema Editor in the installation.

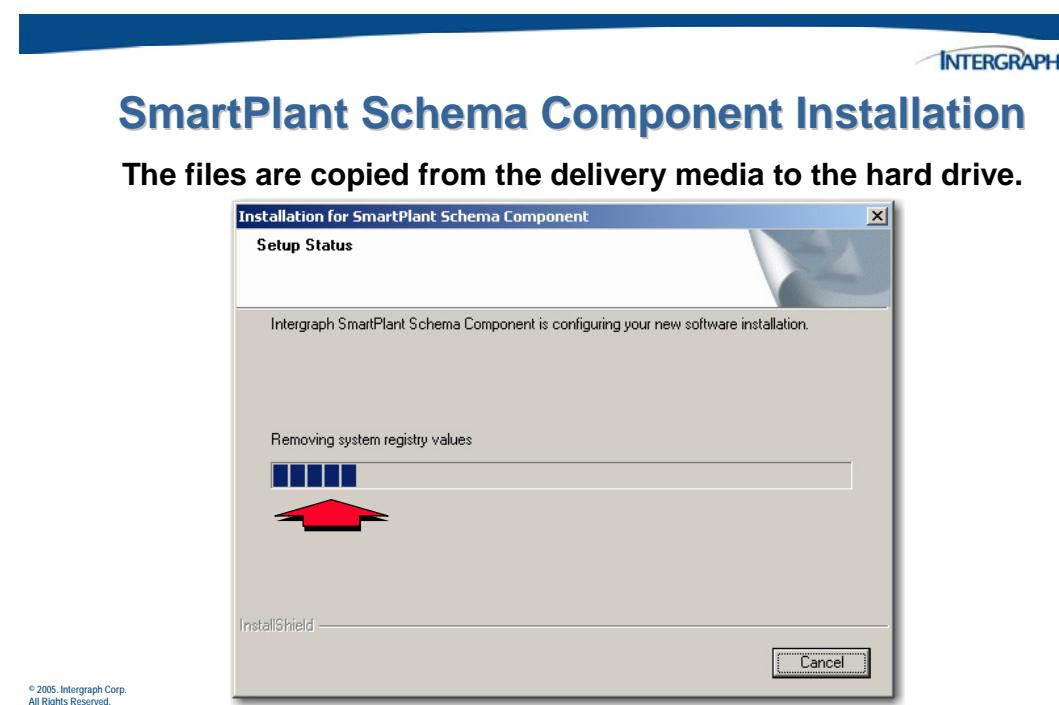


Choose a Program folder.

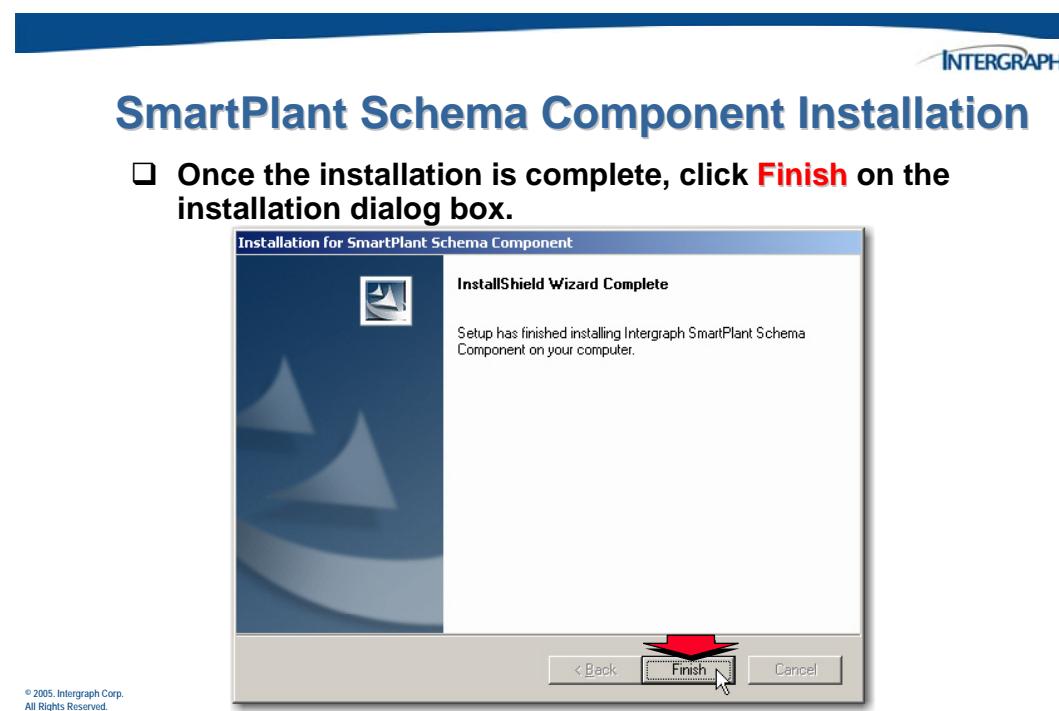


The Schema Editor, which allows you to view and author Schema, Tool Schema, mapping, and data, is installed with the Schema Component.

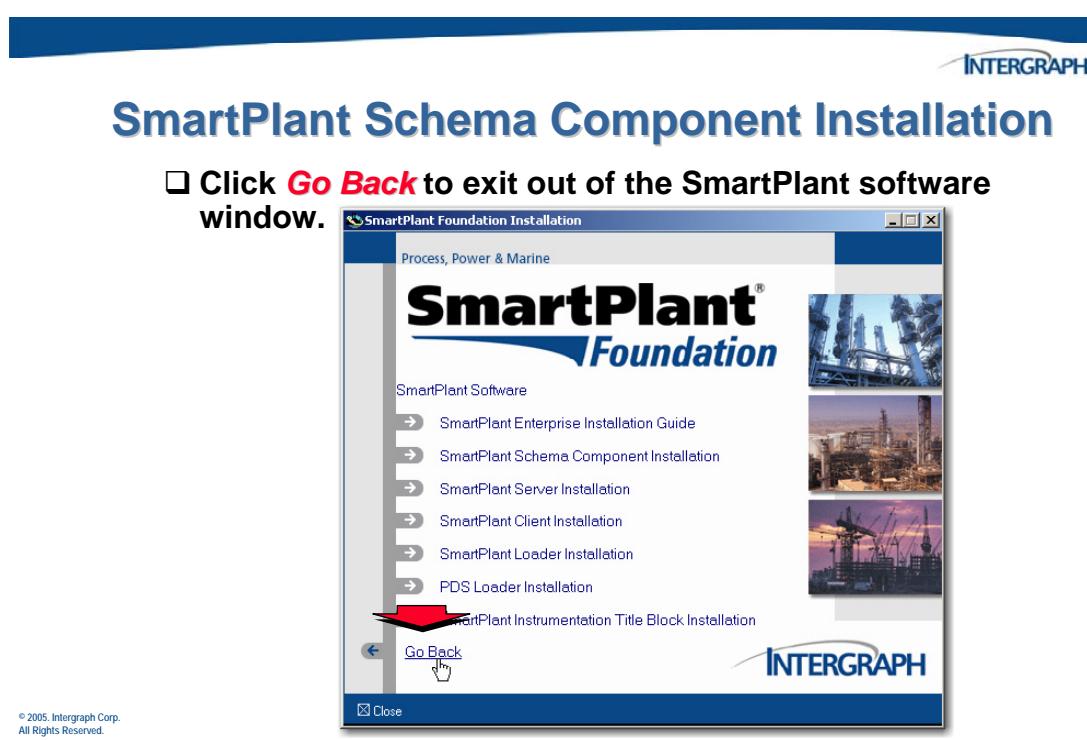
The *InstallShield Wizard* is now ready to start copying files to the defined location.



When the installation is finished, the **InstallShield Wizard Complete** dialog box appears.

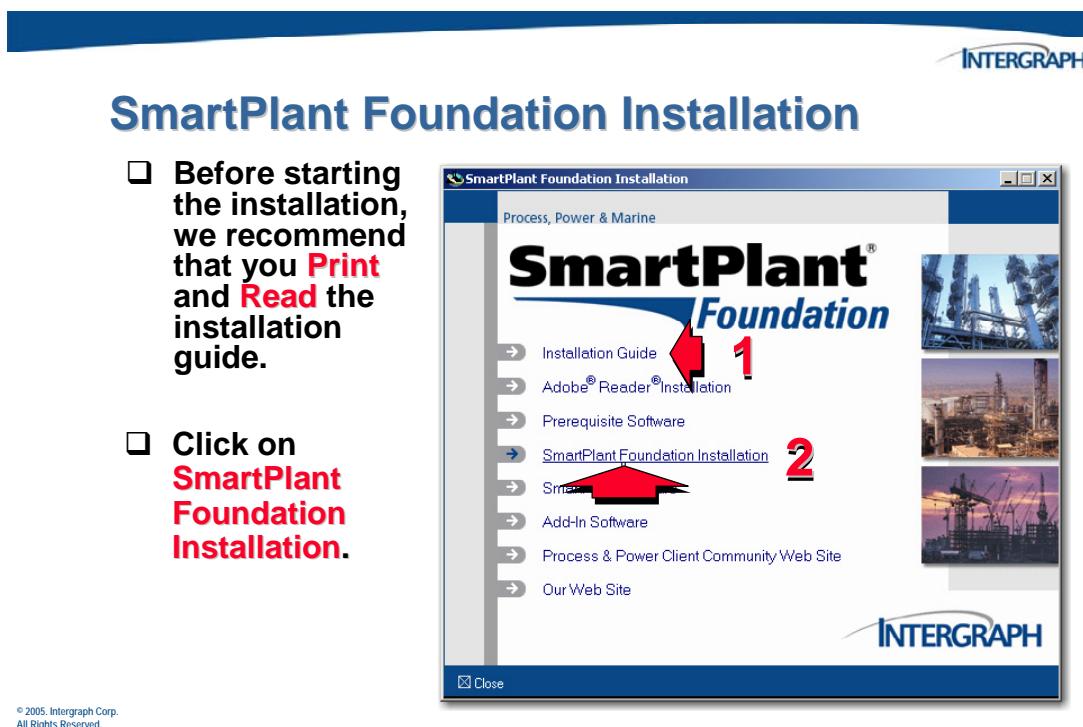


After the Schema Component has been installed, use the **Go Back** option to return to the main installation menu.



## 9.4.2 SmartPlant Foundation Installation Steps

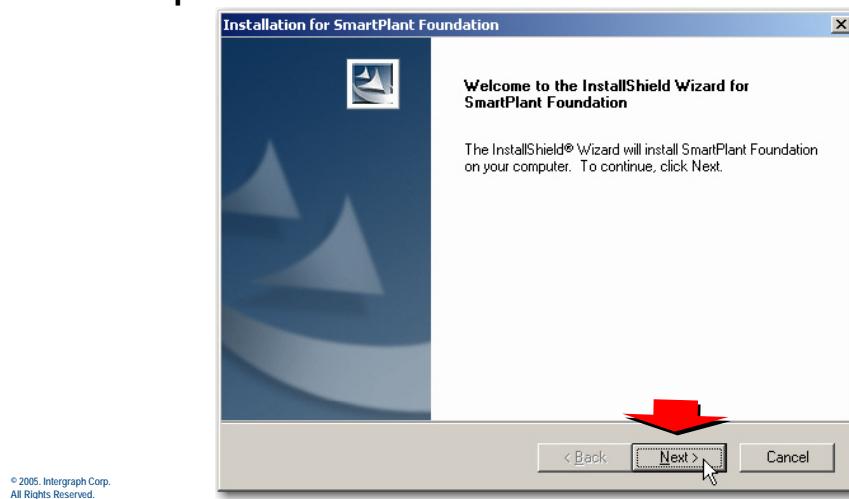
After backing out of the SmartPlant Software menu, the SmartPlant Foundation Installation main menu will appear once more.



The *SmartPlant Foundation* InstallShield Wizard starts.



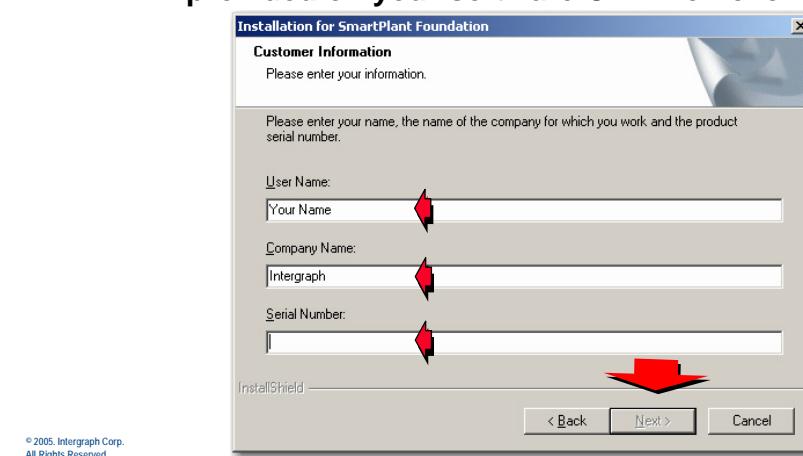
- ❑ The **Welcome** screen is displayed. Select **Next** to proceed with the installation.



Provide the requested customer information. The serial number should be provided with your installation CD.



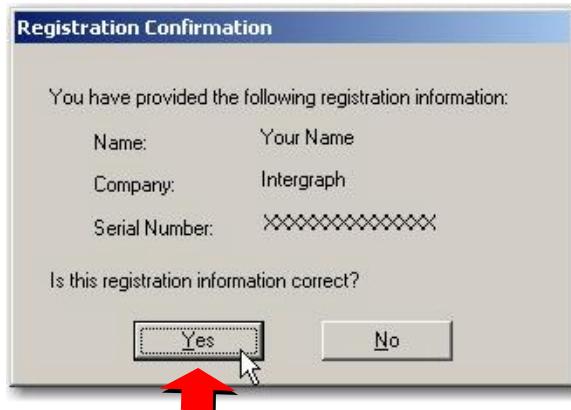
- ❑ The **Customer Information** screen is displayed. Provide your name, your company name, and the serial number provided on your software CD. Then click **Next**.





## SmartPlant Foundation Installation

- ❑ Confirm the information for your name, your company name, and the serial number. If the information is correct, click Yes.



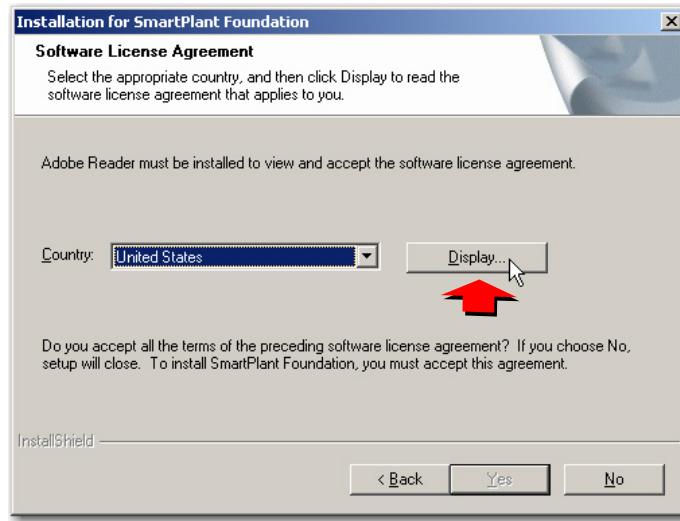
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Confirm your information and serial number, and then click Yes to continue.



## SmartPlant Foundation Installation

- ❑ Click **Display** to open the Software License Agreement.

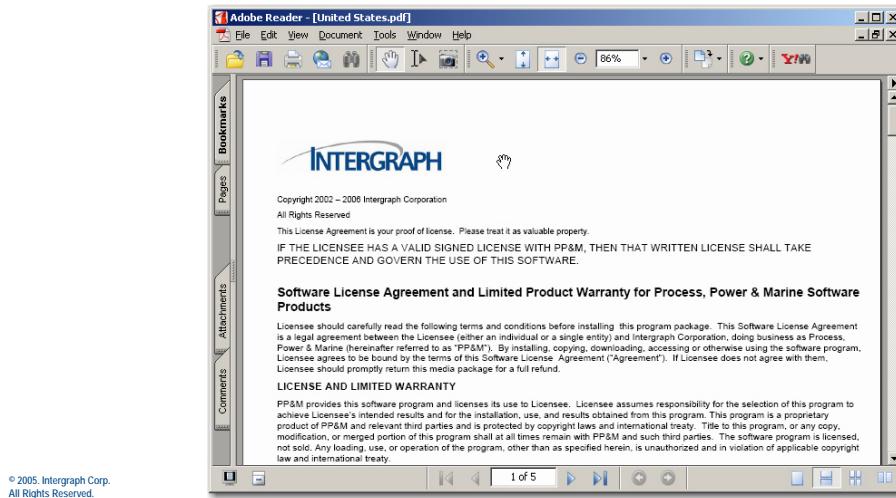


You must have Adobe Reader to view the Software License Agreement.



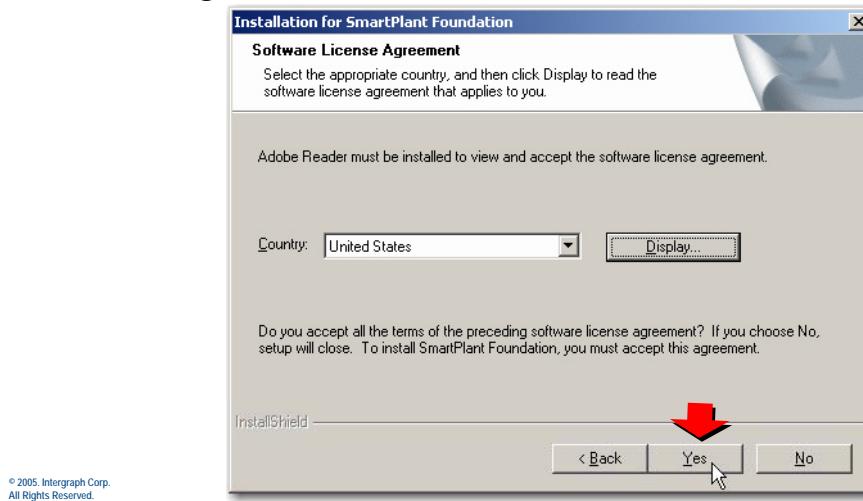
## SmartPlant Foundation Installation

- Thoroughly read the **Software License Agreement**. Once you finish reading the agreement, close the PDF window.



## SmartPlant Foundation Installation

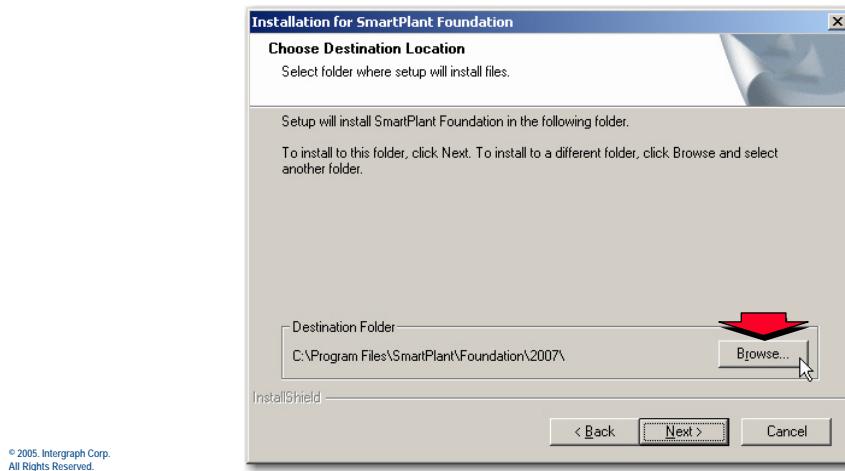
- If you agree to the terms of the **Software License Agreement**, click Yes.





## SmartPlant Foundation Installation

- ❑ The default destination location is **C:\Program Files\SmartPlant\Foundation\2007**. Click **Browse** to select a different location.

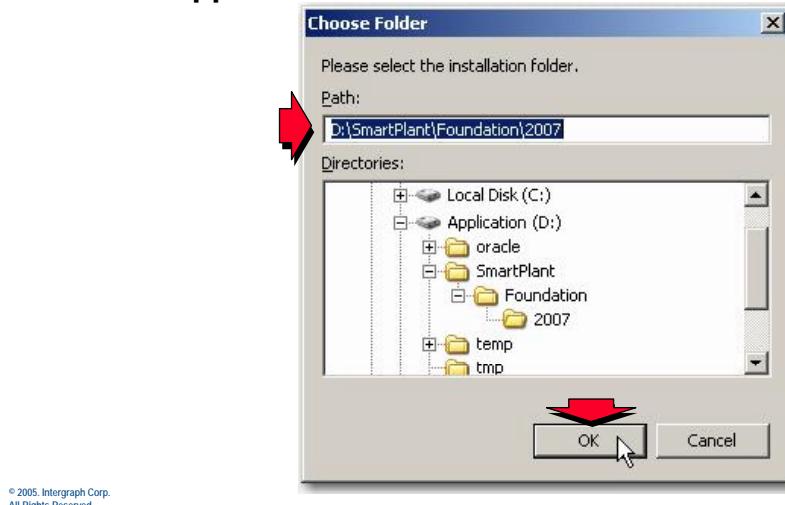


Choose the location where you want to install the SmartPlant Foundation software.



## SmartPlant Foundation Installation

- ❑ Choose a folder where you want to install the application.

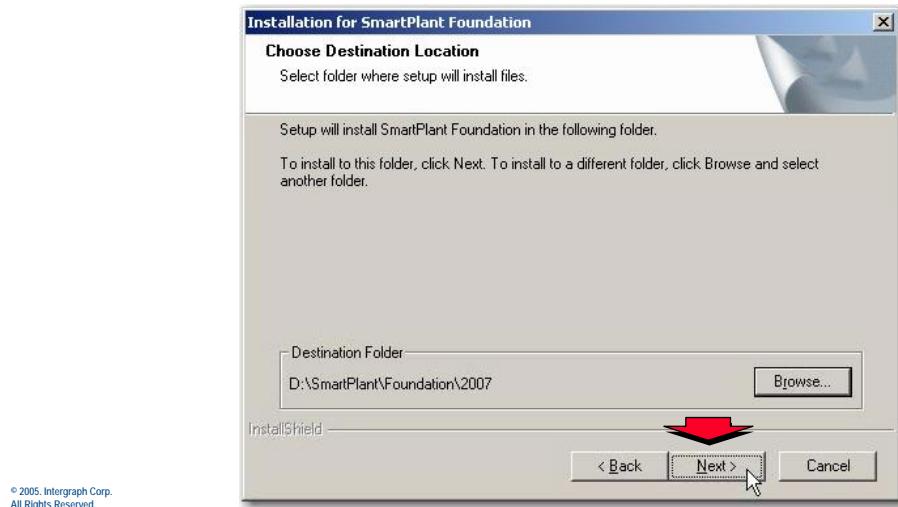


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## SmartPlant Foundation Installation

- Once you have selected the *Destination Location*, click **Next** to continue.

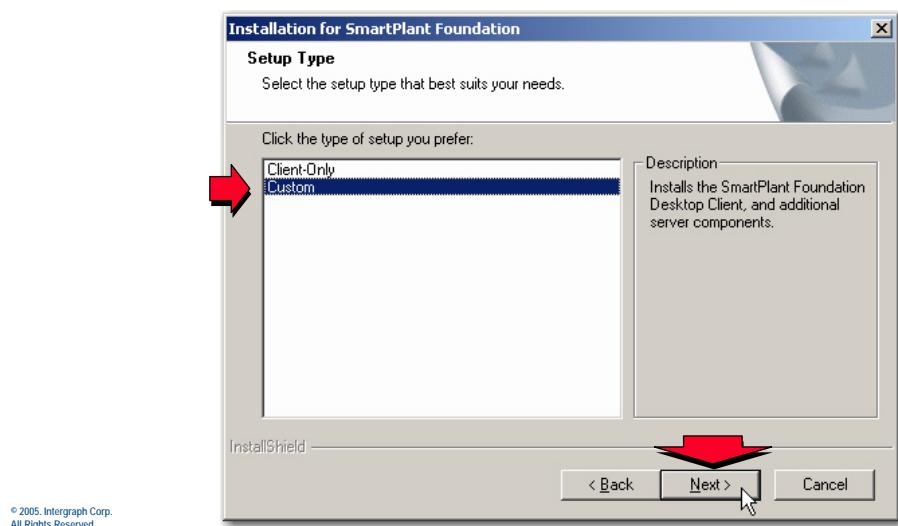


To load only the client software, select *Client-Only*. The *Custom* option is used to load the server components. The *Select Components* dialog will appear.



## SmartPlant Foundation Installation

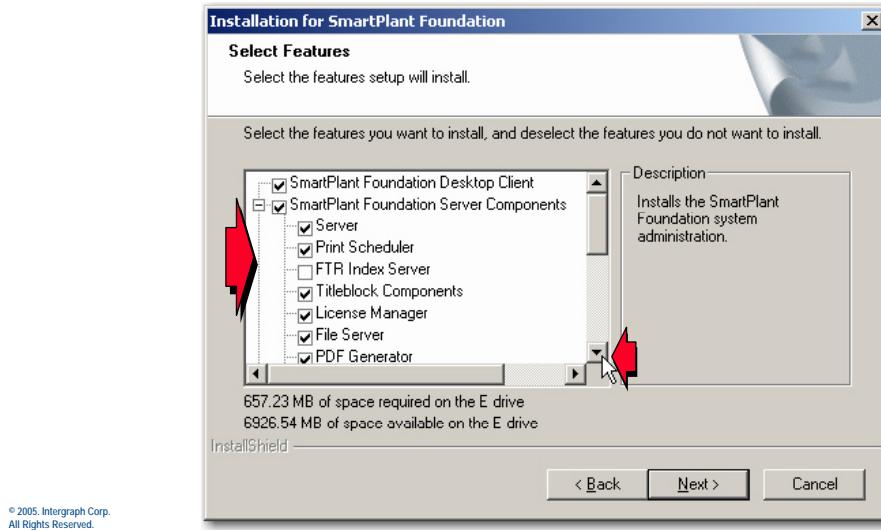
- Select **Custom** to choose the options to be installed.





## SmartPlant Foundation Installation

- ❑ Select the server components to be installed.



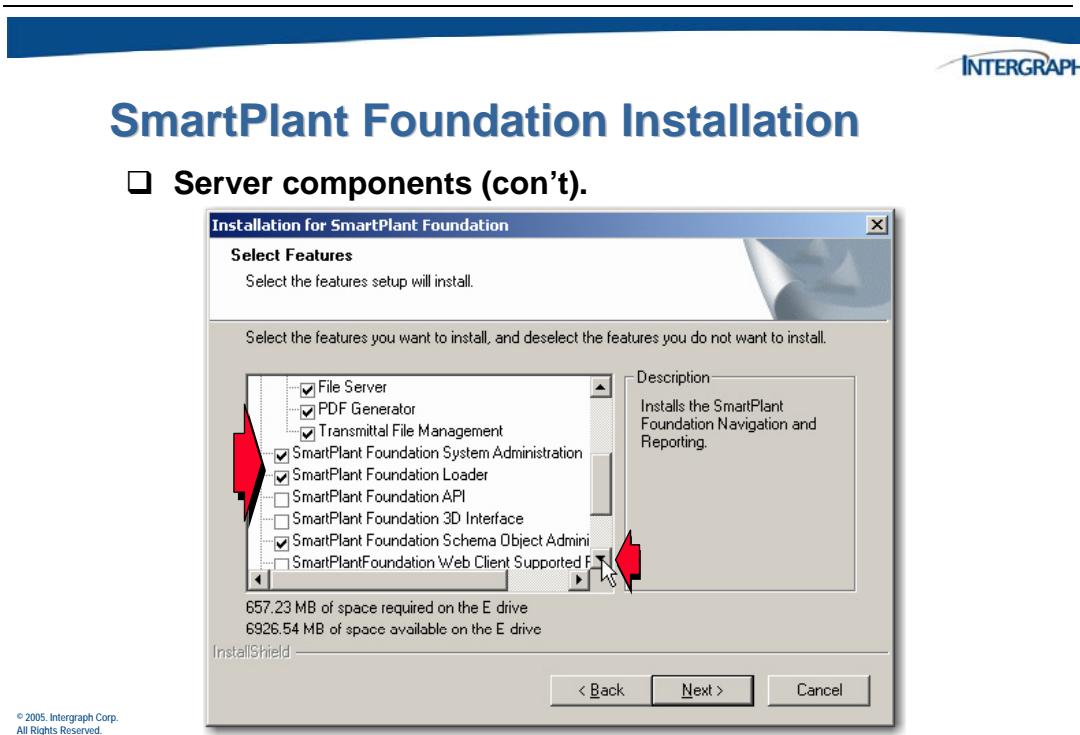
The following describes the server components available in the *Select Components* dialog:

- ❑ **SmartPlant Foundation Desktop Client** - A windows application that provides the basic SmartPlant Foundation functionality to end-users and requires local installation of the client software. The Desktop Client software is written using **Microsoft .NET** technology and requires the *.NET Framework* runtime loaded on the client machine. System administrators define user access to functionality in the Desktop Client in SmartPlant Foundation System Administration.

### SmartPlant Foundation Server Components

- ❑ **Server** – Loads the server utilities that allow the system administrator to create and maintain basic software elements and control the access and functionality provided to each SmartPlant Foundation user.
- ❑ **Print Scheduler** – Handles printing for an identified list of printers. It allows users to select documents with attached files and print the attached files at a specific date and time. The software prints only those files that are designated as viewable when users add them to objects in the SmartPlant Foundation Web Client.
- ❑ **FTR Index Server** – Separate module of SmartPlant Foundation that allows you to use full text retrieval to store, index, and search for text contained in or associated with objects managed by the SmartPlant Foundation system. Full-text retrieval creates an inverted index (a list of the individual words with locations in the files) and uses this index at search time.
- ❑ **Titleblock Components** – Installs the title block component that allows you to update title blocks automatically or manually.

- License Manager** – Component of SPF that uses a third-party product developed by Globetrotter Software (Flexlm License Manager and FlexMeter) to manage both perpetual and daily tokens. The Flexlm product handles the general checkout and checkin of licensing as well as tracking information about the checked out license, such as user name and remaining access time. The FlexMeter product is used to keep track of the number of daily licenses that are available in the license pool.
- File Server** – SPF file service that handles direct file transfer between vaults and the client.
- PDF Generator** – Component that generates PDF alternative file format, such as PDF instead of PID.



- Transmittal File Management** – Component that can generate alternate formats for application files then copy them for distribution on a CD or DVD. These time-consuming tasks can be scheduled to occur asynchronously.
- SmartPlant Foundation System Administration** – Allows the system administrator to create and maintain basic software elements and control the access and functionality provided to each SmartPlant Foundation user.
- SmartPlant Foundation Loader** – Allows system administrators to create business object load files and bulk load them into SmartPlant Foundation.
- SmartPlant Foundation API** – Allows programmers to write external applications that can interact with SmartPlant Foundation.

- SmartPlant Foundation 3D Interface** – Allows the client application to view 3D graphics in the right-hand pane in the client window.
- SmartPlant Foundation Schema Object Administration** – Used by system administrators to create view definitions, graph definitions, and edge definitions in SmartPlant Foundation. It can attach workflows and methods to interface definitions in the SmartPlant schema and make all the SmartPlant schema property definitions available to SmartPlant Foundation as display items for forms. It can also convert class definitions in the SmartPlant schema into SmartPlant Foundation forms.
- SmartPlant Foundation Web Client Support** – Installs the secure signoff with the NT authentication file for the client.



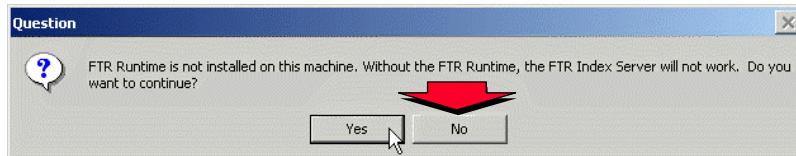
- SmartPlant Foundation Change Management Administration** - Loads the server utilities that allow system administrators to maintain all the key objects that make up a change lifecycle. In CM Admin, the administrator can create, update, and delete change management objects, such as workflow templates, steps, check lists, and statuses, as well as create and delete relationships between these objects.
- SmartPlant Foundation Web Client Server Files** - Provides the functionality of the SmartPlant Foundation client software through an easy-to-deploy Internet Explorer Web browser.
- Navigation and Reporting** – Installs the SmartPlant Foundation Navigation and Reporting component that gives the client the ability to navigate and view related graphics.

The following messages **may** appear if needed software components are not loaded.

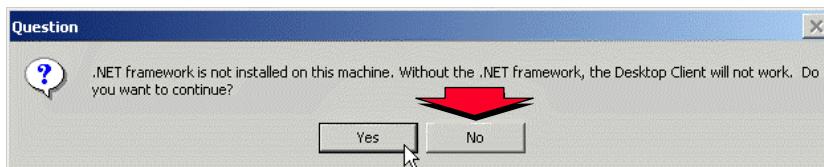


## SmartPlant Foundation Installation

- If the FTR component is selected but not loaded, a warning dialog is displayed.



- The .NET framework component is required and if not detected, a warning dialog is displayed.

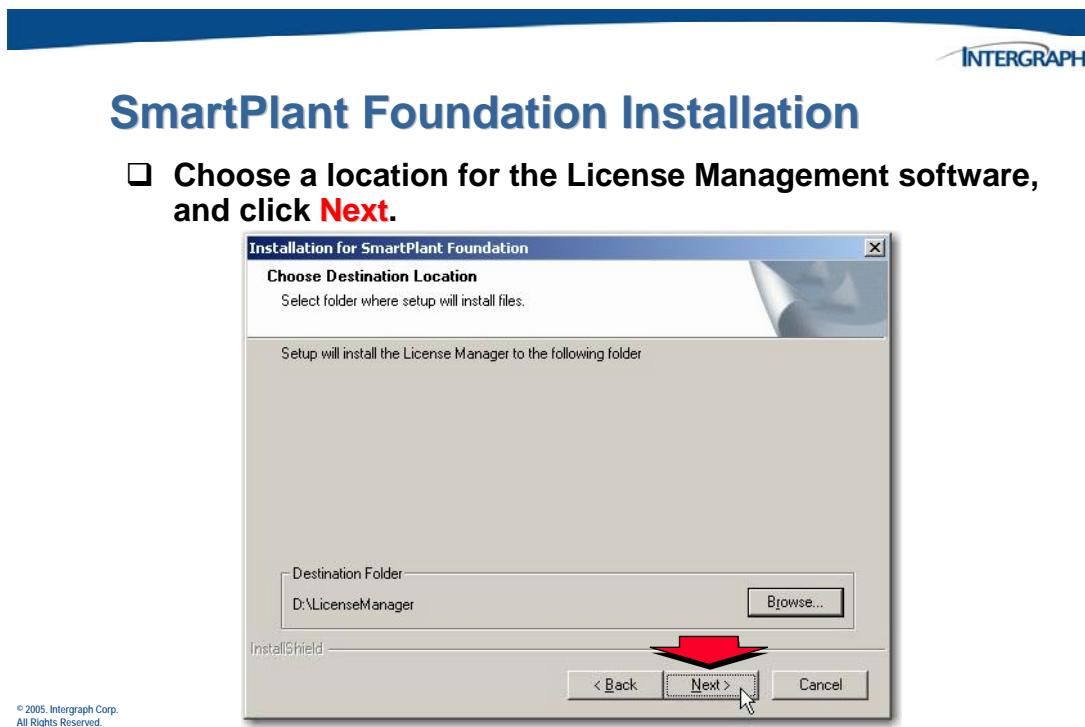


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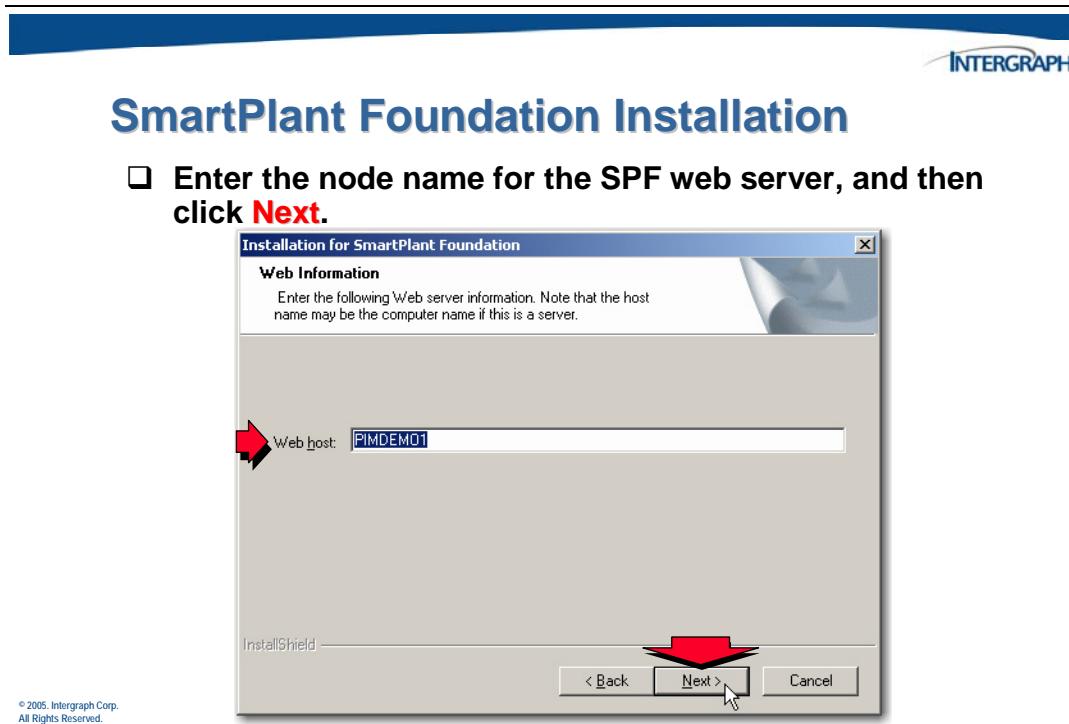
If you selected to install the License Management software on the *Select Component* dialog box, the *Choose Destination Location* dialog for the **License Manager** component will appear. Use the **Browse** button to select a folder path.

Choose or enter the folder path where the license software is to be loaded.

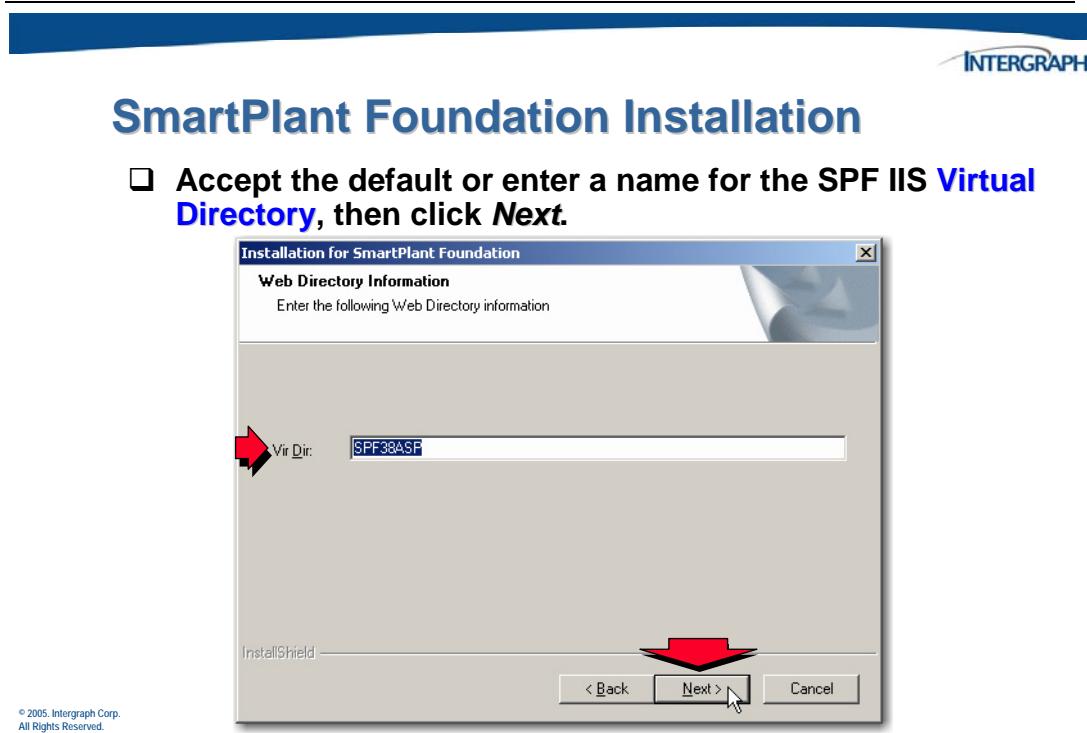


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The *Web Information* dialog will appear.



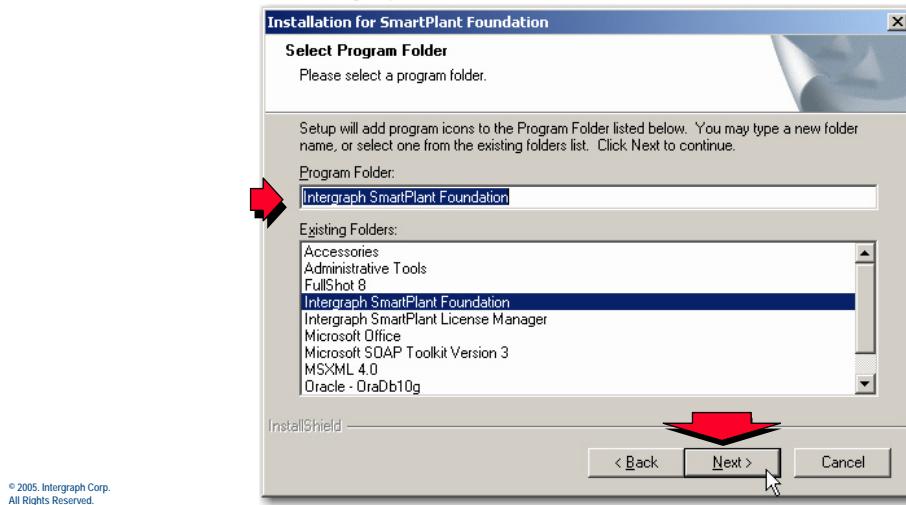
The default virtual web directory that will be mapped to the physical folder that contains the .asp pages will be displayed next.





## SmartPlant Foundation Installation

- Enter a Program Folder name or use the default, and then click **Next**.

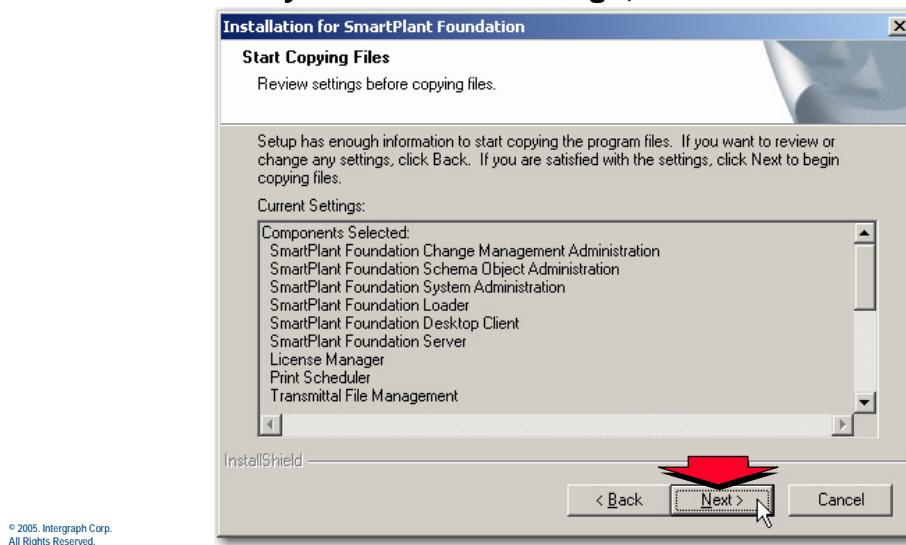


The *InstallShield Wizard* is now ready to start copying files to the defined location.



## SmartPlant Foundation Installation

- Review your selected settings, and then click **Next**.

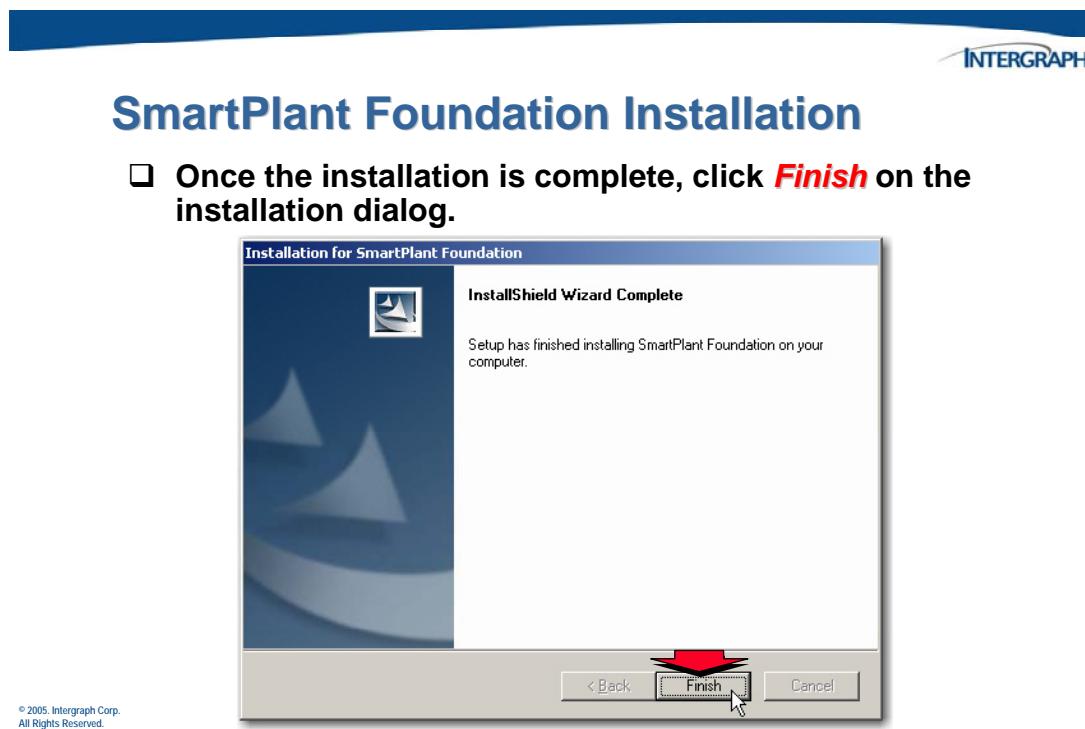


The installation will copy the necessary files onto the local hard drive.



**The files are copied from the delivery media to the hard drive.**

When the installation finishes, the *InstallShield Wizard Complete* dialog will appear.



If the SmartPlant components **will not** be installed, click the **Close** option.

---



## SmartPlant Foundation Installation

- If you are performing a **standalone SPF installation**, you have completed software installation, and you are ready to configure a new site.
  
- If you are planning to use SPF in a full SmartPlant environment, you are ready to install the SmartPlant Components.

## 9.5 Installing SmartPlant Components

After you install the SmartPlant Foundation software on the SPF/SmartPlant server, you can install the SmartPlant Server components. SmartPlant Foundation must always be installed first.



The SmartPlant schema, which is a large .xml file, describes all data that passed into and out of SmartPlant. There is a copy of the SmartPlant schema on the SmartPlant server and every client. The SmartPlant schema describes the format of the data, as well as many rules that apply to the data. To validate data and enforce the rules in a consistent manner, the SmartPlant Schema Component is provided. The SmartPlant Schema Component is a set of .DLLs that provide common functionality, including the following:

- Parsing
- Validation
- Comparison
- Mapping
- Navigation
- Authoring (create, modify, delete, relate)

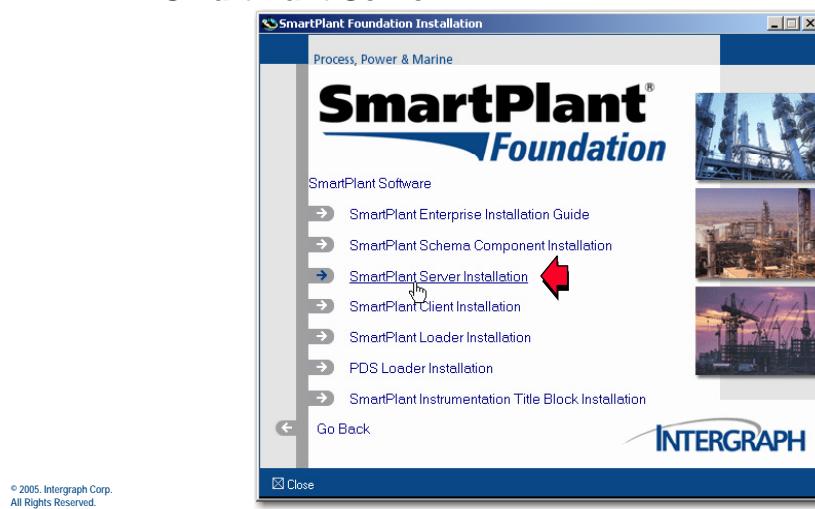
## 9.5.1 SmartPlant Server Installation

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.



### SmartPlant Server Installation

- ❑ Click **SmartPlant Server Installation** to install the SmartPlant Server.

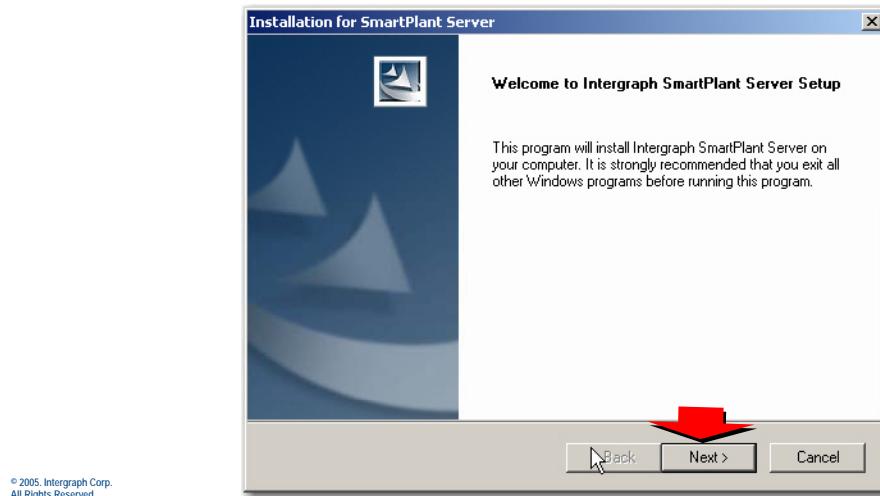


The *SmartPlant Server* Installer opens, and the InstallShield Wizard starts.

---

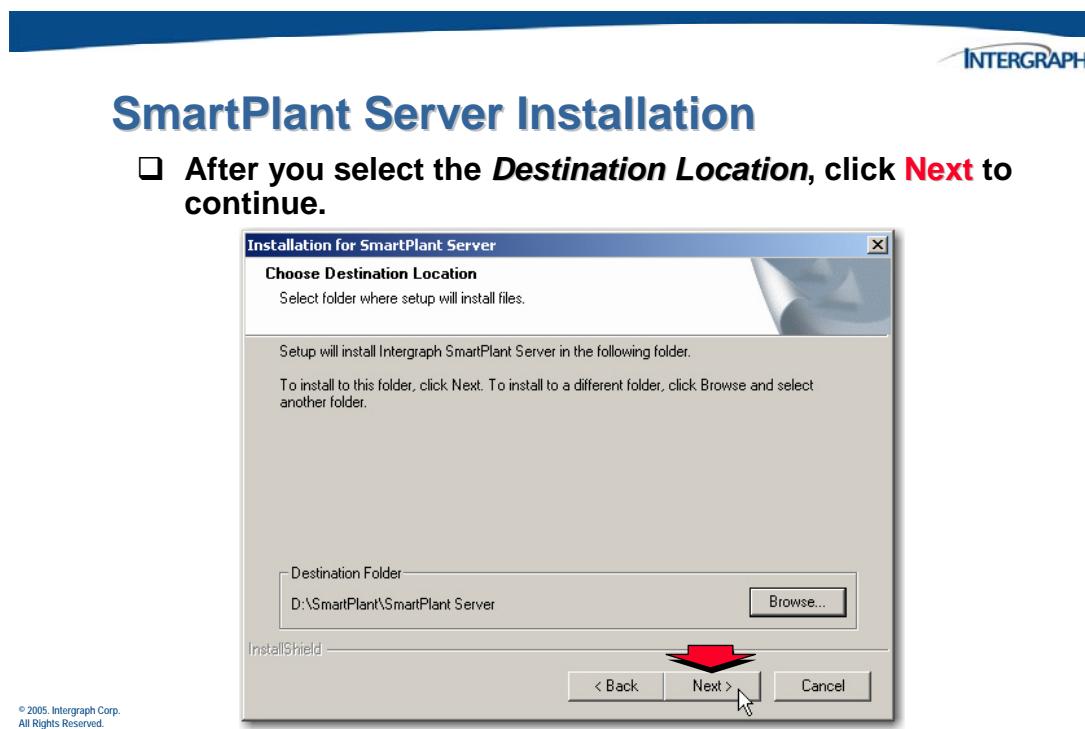


- The *Welcome* screen is displayed. Click **Next** to proceed with the installation.

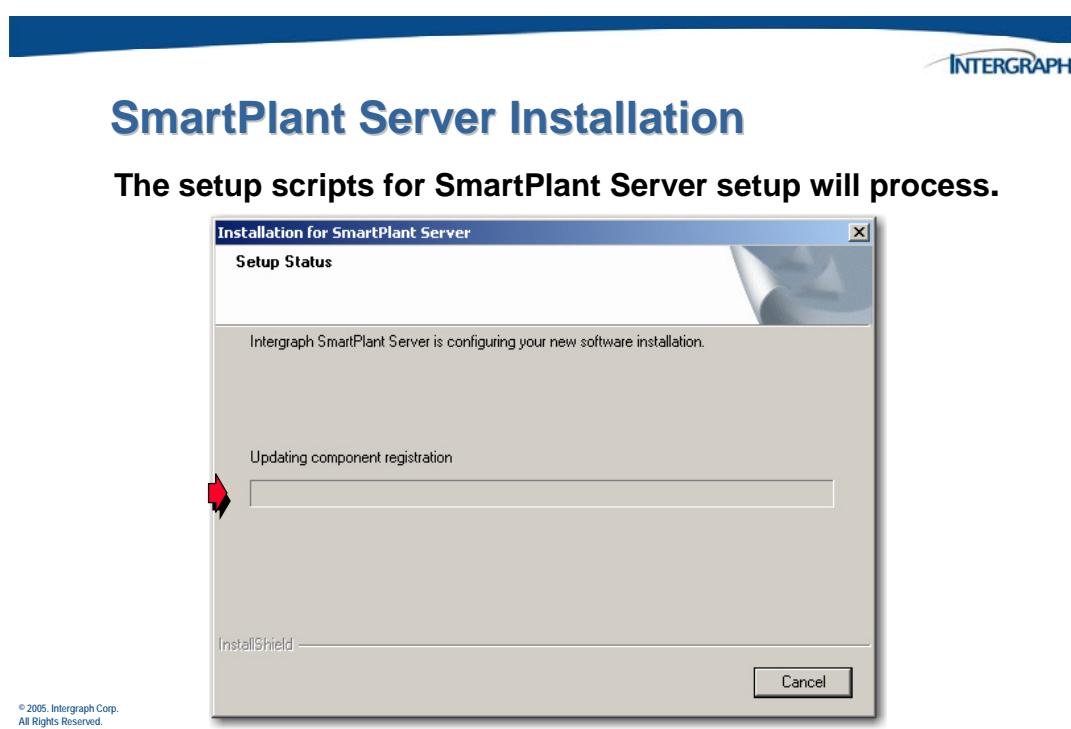


The *Choose Destination Location* dialog box appears.

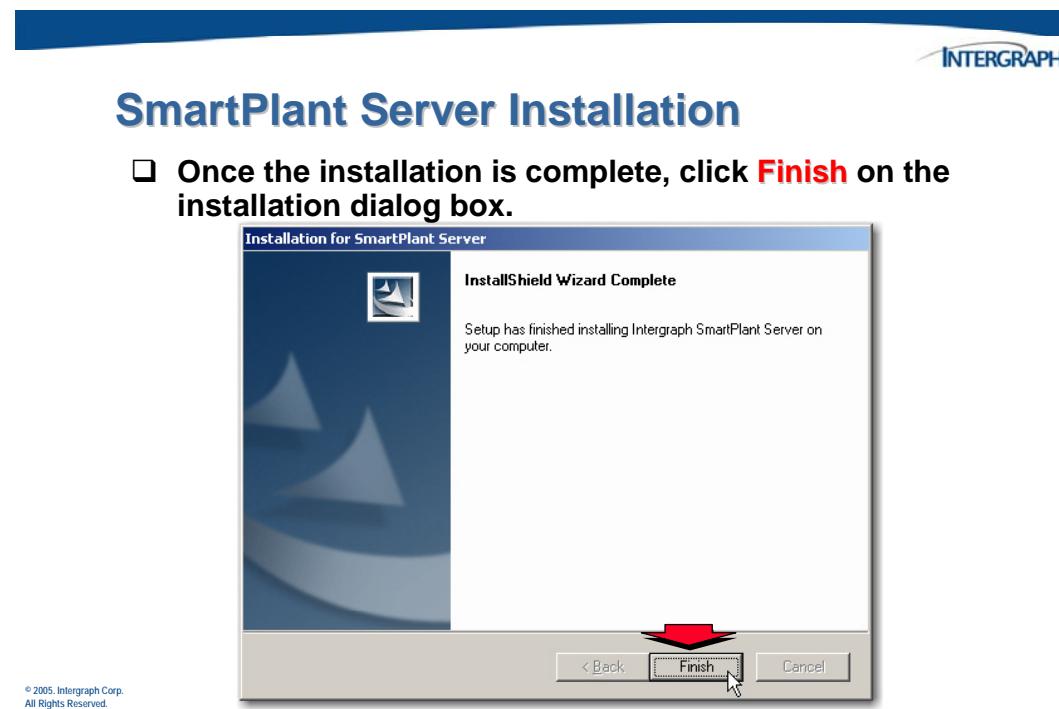
---



Once you have selected a location, the *InstallShield Wizard* is ready to start installing files.



When the installation finishes, the *InstallShield Wizard Complete* dialog box appears.



## 9.5.2 SmartPlant Client Installation

The **SmartPlant Client** controls all communications between SmartPlant applications and the SmartPlant Server. It consists of several components; the most visible of which is the common user interface (UI), which provides a consistent look and feel to SmartPlant operations within those authoring tools that choose to use it. The SmartPlant Client is also built on the SmartPlant Schema Component.

The SmartPlant Client must be installed on all client computers that will publish to or retrieve from SmartPlant. The SmartPlant Client requires that the SmartPlant Schema Component be installed first.

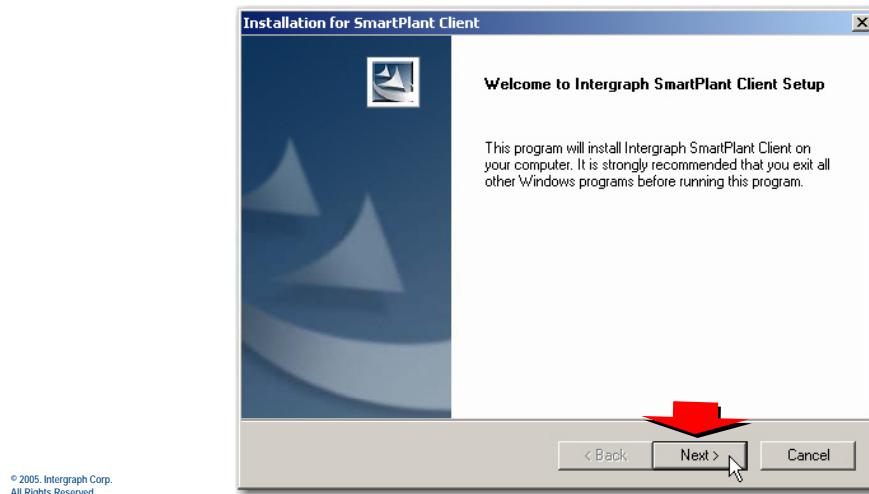


The *SmartPlant Client* Installer appears, and the InstallShield Wizard starts.



## SmartPlant Client Installation

- ❑ The *Welcome* screen is displayed. Click **Next** to proceed with the installation.

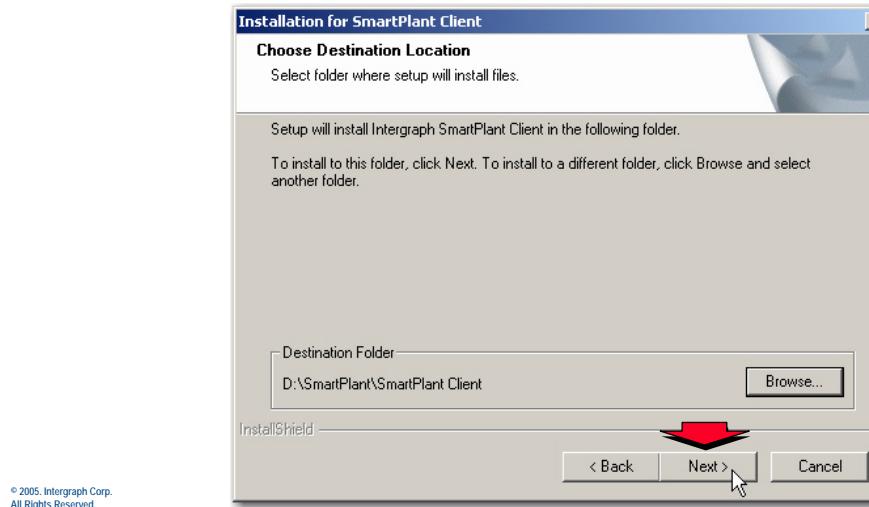


The *Choose Destination Location* dialog box appears.



## SmartPlant Client Installation

- ❑ After you select the *Destination Location*, click **Next** to continue.





## SmartPlant Client Installation

- Enter a **Program Folder** name or use the default, and click **Next**.

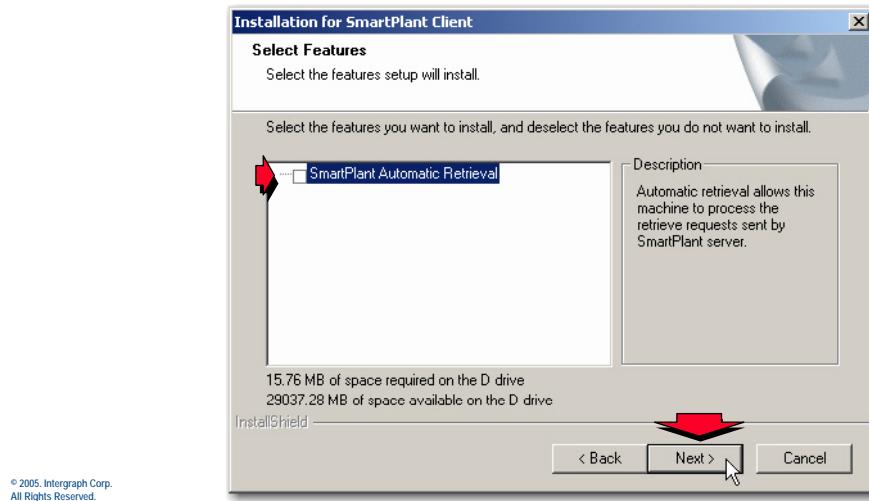


Deactivate the *SmartPlant Automatic Retrieval* option on the *Select Features* screen.



## SmartPlant Client Installation

- Turn off this check box to omit the **SmartPlant Automatic Retrieval** feature from the installation.

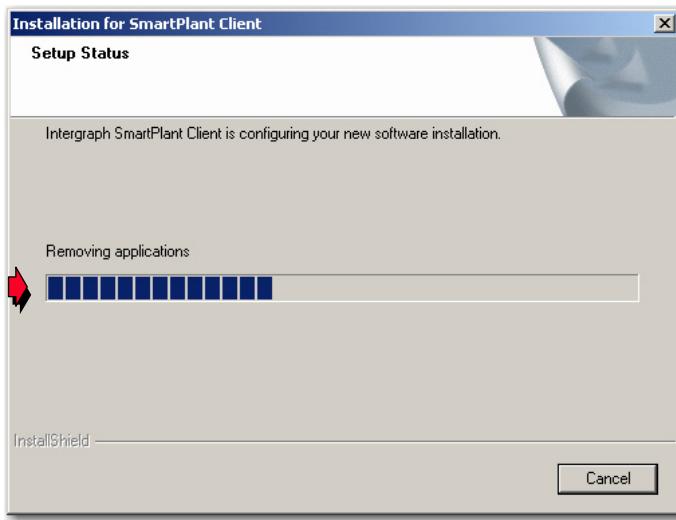


The *InstallShield Wizard* is now ready to start installing files to the defined location.



## SmartPlant Client Installation

The setup operations run for the SmartPlant Client setup.

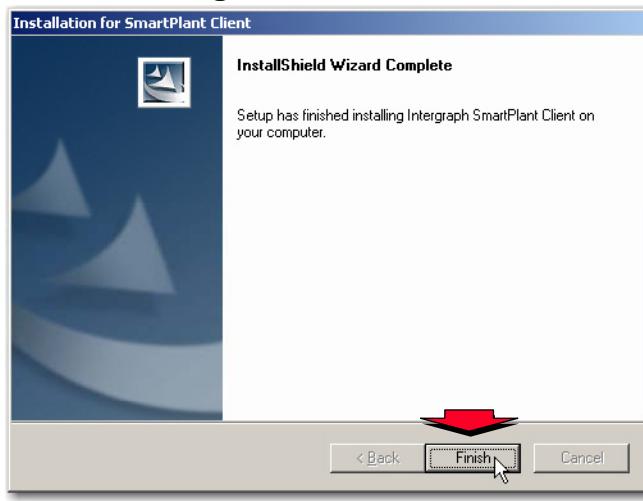


When the installation finishes, the *InstallShield Wizard Complete* dialog box appears.



## SmartPlant Client Installation

- Once the installation is complete, click **Finish** on the installation dialog box.



### 9.5.3 SmartPlant Loader Installation

The **SmartPlant Loader** loads data published by the authoring tools into the SmartPlant Foundation database. The SmartPlant Loader continuously monitors SmartPlant activity for files to load.

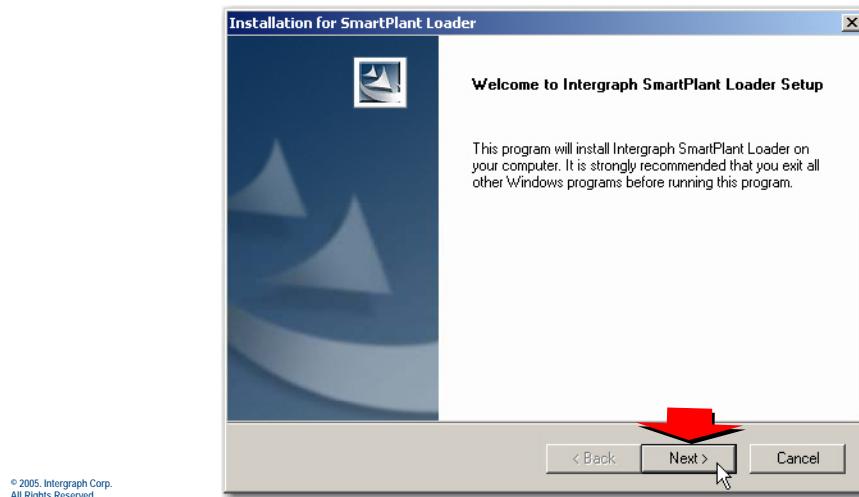


The *SmartPlant Loader* Installer appears, and the InstallShield Wizard starts.



## SmartPlant Loader Installation

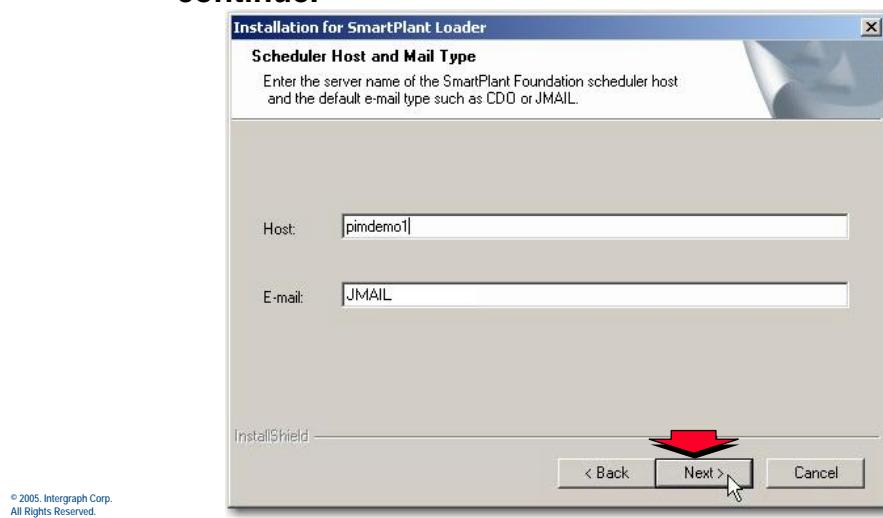
- The *Welcome* screen is displayed. Click **Next** to proceed with the installation.



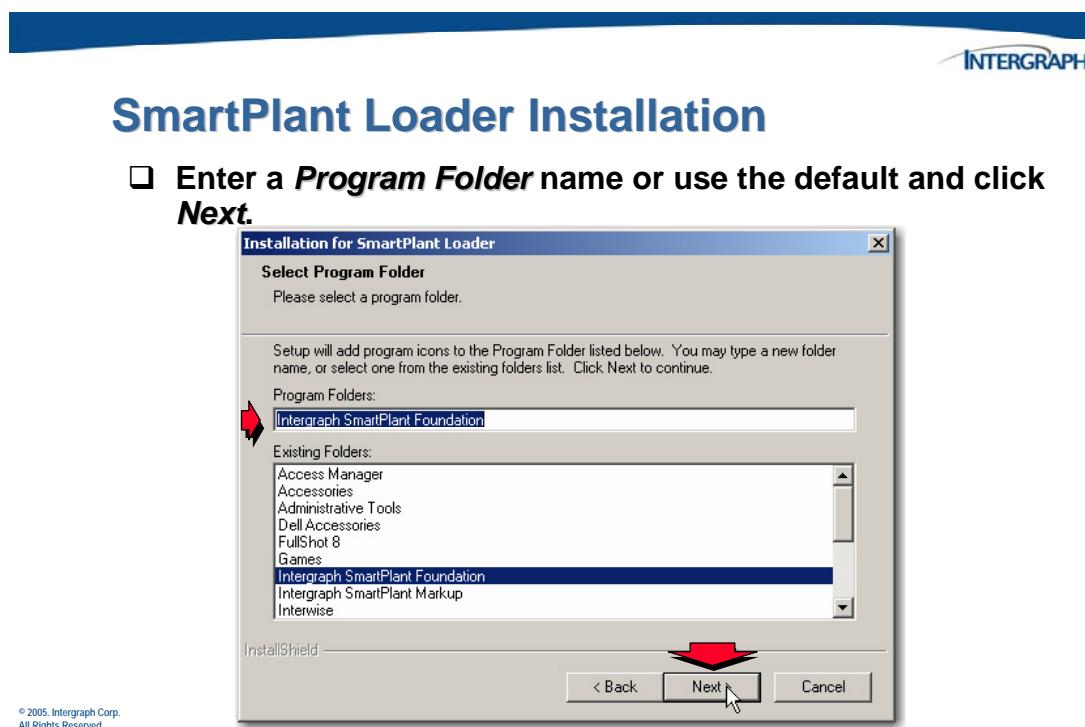
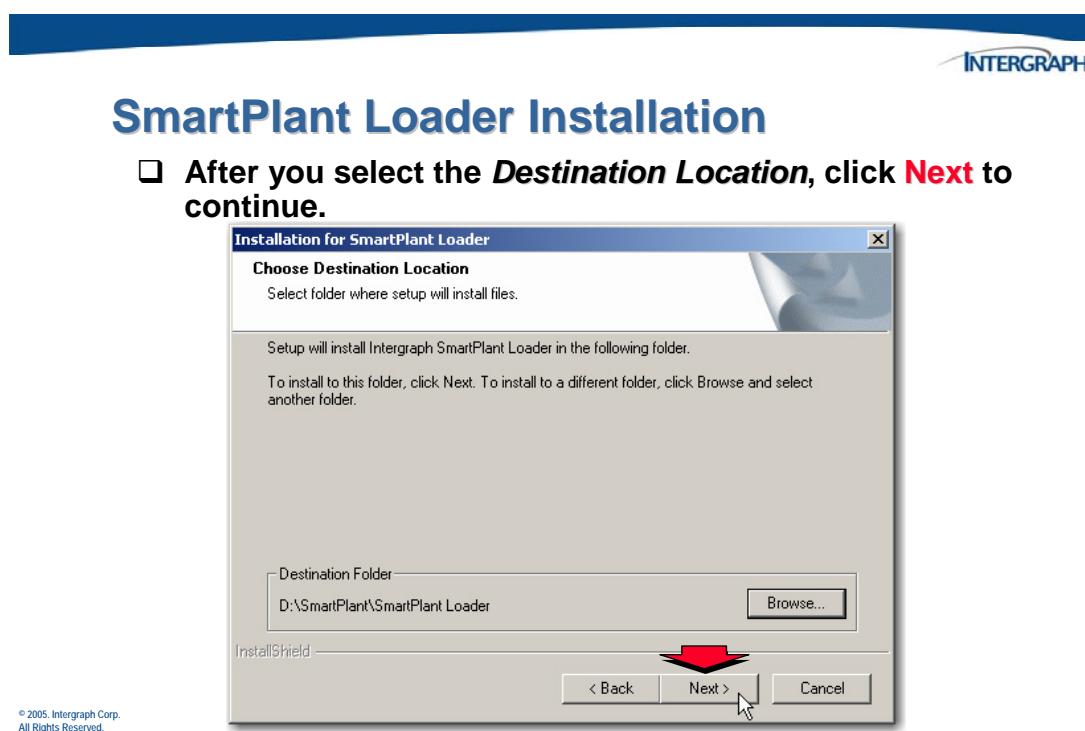
Enter information about the loader scheduler host and mail type (JMAIL or CDONTS).



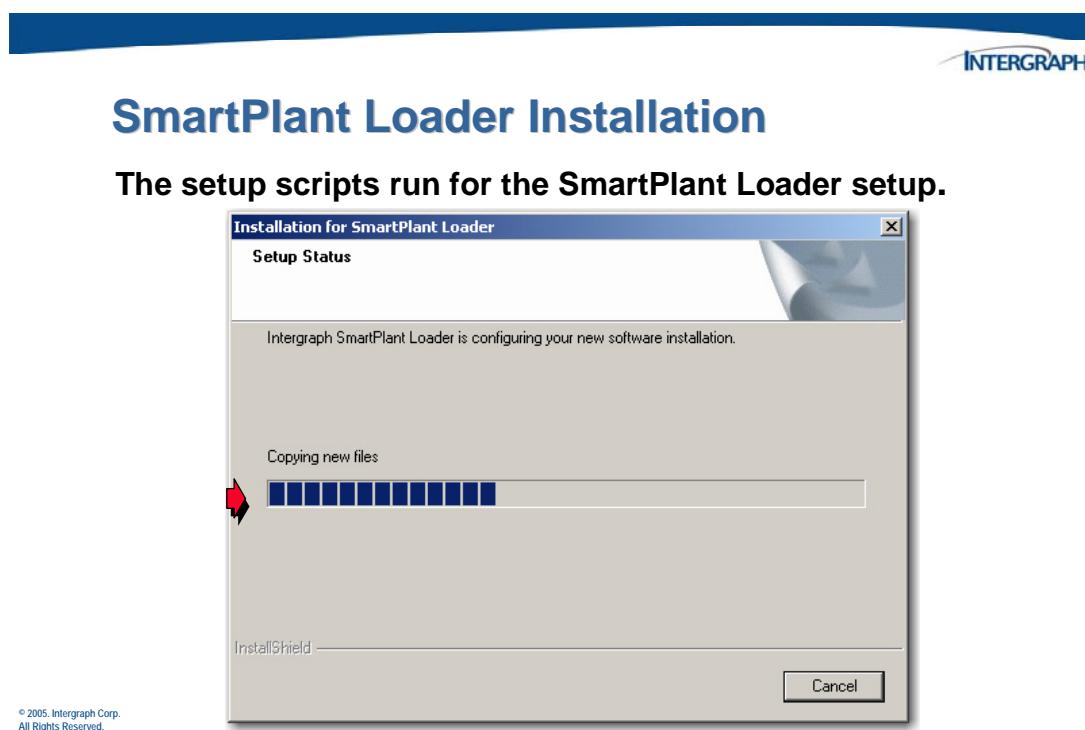
- ## SmartPlant Loader Installation
- Enter the **mail host** and **type**, then click **Next** to continue.



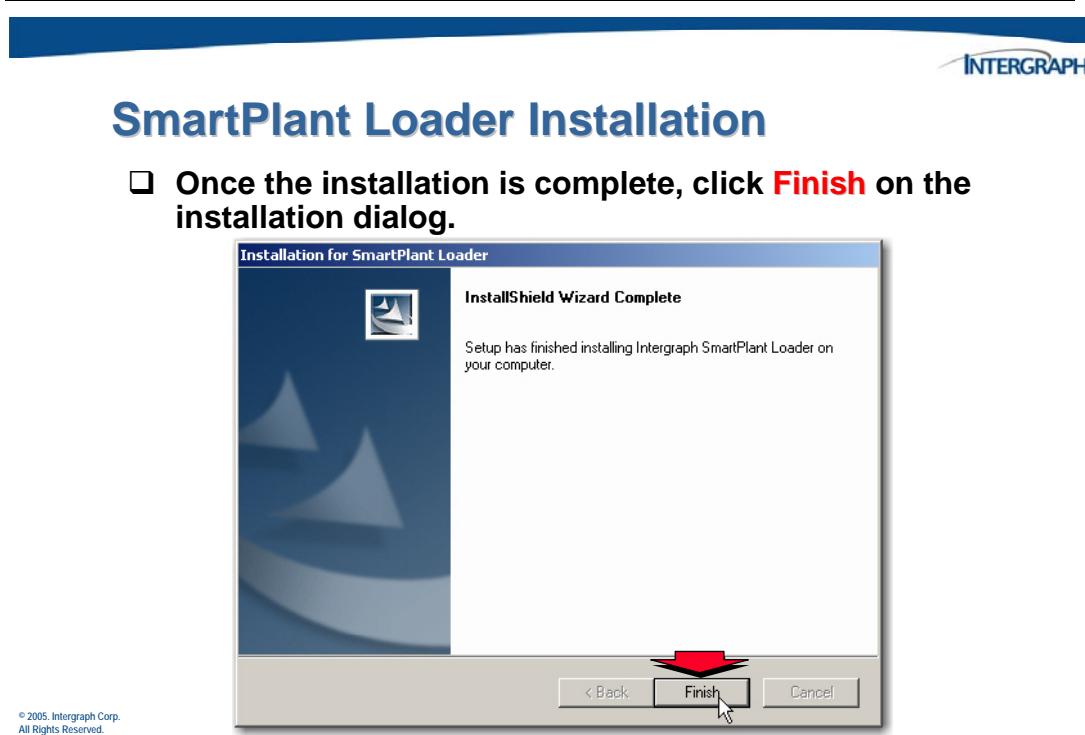
The **Choose Destination Location** dialog box appears.



The *InstallShield Wizard* is now ready to start installing files to the defined location.



When the installation finishes, the *InstallShield Wizard Complete* dialog box appears.



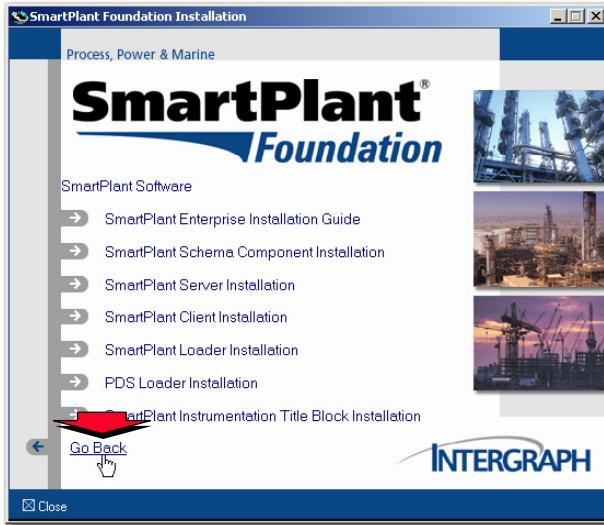
Once all of the SmartPlant Software has been installed, exit the SmartPlant setup.

---



## SmartPlant Installation

- ❑ Click **Go Back** to exit out of the SmartPlant software.



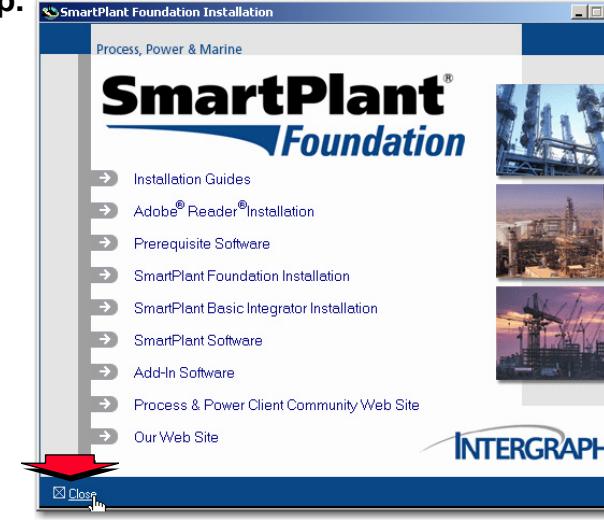
Then, exit the SmartPlant Foundation setup.

---



## SmartPlant Foundation Installation

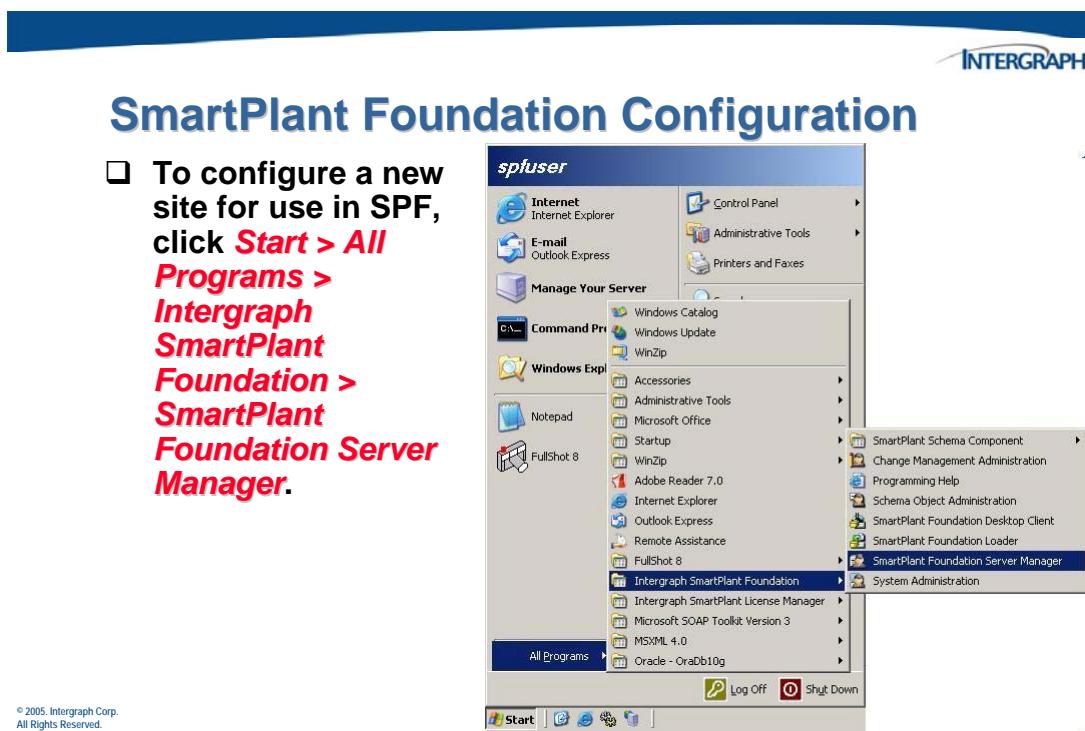
- ❑ Click **Close** to terminate the SmartPlant Foundation setup.



## 9.6 Configuring the SPF Installation

While the steps in the previous section walked you through the process of installing the SmartPlant Foundation software, you are not quite ready yet to run the software. You must first perform a number of steps to configure the installation and prepare to run the applications.

Most of the remaining steps are performed in the new SmartPlant Foundation Server Manager application.



The first time you open the Server Manager application, you are prompted to select a root directory. The next time you open the application, it will return to the same root directory.

## SmartPlant Foundation Configuration

- The first time you open the Server Manager application, you will encounter the following message. Click OK.



Using the **Browse** button, select the location where you installed your software.

## SmartPlant Foundation Configuration

- Click the **Browse** button to choose a default location, and then click **OK**.



---

Note: The software can create a new location for you, if the directory you specify does not already exist, but you must provide write access to that new directory.

---

## SmartPlant Foundation Server Manager

The SmartPlant Foundation Server Manager had several options that allow you to configure different aspects of the SmartPlant Foundation software.

**SmartPlant Foundation File Service** - Used to configure the settings used by the SmartPlant Foundation File Server. These settings are displayed from the SmartPlant Foundation File Service web.config file located in the SmartPlant Foundation installation folder. This node contains no sub-nodes.

**SmartPlant Foundation Full Text Retrieval** - Used to configure various registry keys and environment variables used by Full Text Retrieval. This node contains no sub-nodes.

**SmartPlant Foundation License Manager** - Used to configure various registry keys and environment variables used by the License Manager. This node contains no sub-nodes.

**SmartPlant Foundation Scheduler** - Contains the properties associated with configuring the scheduler for SmartPlant Foundation. This node is responsible for editing the SPF38Scheduler.exe.config file and contains two child nodes: **Processors** and **Inspectors**. These two child nodes list all of the children for those nodes represented in the SPF38Scheduler.exe.config file.

**SmartPlant Foundation Sites** - Displays the SmartPlant Foundation sites created using Server Manager and allows you to upgrade existing sites and to create new sites. This node contains a **System Settings** node, used to configure server registry settings, and can contain any number of sub-nodes, each representing a site. The **Settings** node under each site node contains configuration information for that site, and the **Vaults** node under each site contains any vaults defined for the site.

**SmartPlant Foundation Loader** – Used to configure registry keys used by SmartPlant Loader. This node contains no sub-nodes.

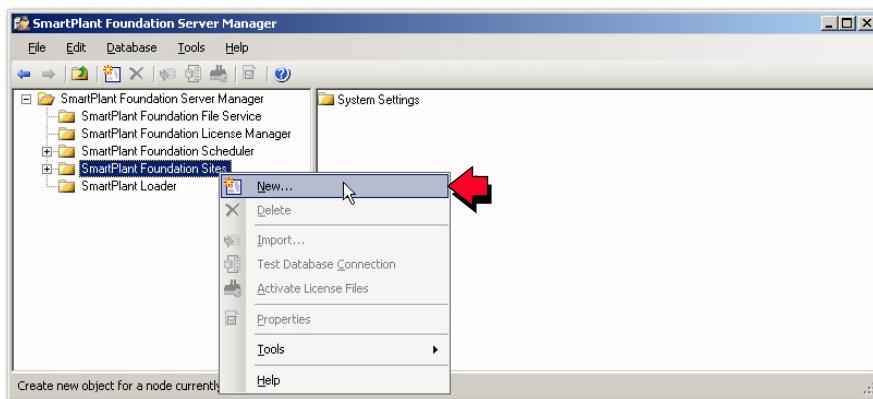
## 9.6.1 Create a New Site

The right-click menu on the *SmartPlant Foundation Sites* option allows you to create a new site. There you can create vaults and tablespaces and set specific settings for the site.

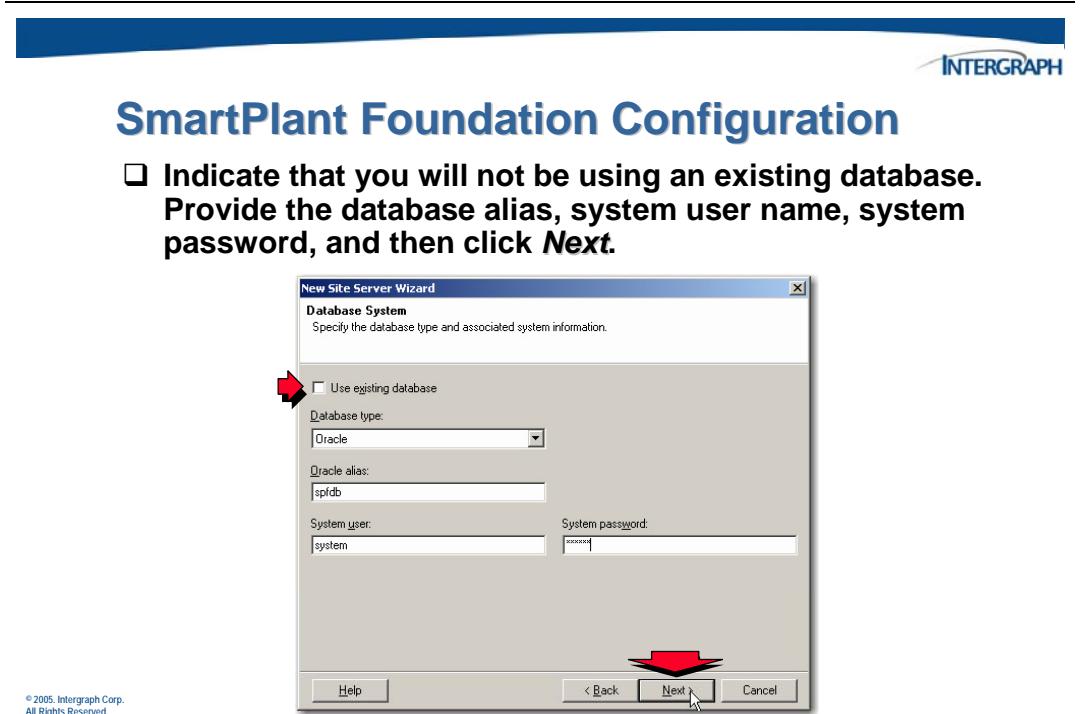
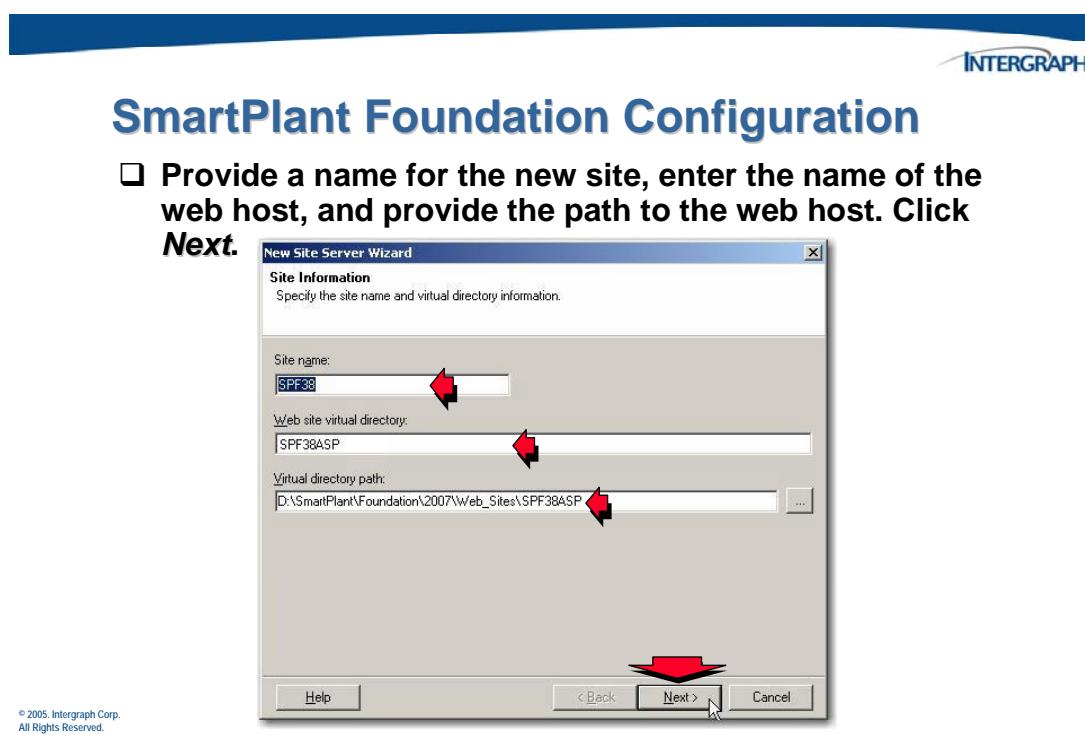


### SmartPlant Foundation Configuration

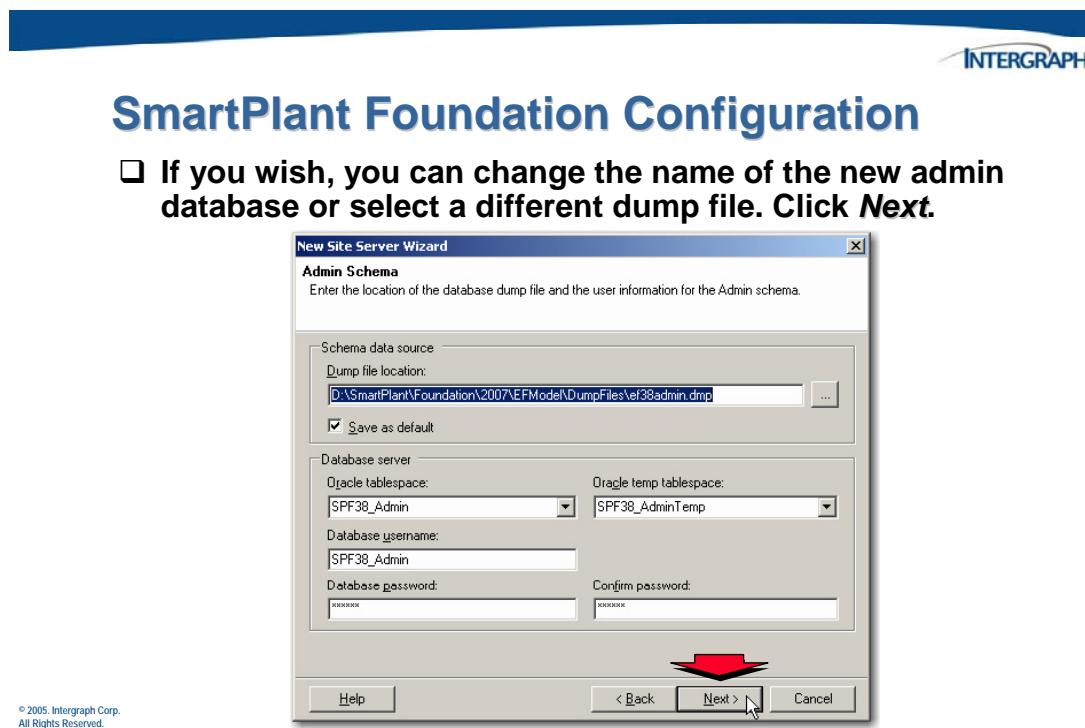
- To create a new site, right-click on **SmartPlant Foundation Sites**, and select the **New** option.



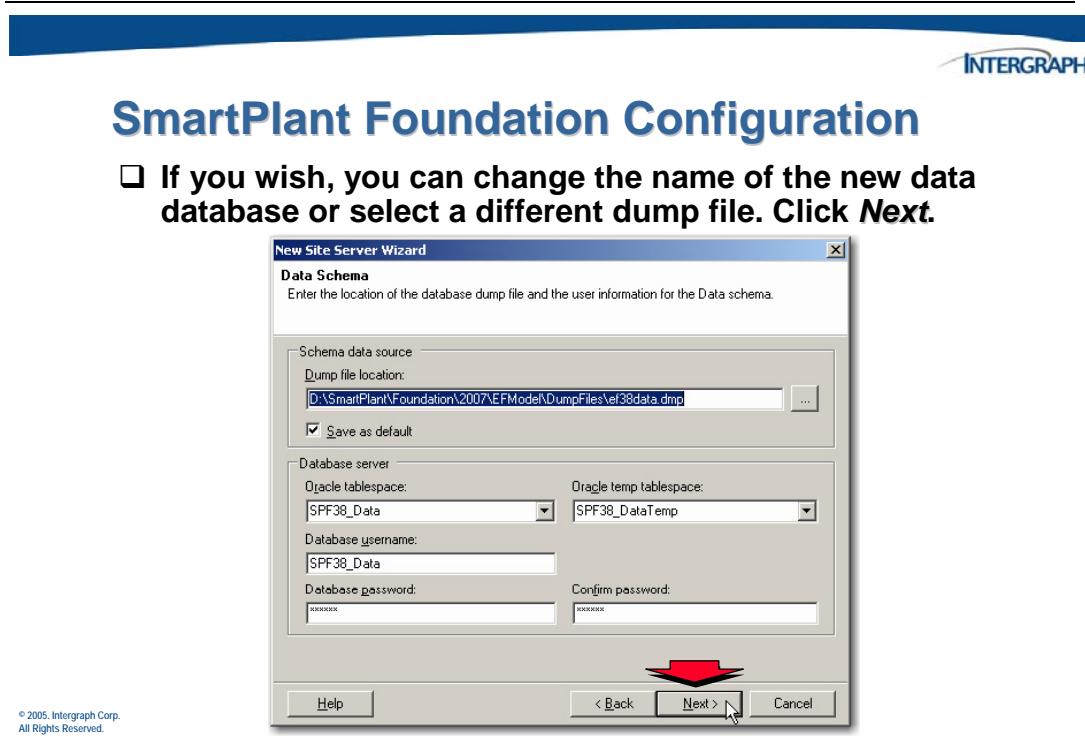
Provide a name for your site, provide the name of the web site virtual directory, and then provide the path to the virtual directory.



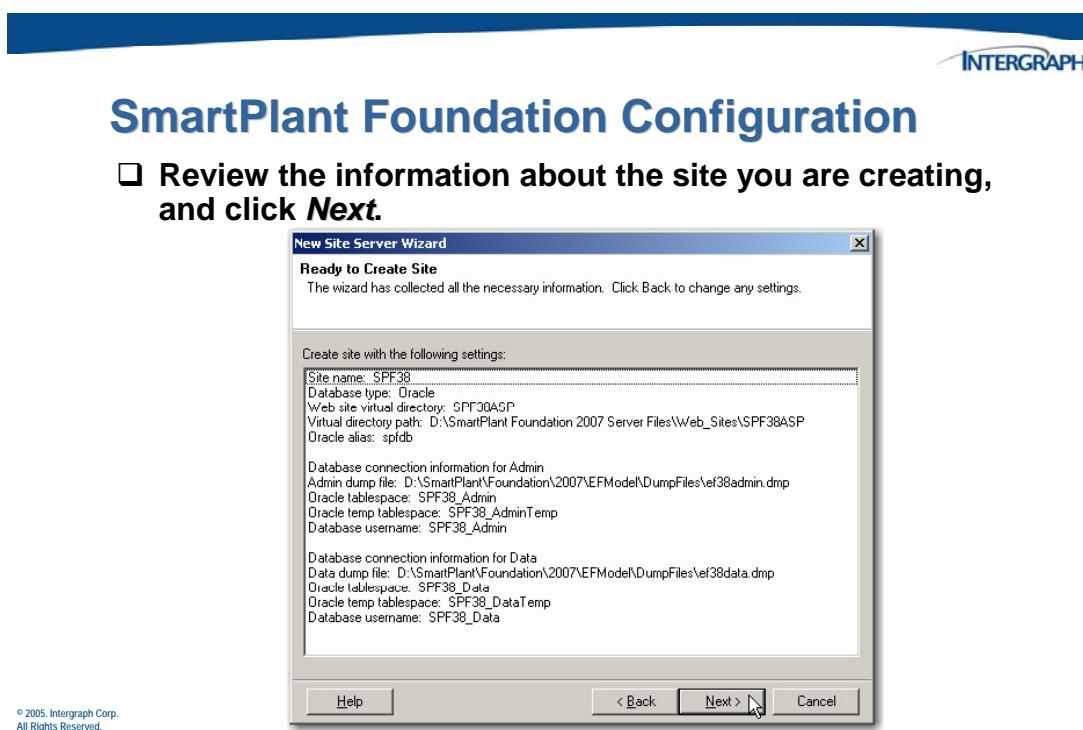
Create a new table space for the SPF Admin database.



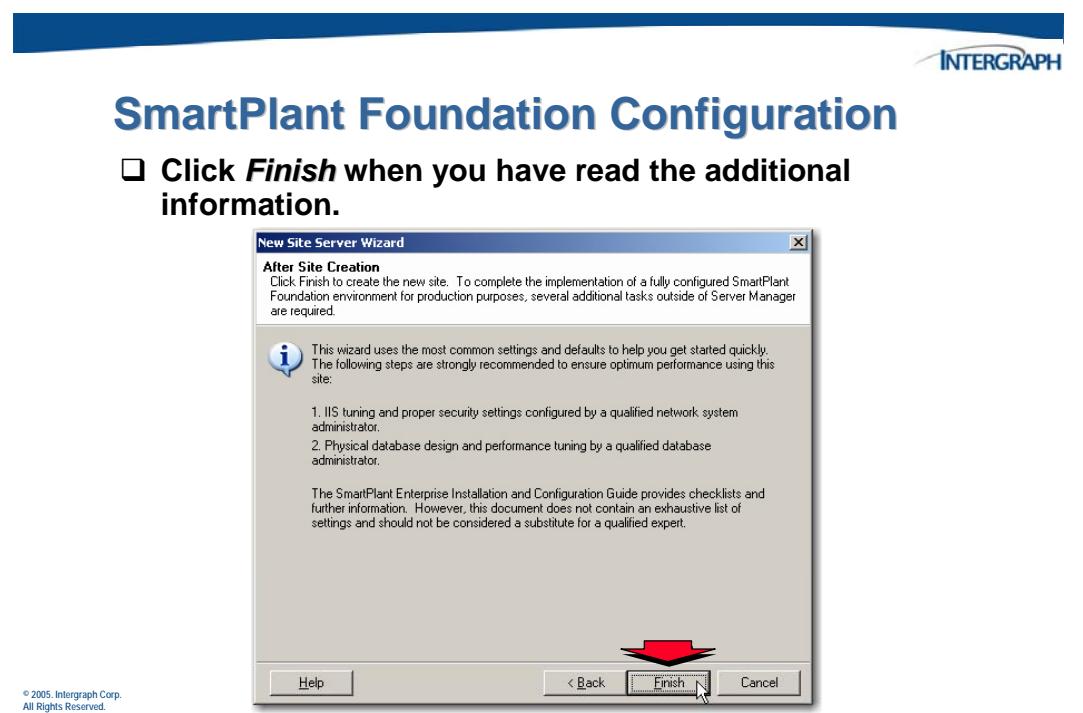
Create a new table space for the SPF data database.



Review the information about the site you are creating.

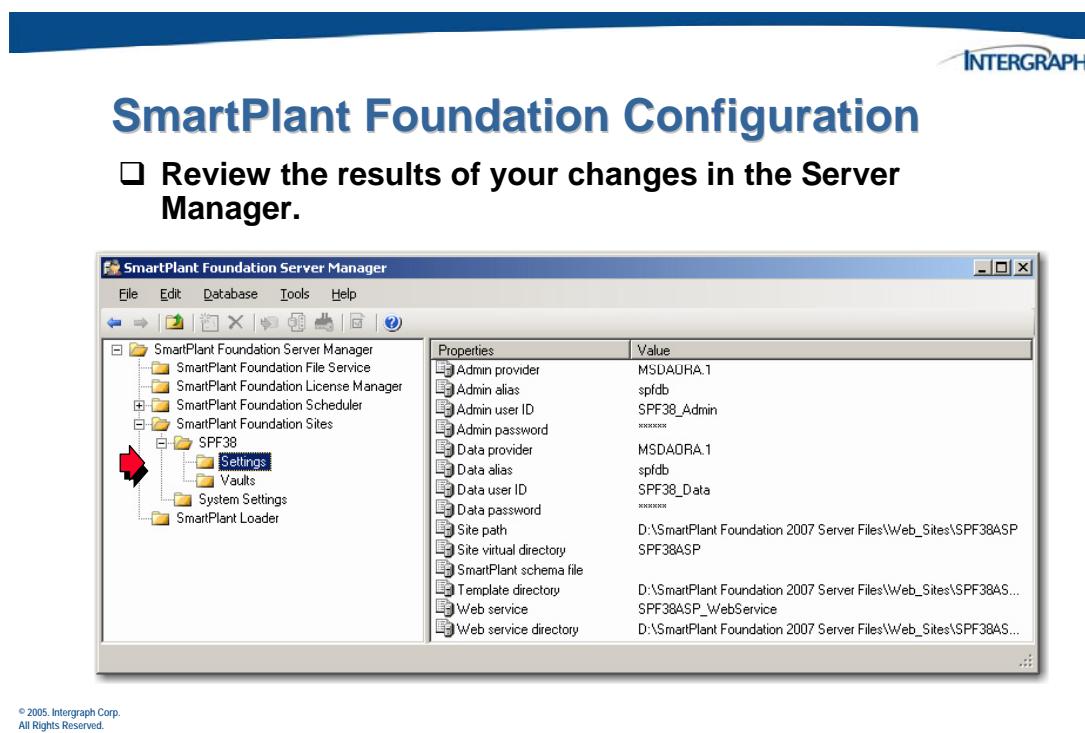


The following dialog box appears to remind you of other things you will need to do to run the SPF software.



You can review the information about the site you created.

---



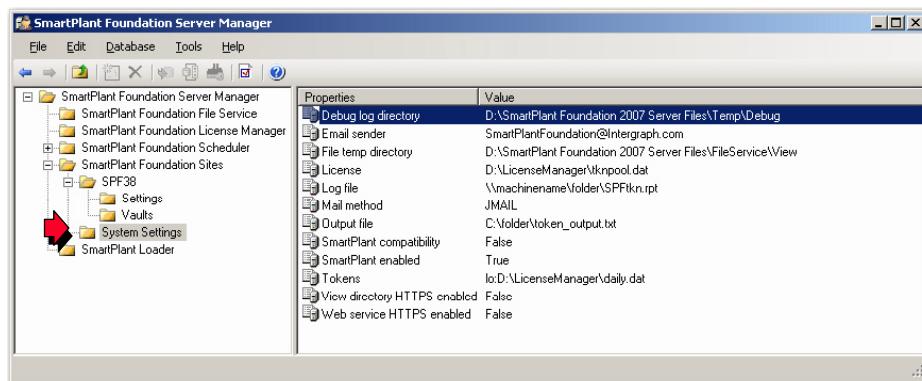
## 9.6.2 Review and Update System Settings

You can also review the *System Settings* from this window.



### SmartPlant Foundation Configuration

- You can also review the System Settings for the new site by select System Settings. Double-click on a property to update the value.



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Click on the *Log file* option to update the location of the License Manager log file.



### SmartPlant Foundation Installation

- Update the location of the Log file.



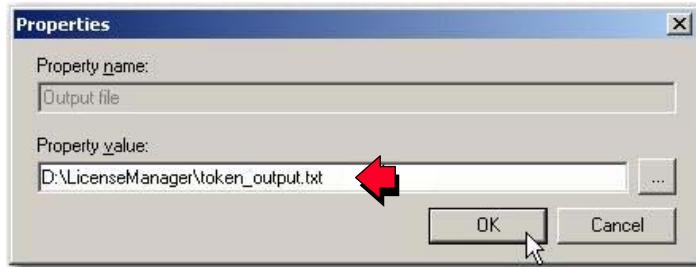
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Click on the *Output file* option to update the location of the License Manager output file.

---

## SmartPlant Foundation Installation

- Update the location of the *Output file*.

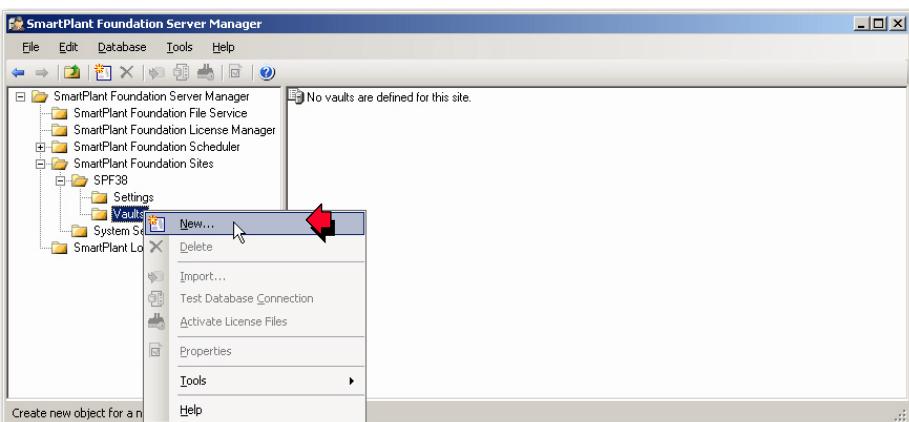


### 9.6.3 Create a Vault

Return to the SmartPlant Server Manager, where you can use the application to create a vault for your new configuration.

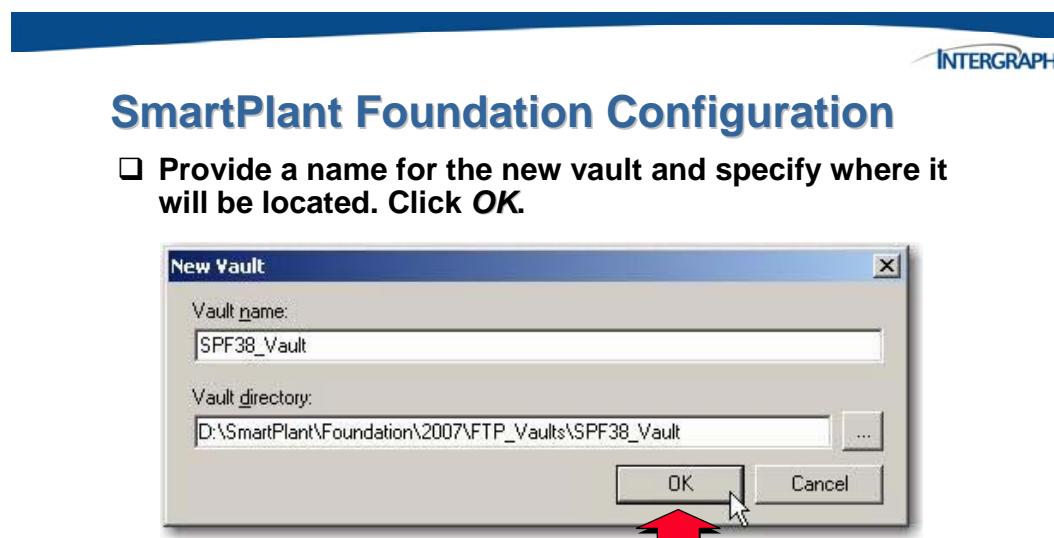


#### To create a new vault, select **Vaults** under the new site, right-click, and click on the **New** command.



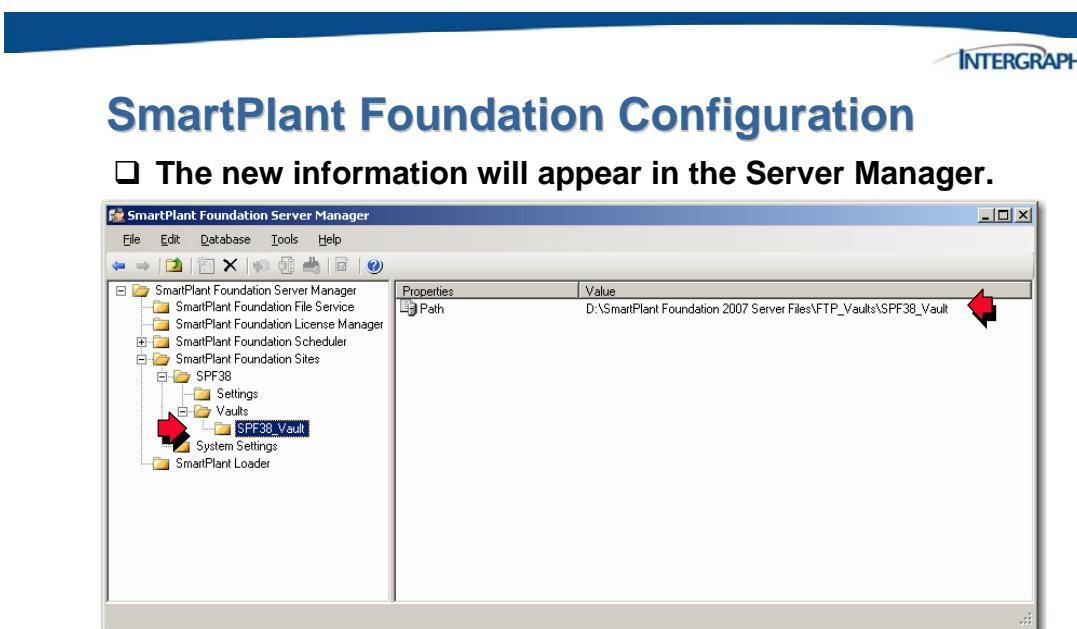
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Provide a name for the new vault, and provide a path to the location where you want to place the vault.



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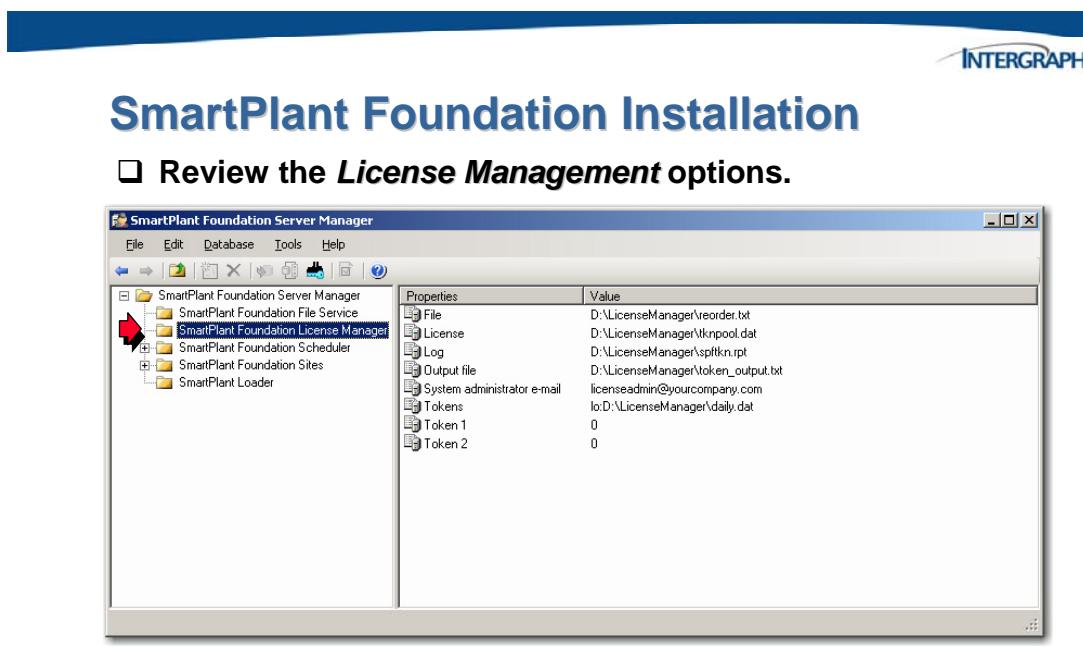
Review the information by selecting the new vault name under the new site.



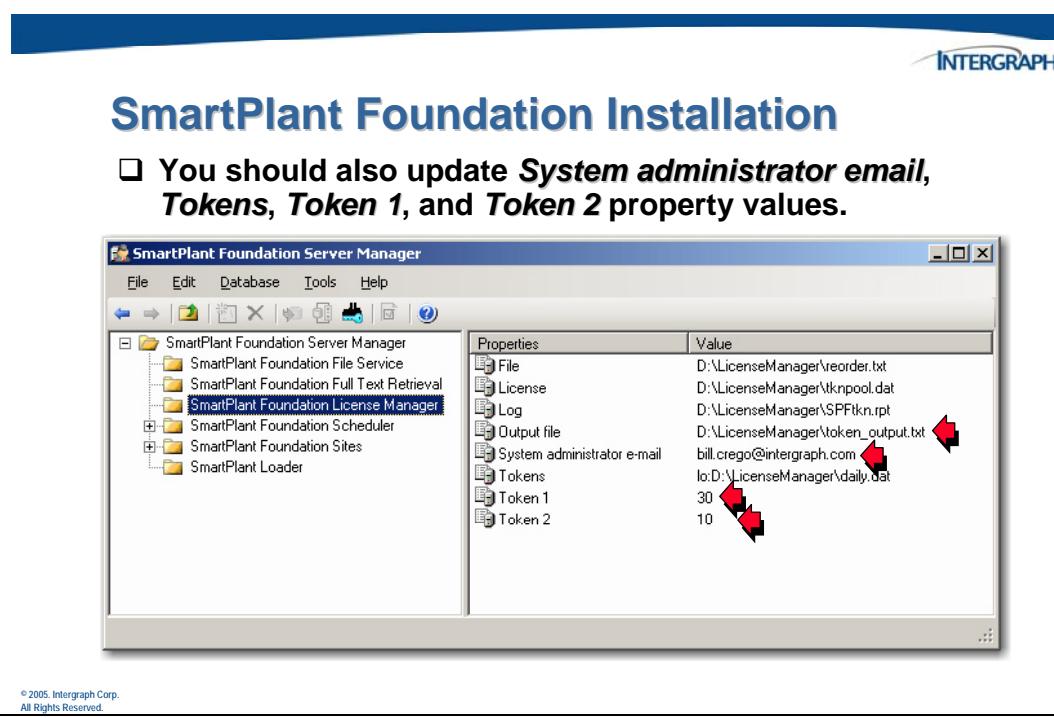
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## 9.6.4 Review or Update License Manager Settings

Review the License Manager settings. To update any of the values, click on the property name, and update the information in the property dialog box that appears.



You should specifically update the email address, the email text file, and the thresholds for sending warning emails.



Refer to the previous chapter for additional information about configuring and activating the license management software.

## 9.6.5 Additional Considerations

Before you use the software, you should also review your virtual directory settings and ensure that your License Management Service is running so that you can check out tokens.

---



### SmartPlant Foundation Installation Additional Considerations

- Before you run the software, you should also review the following configuration points:**
  - Virtual directories
  - License Management Service

## 9.7 Exporting the Configuration

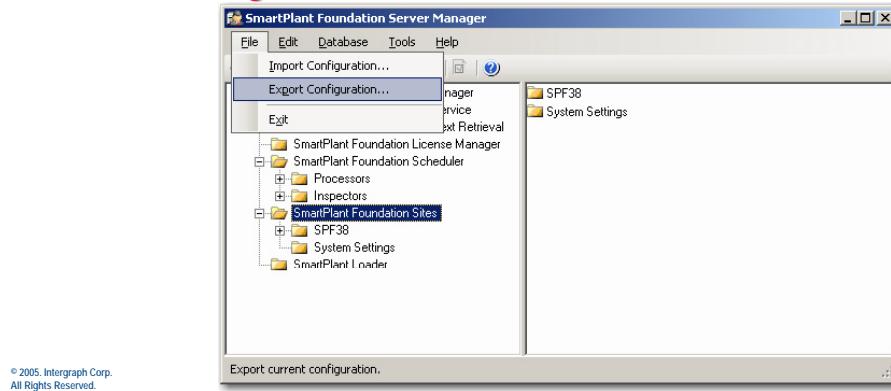
After you have configured the site information, you may want to save out that configuration as a config file. You can do this using the *File > Export Configuration* command.

---



### Exporting the Configuration

- Once you have configured the software, you should export the configuration so that it is available for upgrades or emergencies.
- From the SPF Server Manager, click **File > Export Configuration**.



---

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Once the configuration is exported, you can save it in a safe location. From there, you can re-import the configuration later, if you upgrade or re-install the software.



## Exporting the Configuration

- Save the resulting configuration (config) file to a safe location.**
- It is then available to import again when you upgrade the software later.**



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## 9.8 Choosing the Active Site

With the new Server Manager, it is easier than ever to have multiple sites configured within your SmartPlant Foundation installation – each using its own database.

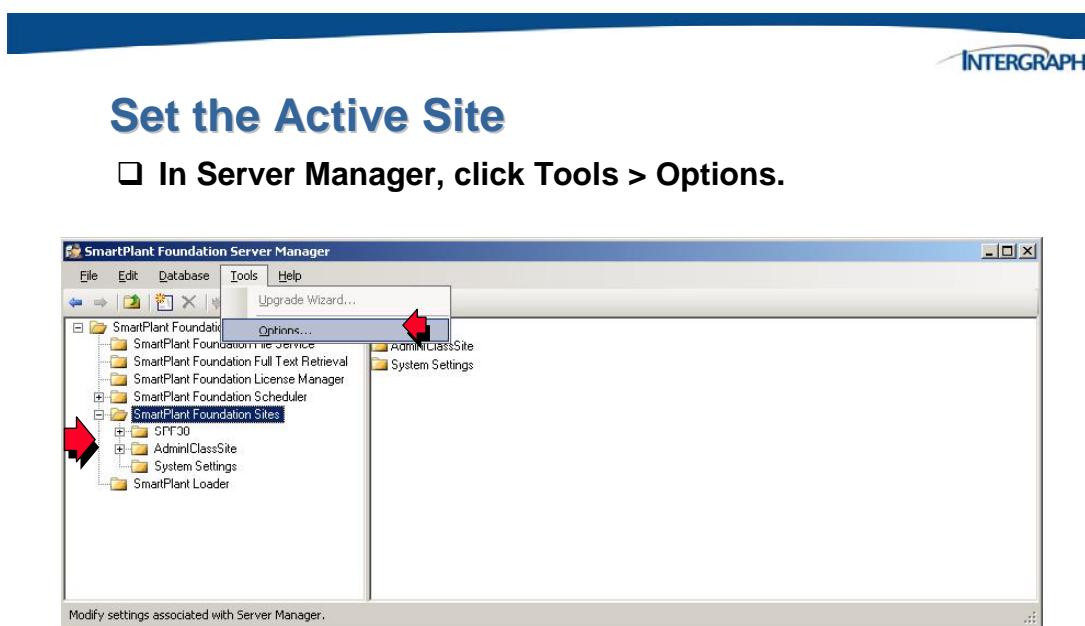
When you log into the Desktop Client, the login screen allows you to choose which site you want to connect to and use. You choose by selecting a server from the Server field. This server name is actually a name that represents a server/virtual directory combination.

However, when you log into other applications, such as the System Administration or Change Management utilities, or even the SmartPlant Foundation Loader, you are not prompted to specify which site to which you want to connect. These applications use the information specified in the registry to determine what database to which to connect.

Previously, you had to modify the information in the registry to indicate which database to use for these applications, but the new Server Manager utility allows you to specific which site you want to be the active site. By choosing an active site, you populate the registry settings with the information applicable to the site you want to use.

To choose an active site, open the Server Manager application, and use the **Tools > Options** command.

---

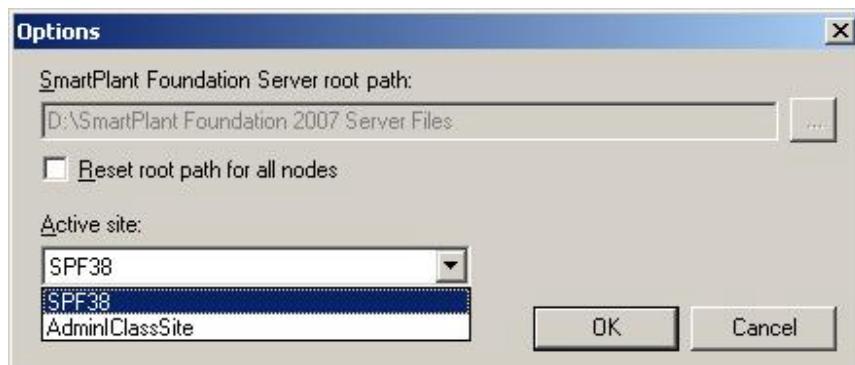


The **Options** dialog box will appear.



## Set the Active Site

- ❑ The **Active site** list box contains a list of all the sites defined through the Server Manager.



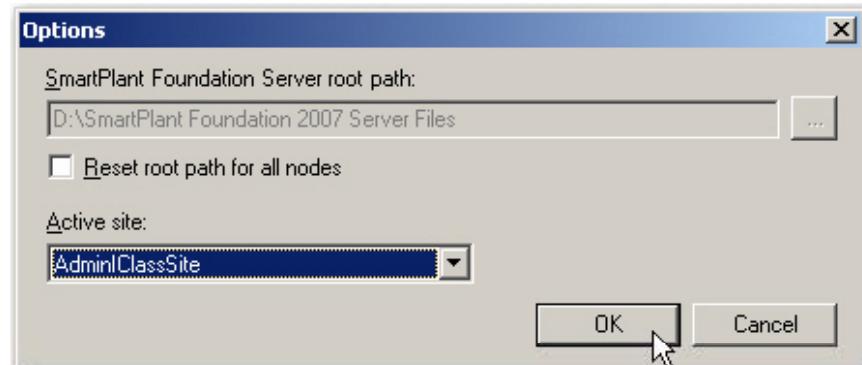
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Choose the site you wish to make active, and click **OK**.



## Set the Active Site

- ❑ Select the site you want to use, and click **OK**.

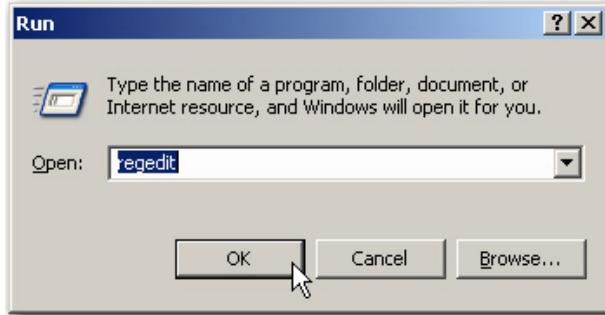


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To verify that the correct information is available in the registry, open the **Start** menu and choose **Run**. From the Run dialog box, launch regedit.

## Set the Active Site

- To confirm the changes, to the *Registry Editor*. Click **Run** and the **Start** menu, and run *regedit*.

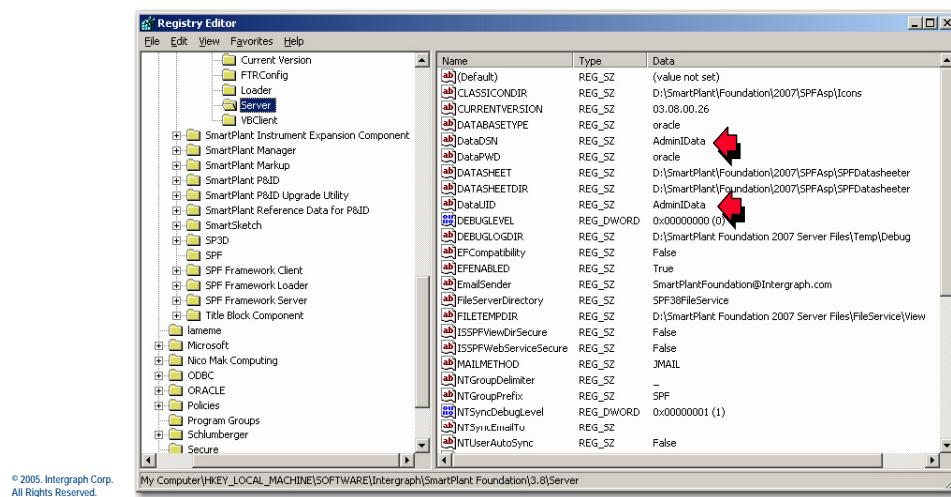


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Note the following registry settings:

## Set the Active Site

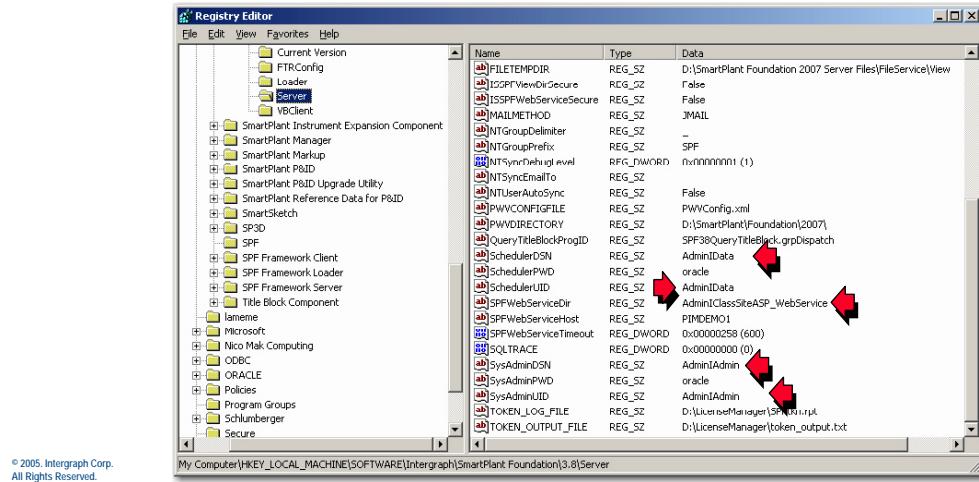
- View the registry settings in the following location:  
*Intergraph > SmartPlant Foundation > 3.8 > Server*.





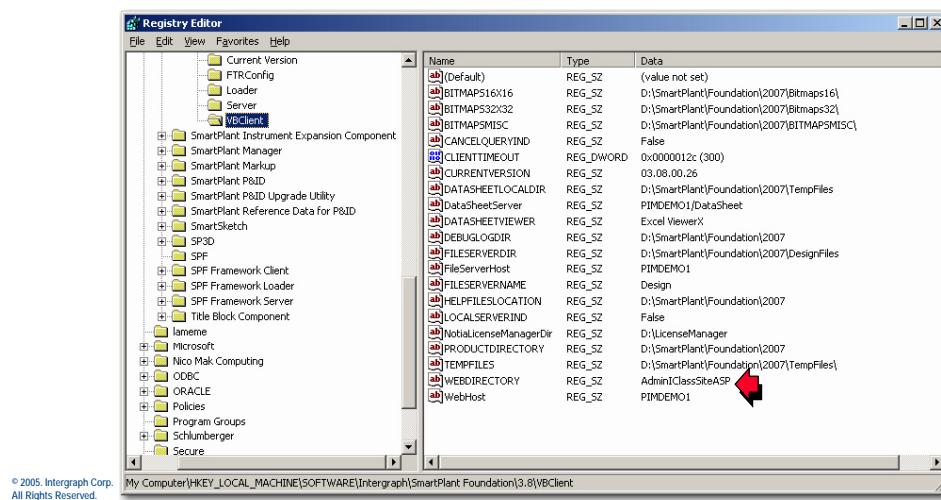
# Set the Active Site

- View the registry settings in the following location:  
*Intergraph > SmartPlant Foundation > 3.8 > Server.*



## Set the Active Site

- View the registry settings in the following location:  
*Intergraph > SmartPlant Foundation > 3.8 > VBClient.*





# 10

C H A P T E R

---

## SPF Troubleshooting

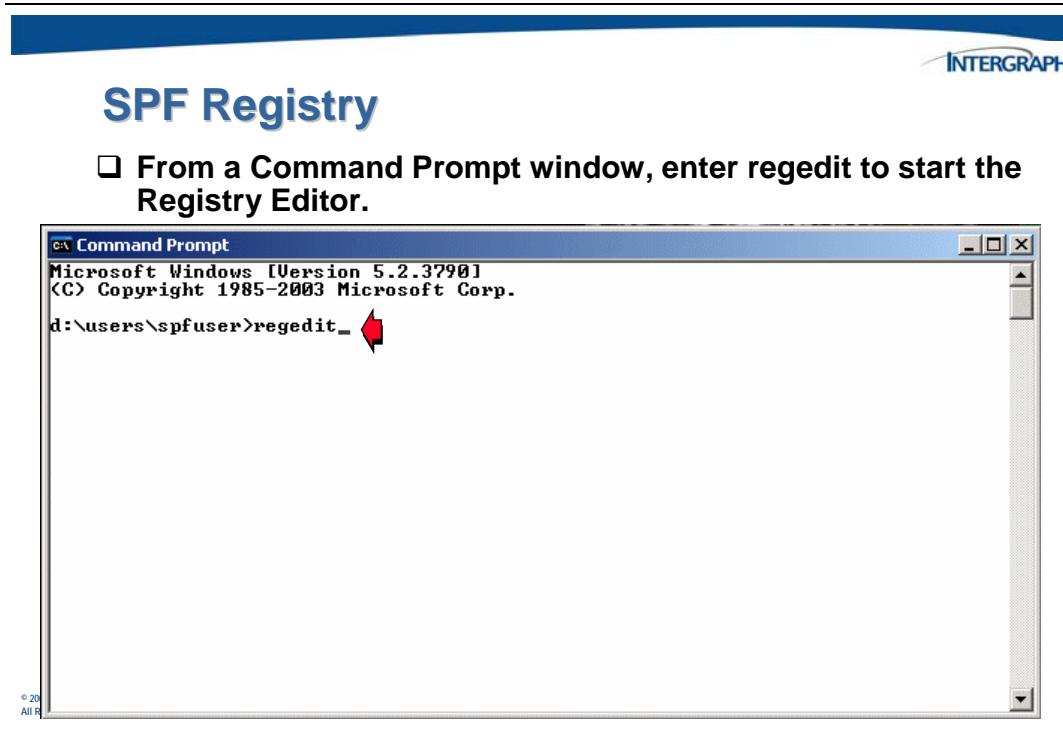


## 10. SPF Troubleshooting

As part of troubleshooting SPF, you can review and edit entries in the System Registry. Also, there are a few test utilities located in the SPF product directory, which will be discussed later in this chapter.

## 10.1 SPF Registry Settings

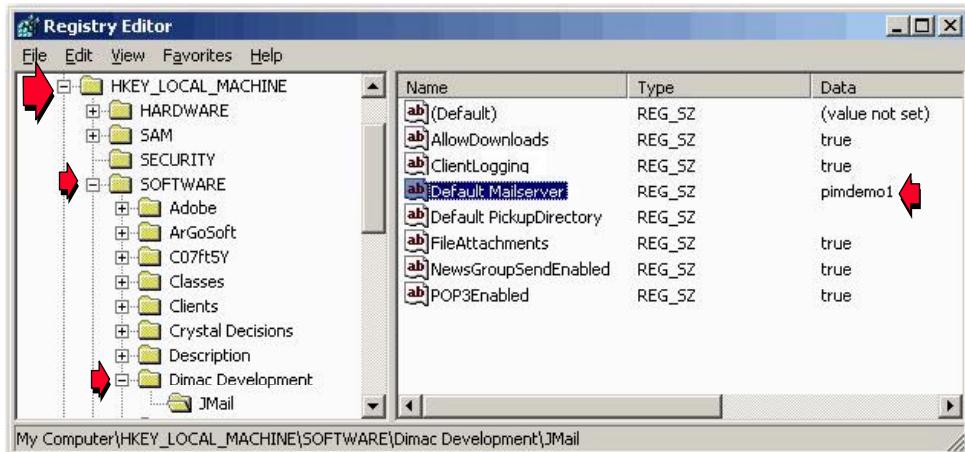
Use the Registry Editor to review and edit (if necessary) any of the SmartPlant Foundation settings.





## SPF Registry

Set/verify the *Default Mailserver*.



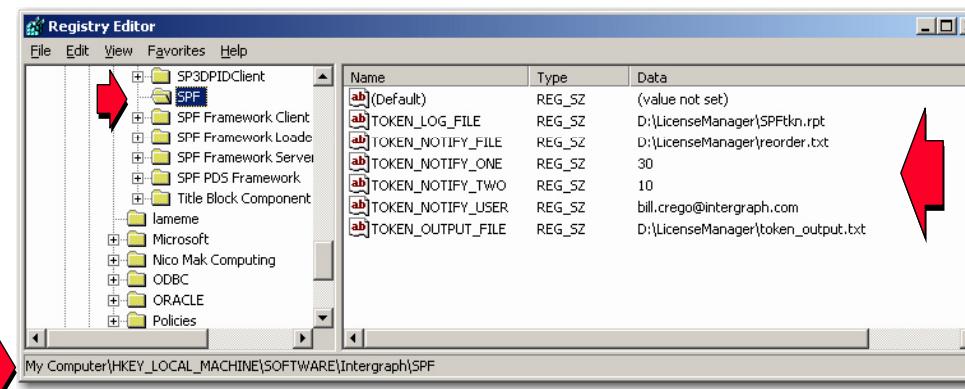
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As part of email configuration, the *Default Mailserver* must be edited and set once the software has been installed.



## SPF Registry

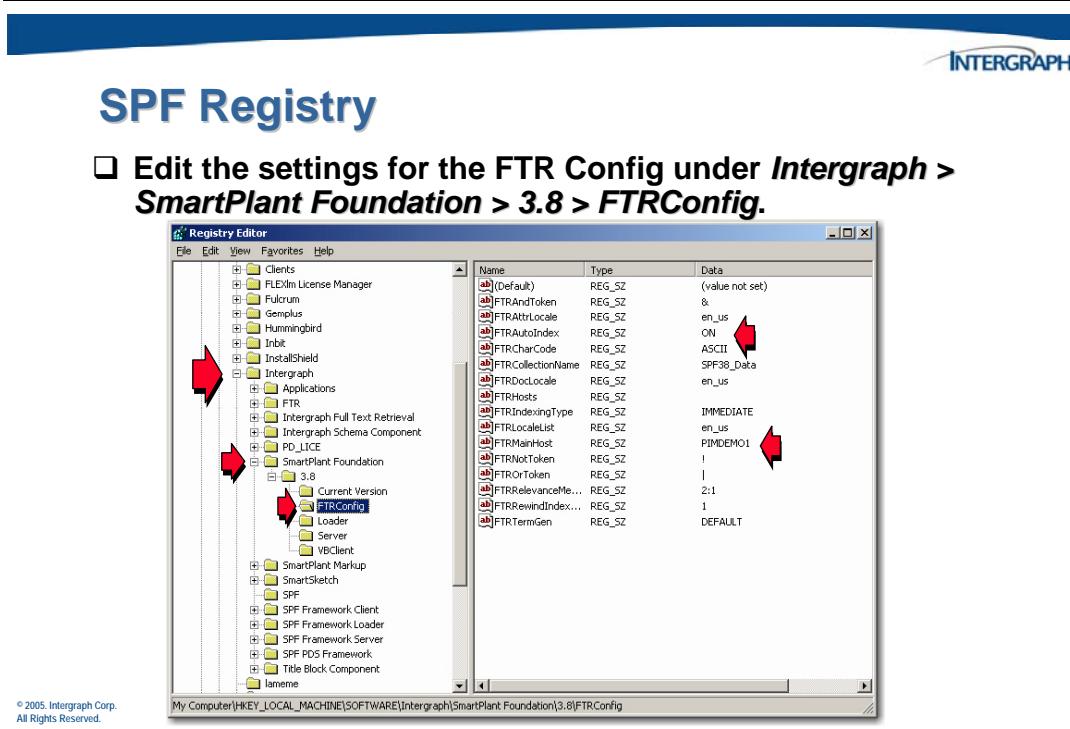
Edit the settings for the license file under *Intergraph > SPF*.



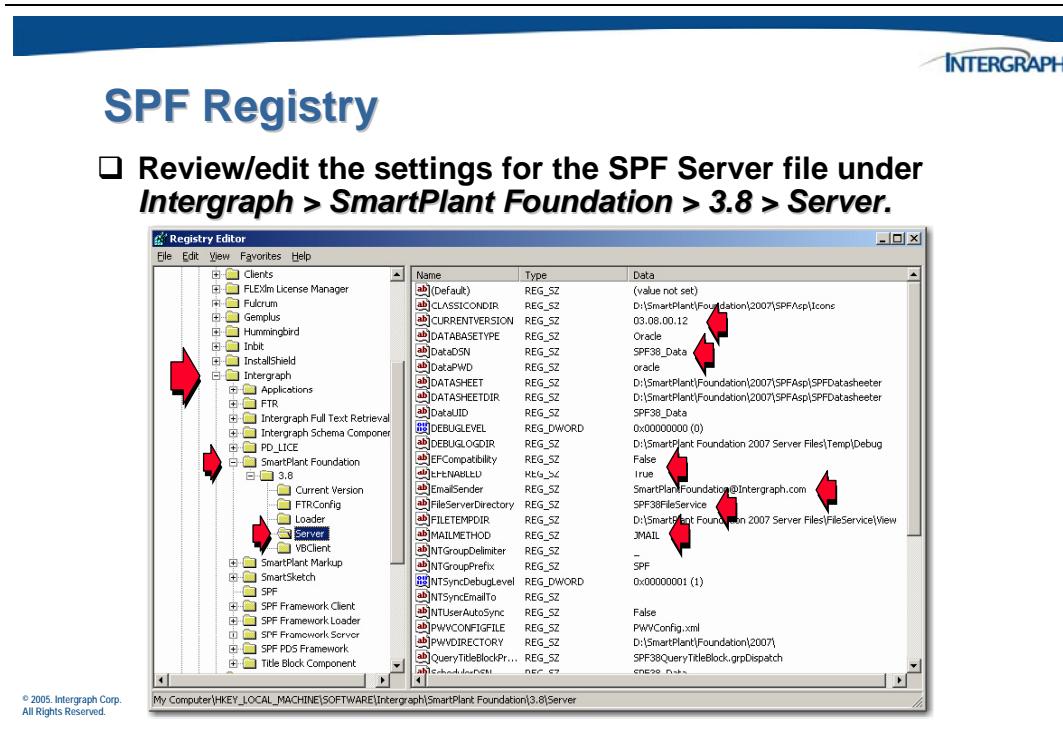
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This section shows the necessary settings for SPF licensing. Changes to the license settings can be made here.

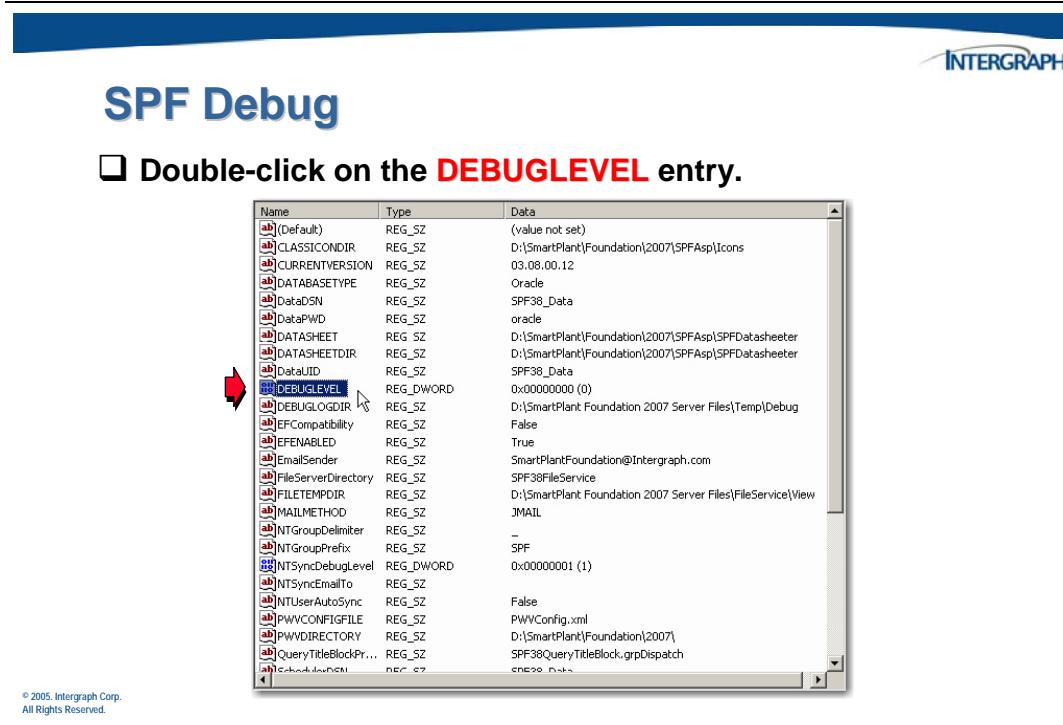
Full Text Retrieval indexing can be turned off and on by editing the Registry setting.



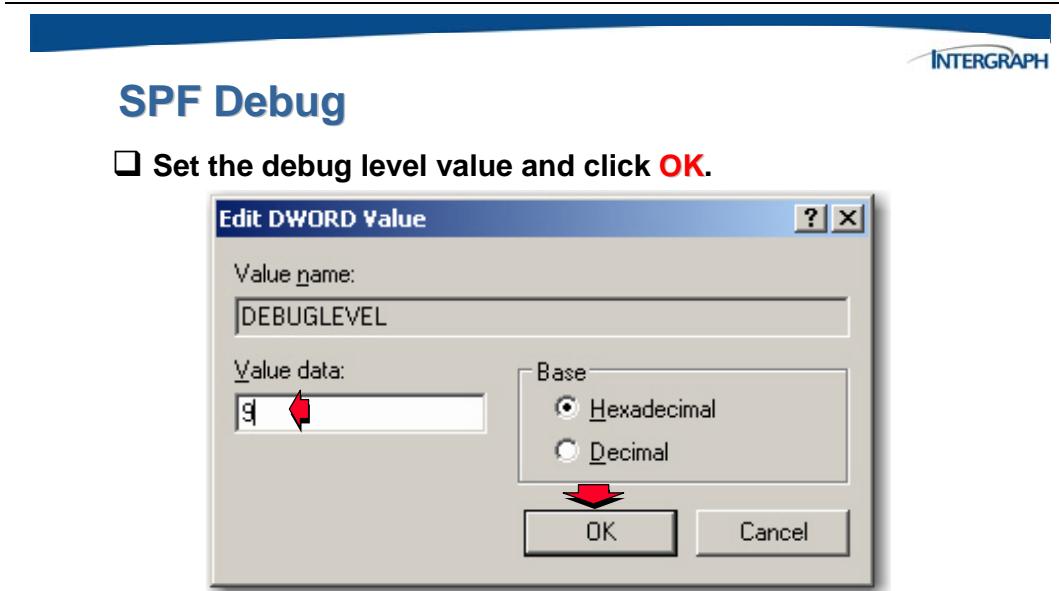
Below is a list of some of the entries for the SPF server in the registry.



To turn on SPF debugging, locate the DEBUGLEVEL entry.

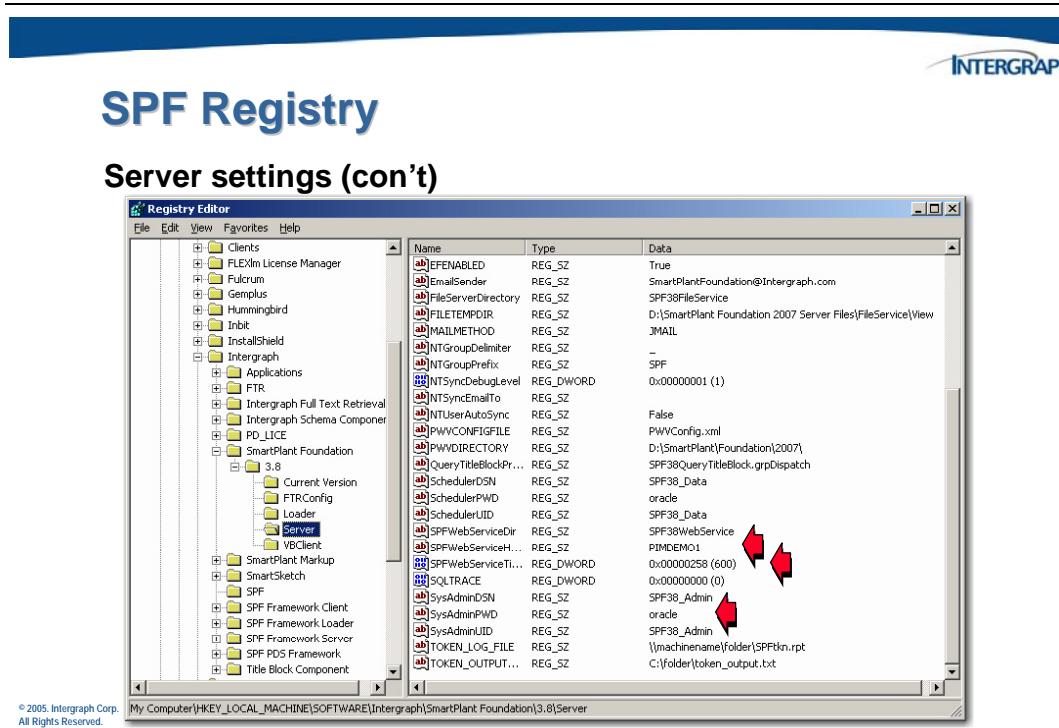


Set the debug level to a value of 1-9, with 9 being the most in-depth debugging.

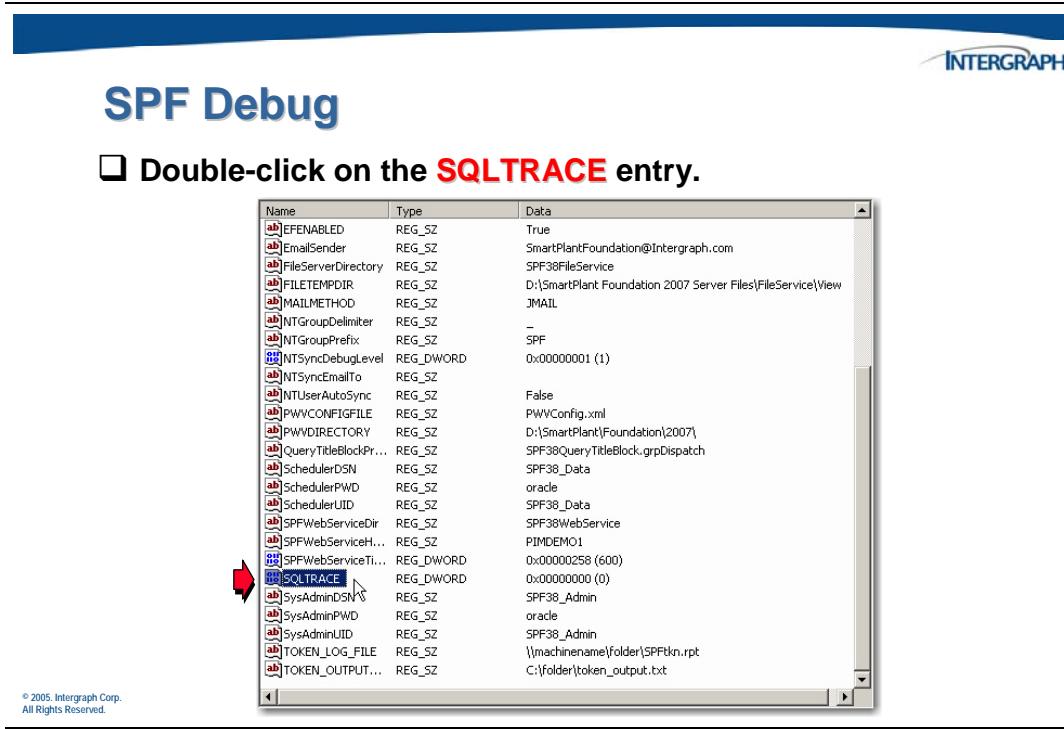


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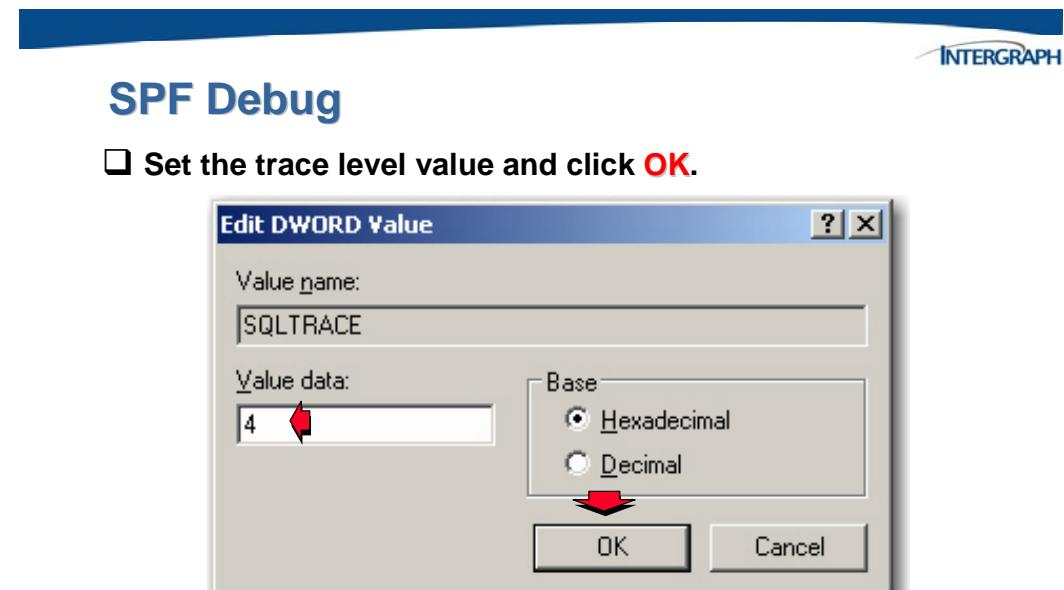
Scroll down to review the rest of the server registry settings.



To turn on SPF SQL tracing, locate the SQLTRACE entry.



Set the tracing level to a value of 1-4, with 4 being the most in-depth tracing.

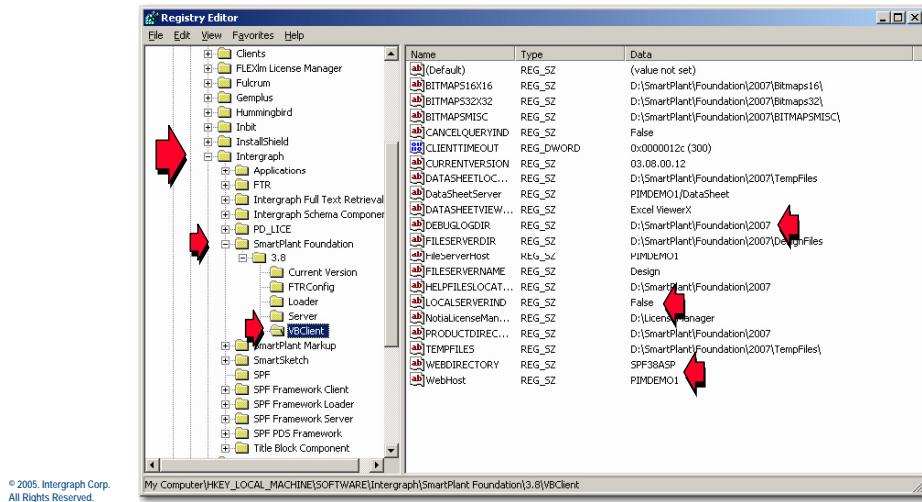


Below is a list of some of the entries for the SPF client in the registry.



## SPF Registry

- Review/edit the settings for the SPF Server file under **Intergraph > SmartPlant Foundation > 3.8 > VBClient**.

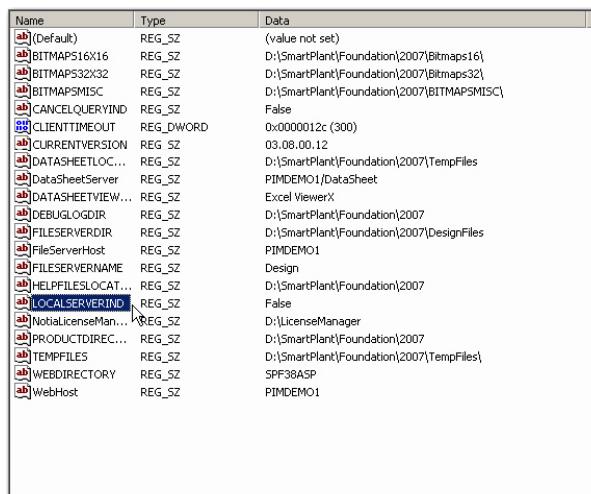


SmartPlant Foundation uses the HTTP protocol by default. If there is a problem with the IIS configuration, communications between the client and server may experience some problems. To determine if the problem is the IIS configuration, you can change the communication protocol to COM by editing the LOCALSERVERIND entry.



## SPF Communications

- Double-click on the **LOCALSERVERIND** entry.



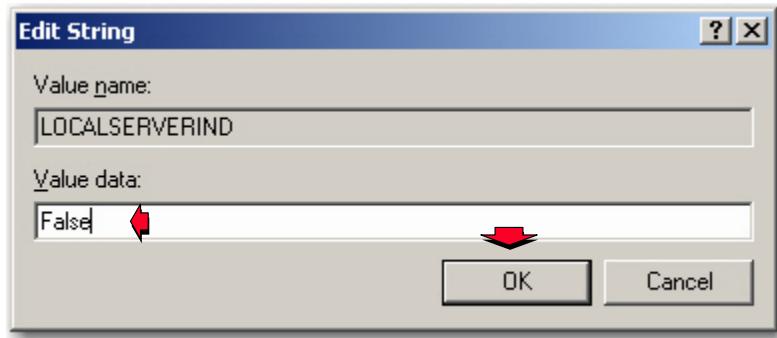
The values for the LOCALSERVERIND setting will be **True** for COM and **False** for HTTP.

---

## SPF Communications



- Set the data value to either **True** or **False** and click **OK**.



## 10.2 SPF Test Utilities

There are a few test utilities that can be found in the SPF product directory. These utilities are used by SPF development to test different aspects of the SPF system. Although these utilities are **unsupported**, they can be helpful in tracking down a problem area in your system.

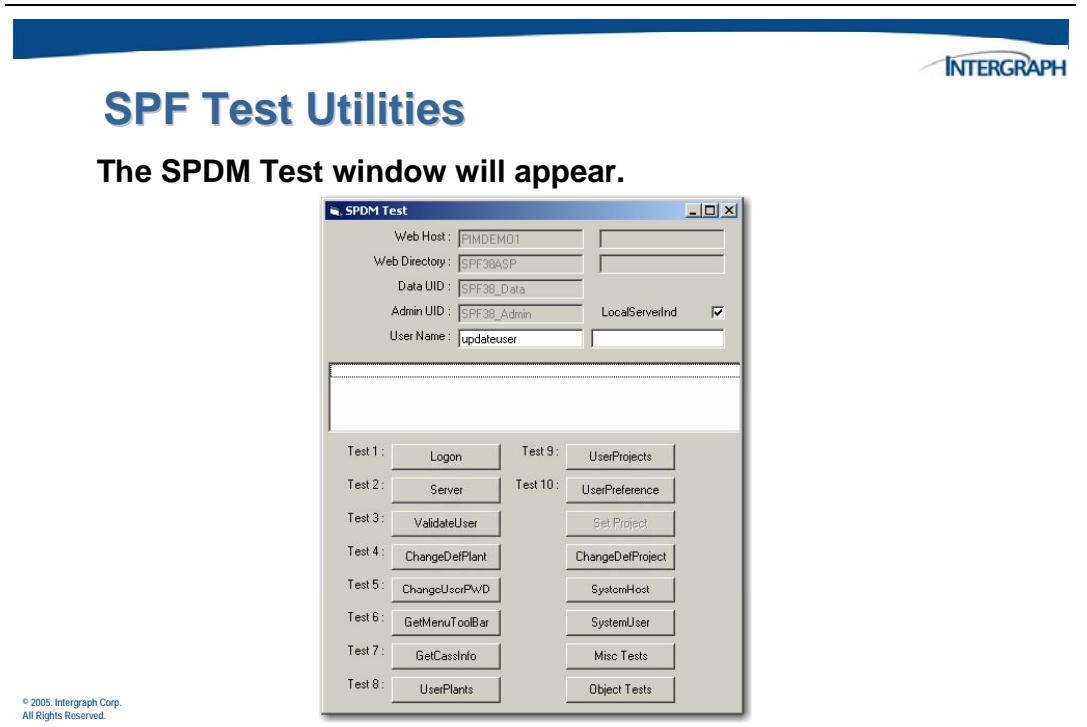
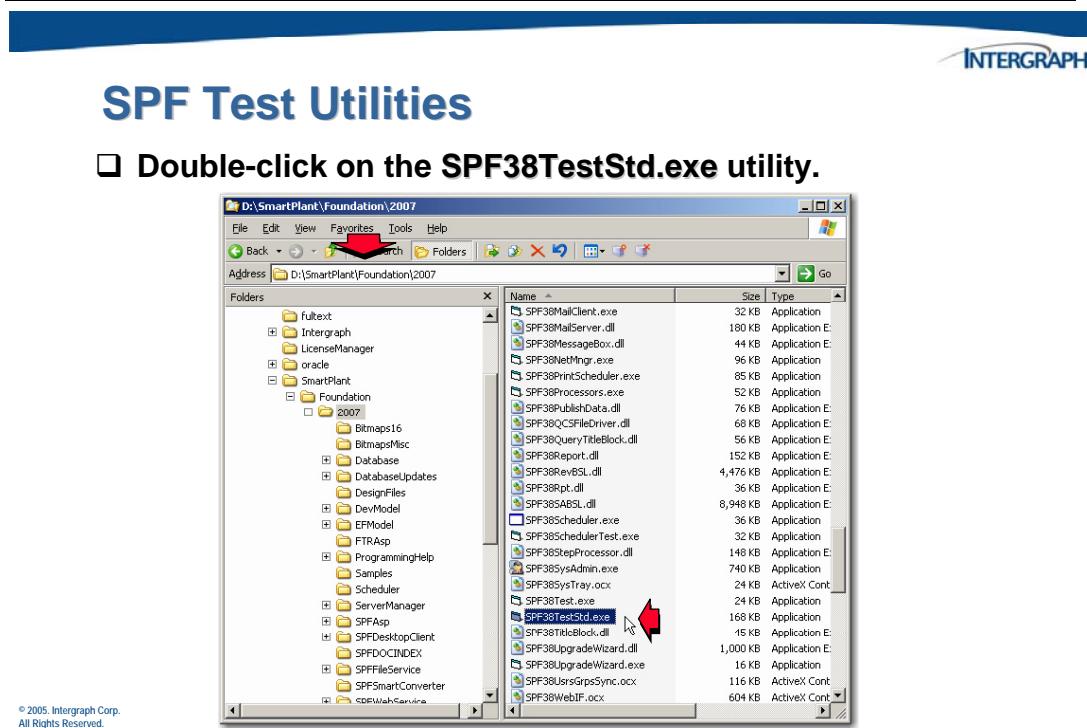


### SPF Test Utilities

#### Common test utilities delivered with SPF:

- SPF38TestStd.exe** – performs a series of tests on SPF
- SPF38MailClient.exe** – tests the mail configuration

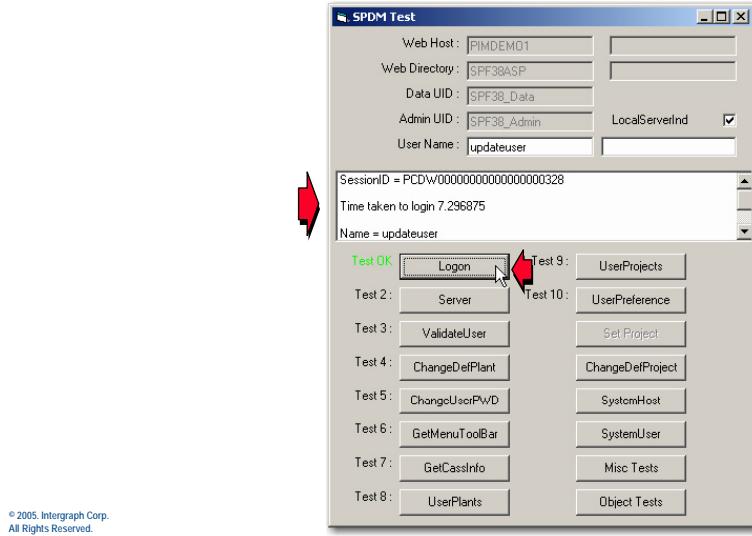
These utilities are located in the D:\SmartPlant\Foundation\3.8 product directory.





## SPF Test Utilities

- Click on the **Logon** button to perform a logon test.

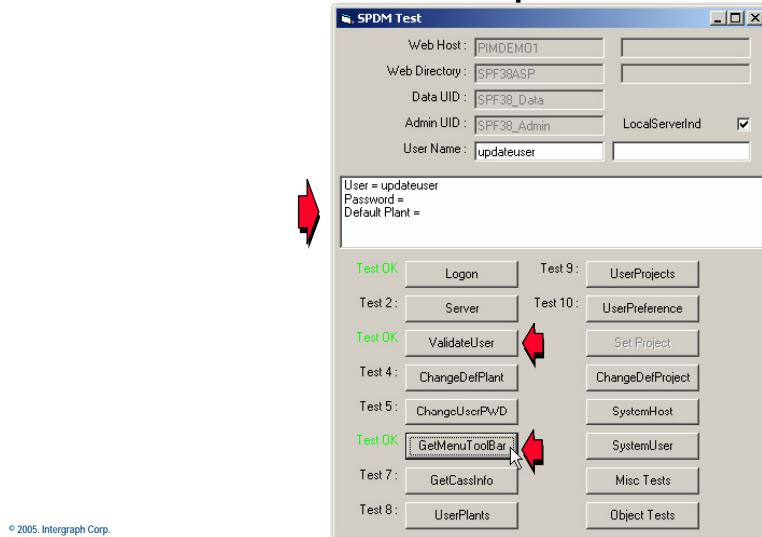


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## SPF Test Utilities

- Click on other buttons to perform additional tests.

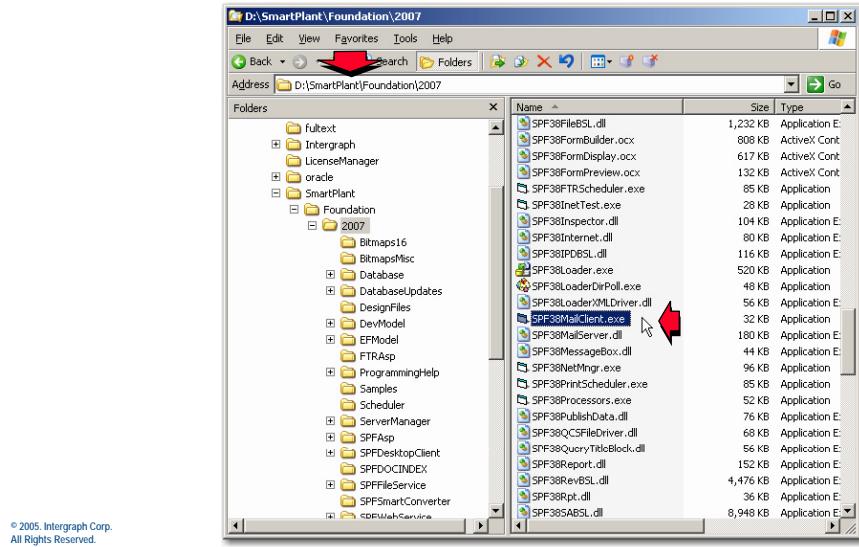


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## SPF Test Utilities

- Double-click on the SPF38MailClient.exe utility.



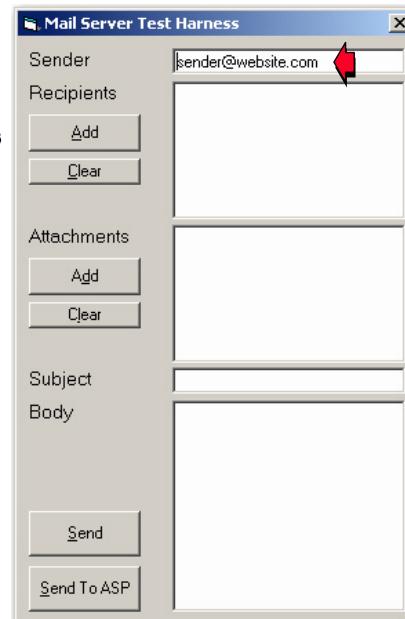
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This utility will let you test the email configuration and make sure that SPF can send email messages successfully.



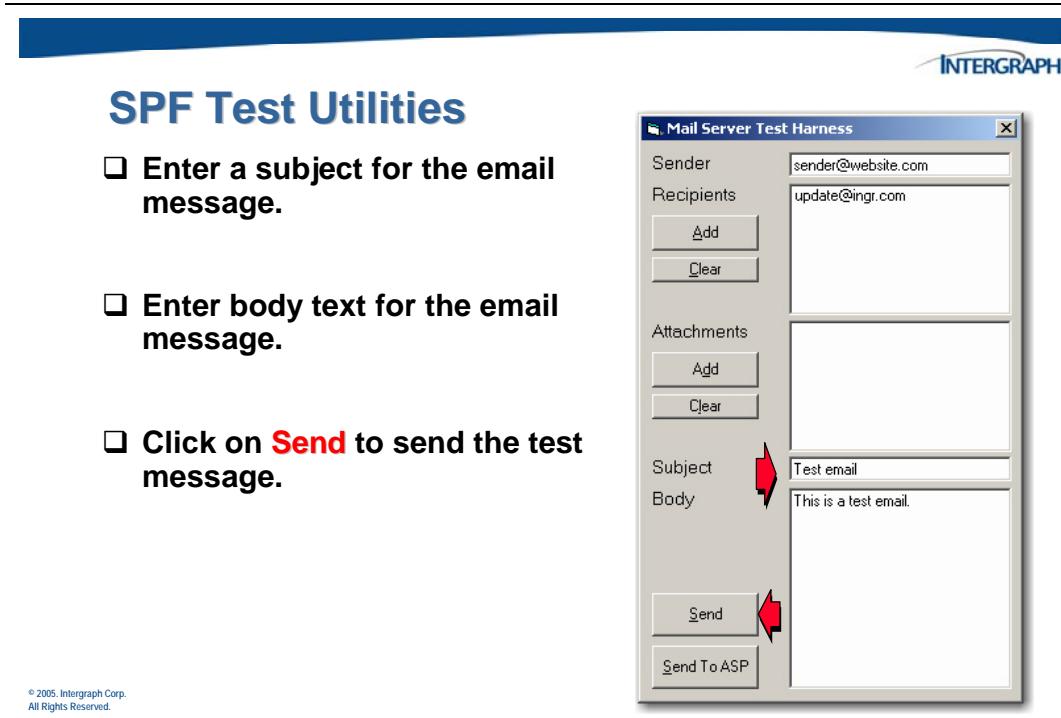
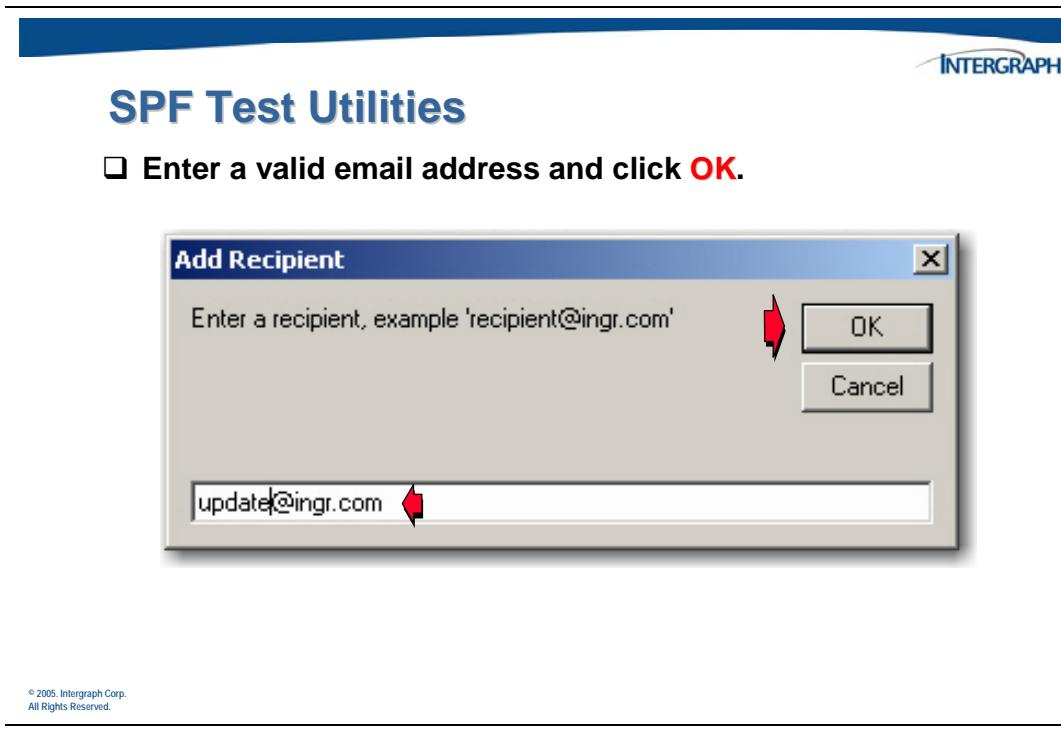
## SPF Test Utilities

- Enter optional sender information.
- Click on Add to enter a valid email client address.

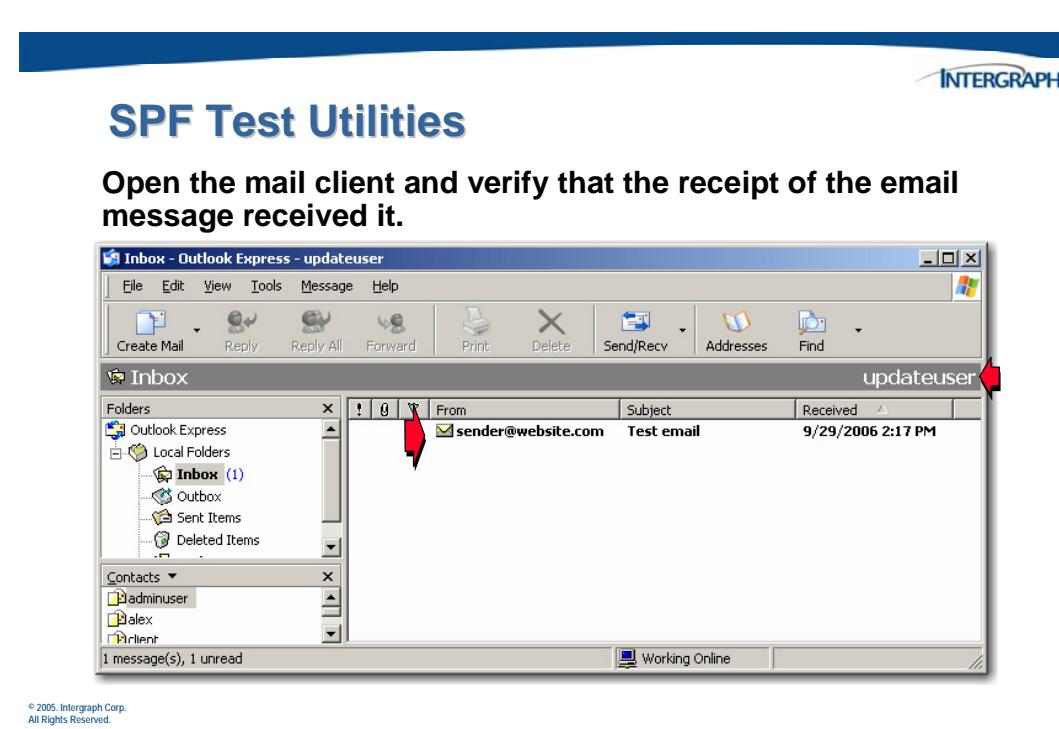
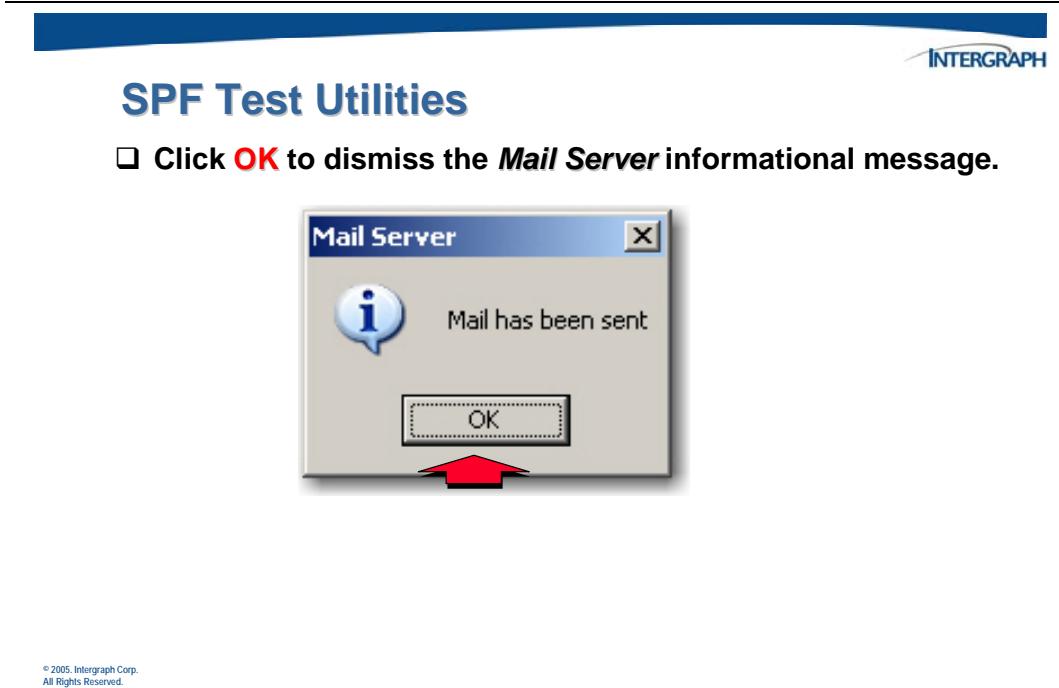


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The *Add Recipient* dialog will appear.



If the test email message can be successfully sent from SPF to the email client, an informational message box will be displayed. Otherwise, an error message will be displayed.





C H A P T E R

# 11

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## SmartPlant Test Tool



## 11. Registering a Plant Example

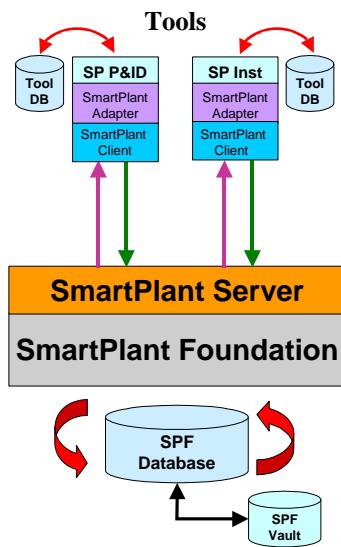
The first step in being able to publish and retrieve documents is to associate or **register** a plant in the tool with a SmartPlant Foundation database.

### Registering a Plant

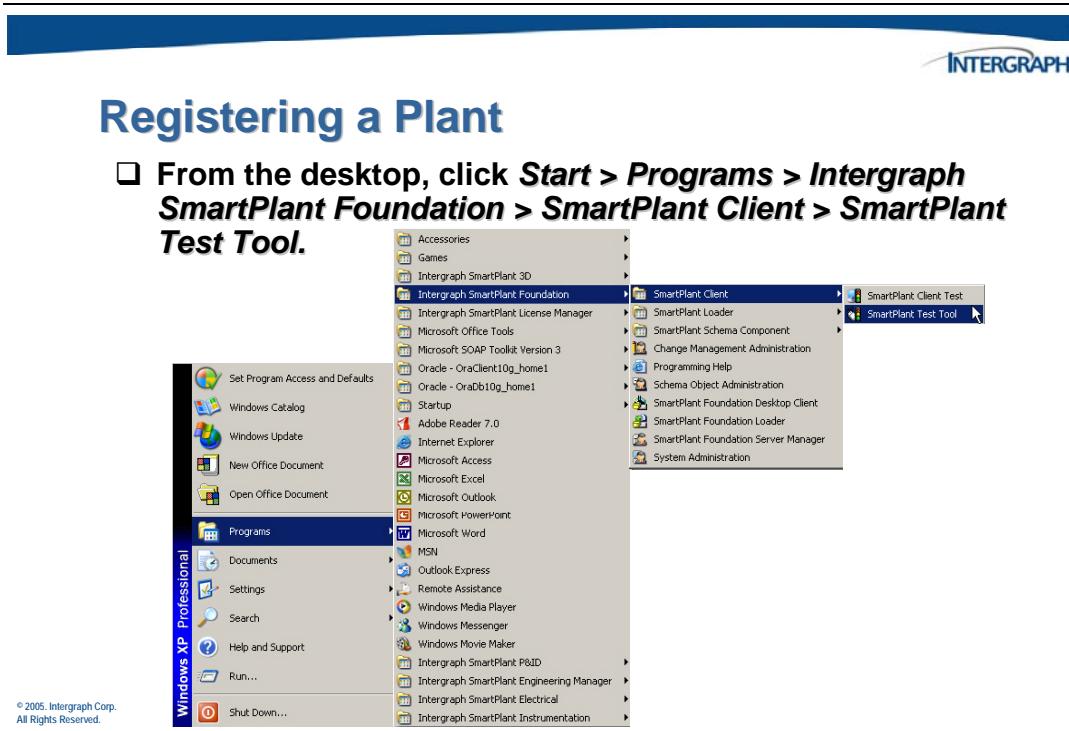
Before you can publish and retrieve from an authoring tool, each plant in the tool must be associated with a SmartPlant Foundation plant database.

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

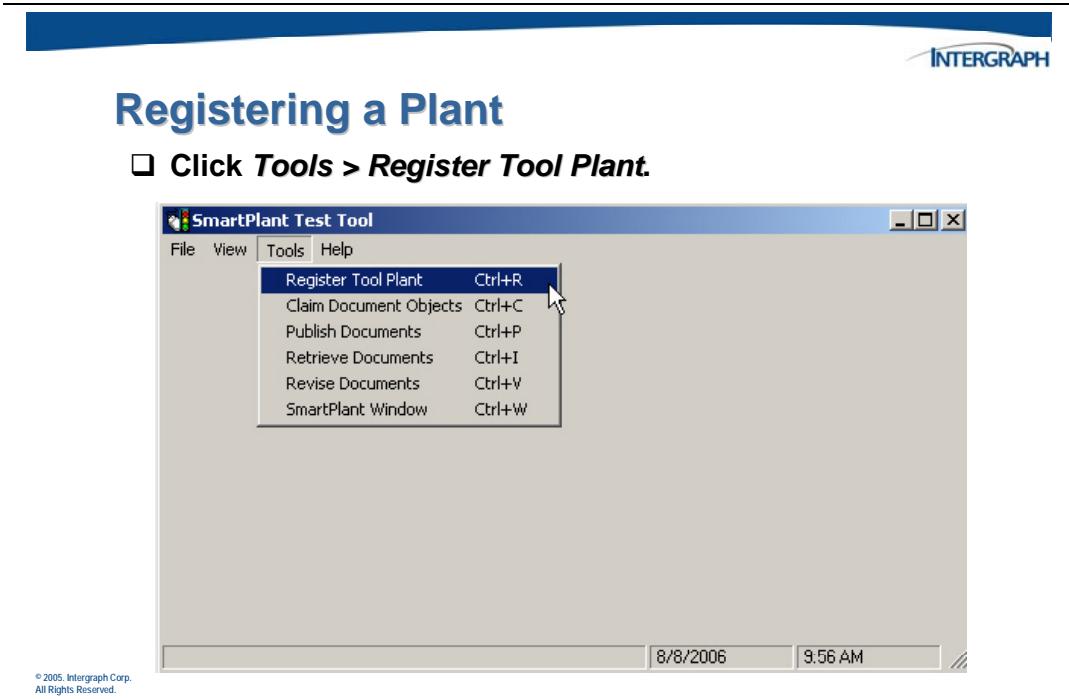
This determines which SmartPlant Foundation database the users of the tool publish and retrieve data to/from.



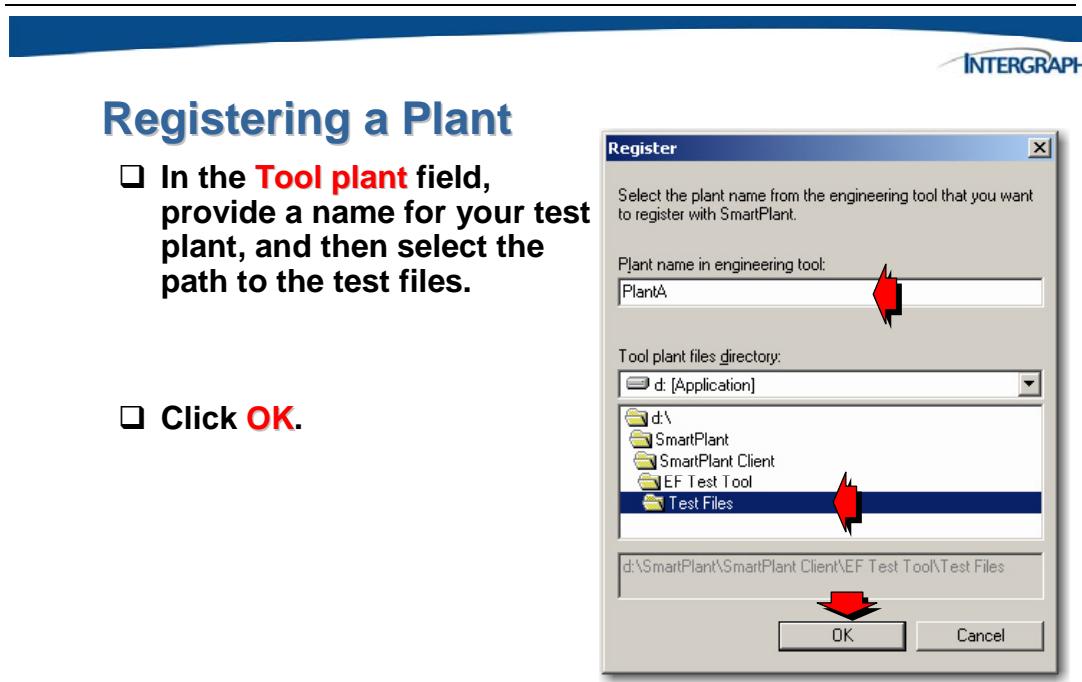
To start the test tool:



The *SmartPlant Test Tool* window will appear.



The *Register Tool Plant* dialog box will appear.



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Test document files are installed to *<product directory>\EF Test Tool\Test Files*, where *<product directory>* is the product directory of SmartPlant Client (by default C:\Program Files\SmartPlant\SmartPlant Client).

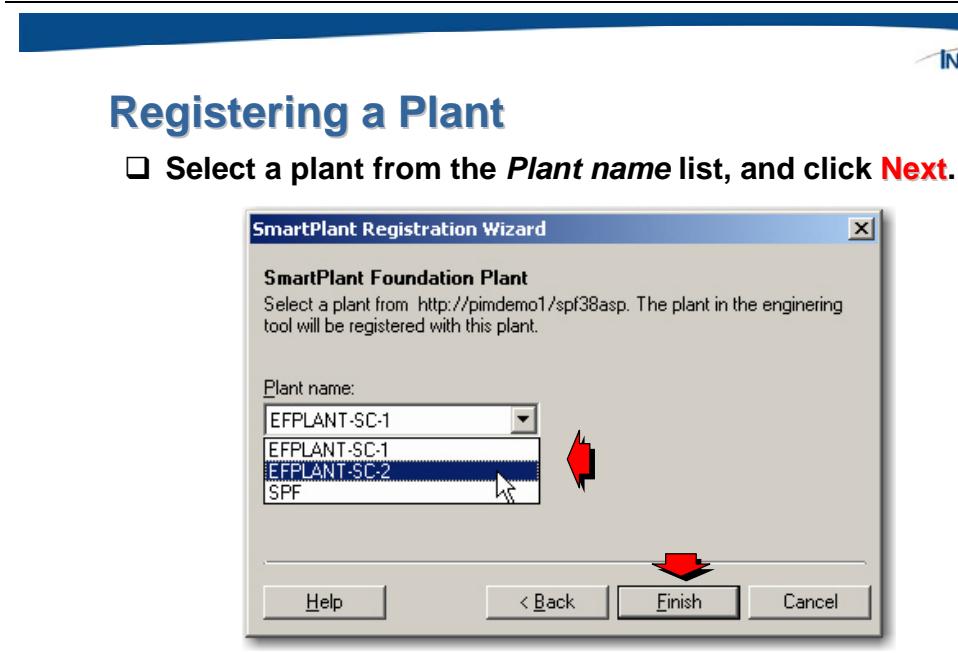
You do not have to use *<product directory>\EF Test Tool\Test Files* as the directory for a test plant. You may copy test document files to any directory that you create.

The SmartPlant Test Tool requires that all the document files for a plant be in a single directory.

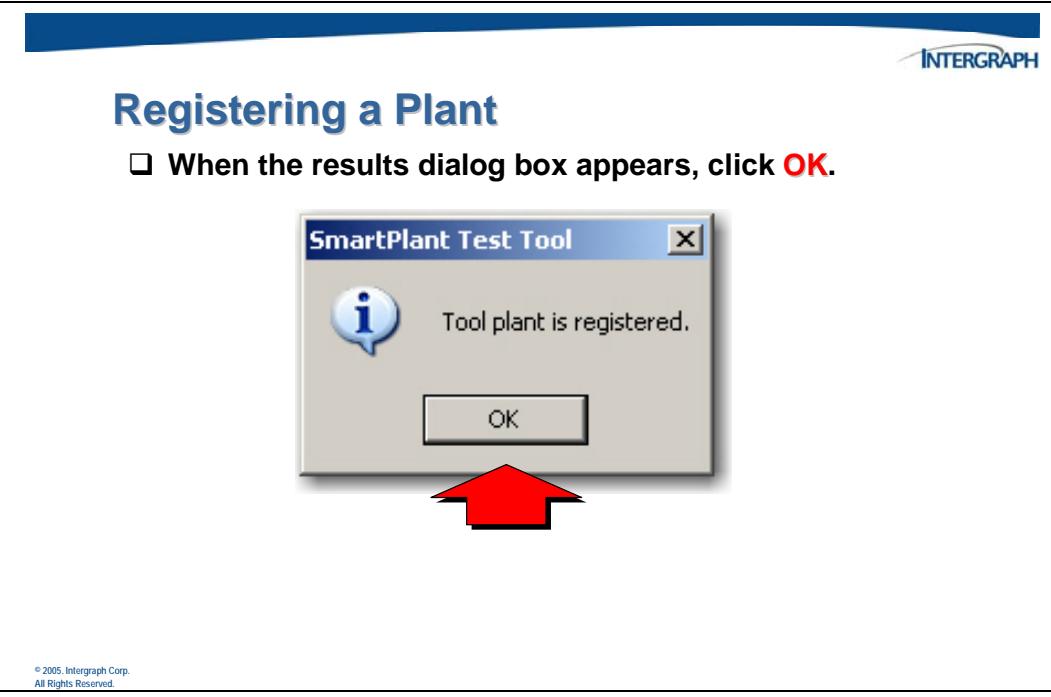
The *SmartPlant Registration Wizard* dialog box will appear.



Tool plants exist separately from SmartPlant Foundation plants. That is, a tool plant can exist whether SmartPlant Foundation is being used or not. Similarly, a SmartPlant Foundation plant can exist whether the tool exists or not.

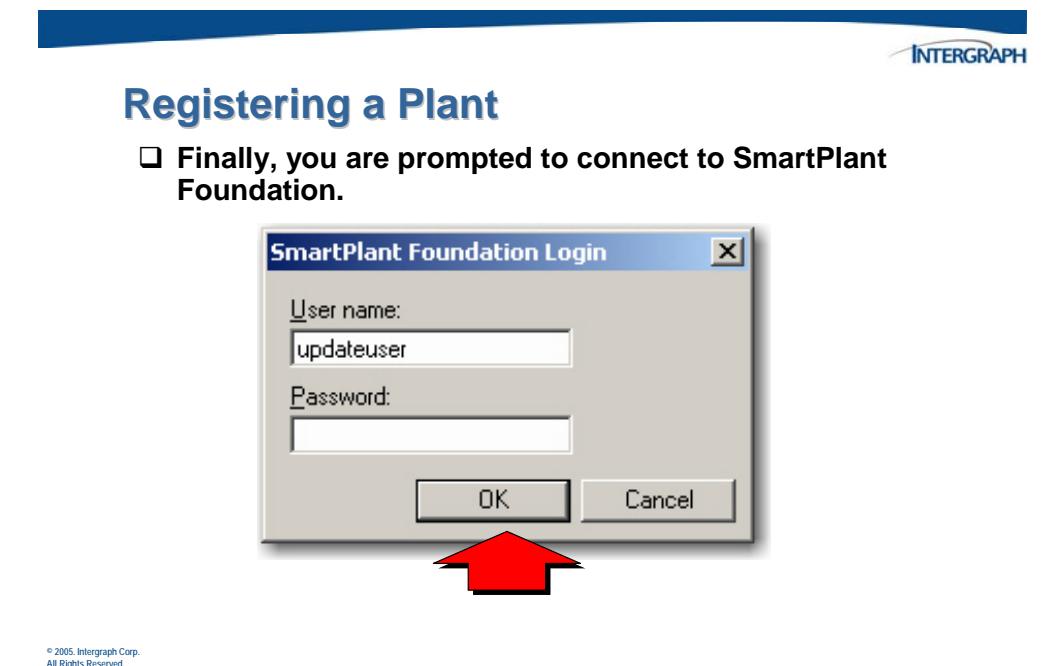


If the registration is completed successfully, a message box will appear to announce that the plant is registered.



After the tool plant is successfully registered with the plant in SPF, you are prompted to log in to SPF.

---



## 11.1 Publishing Documents Example

To perform a sample publish operation, use the ***Publish Documents*** command from the test tool.



### Publishing Application Data

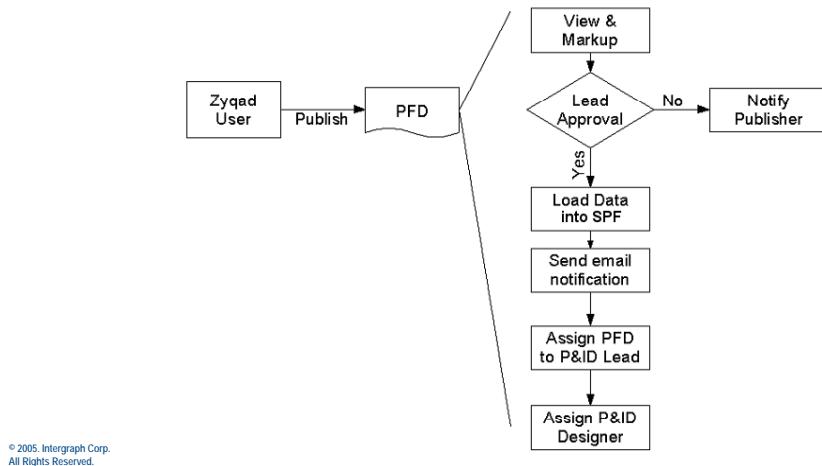
Applications publish documents and associated data into SmartPlant Foundation for several reasons:

- 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.**



## Publishing Documents

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

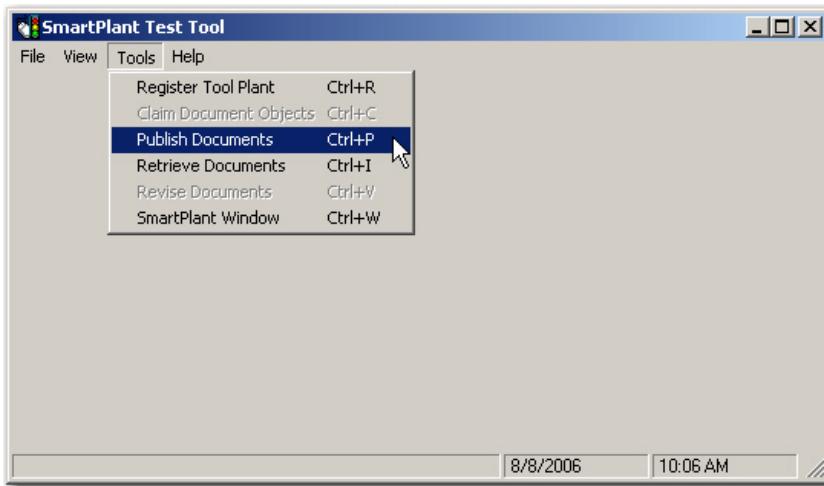


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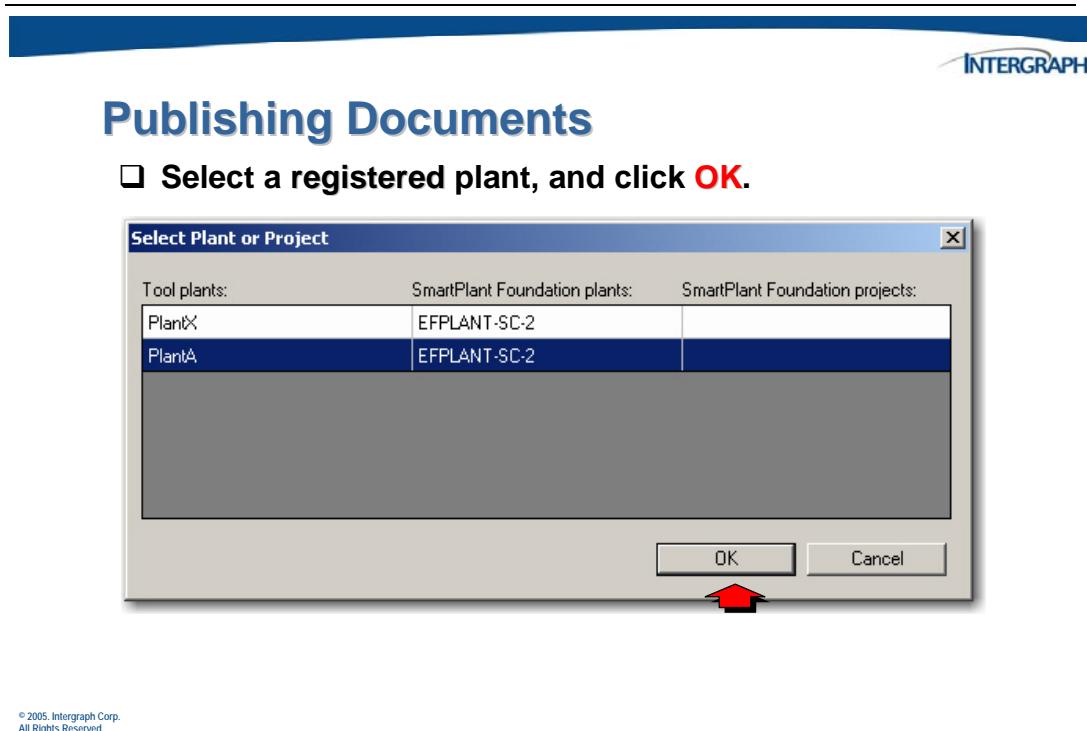
## Publishing Documents

- Select the **Tools > Publish Documents** menu command.



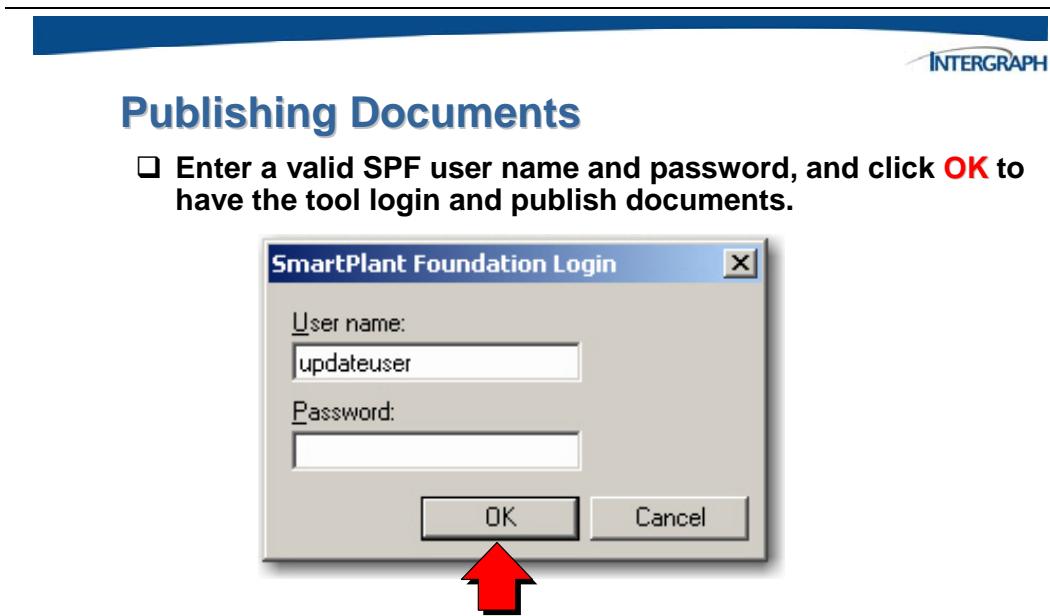
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The *Select Plant or Project* dialog box will appear.



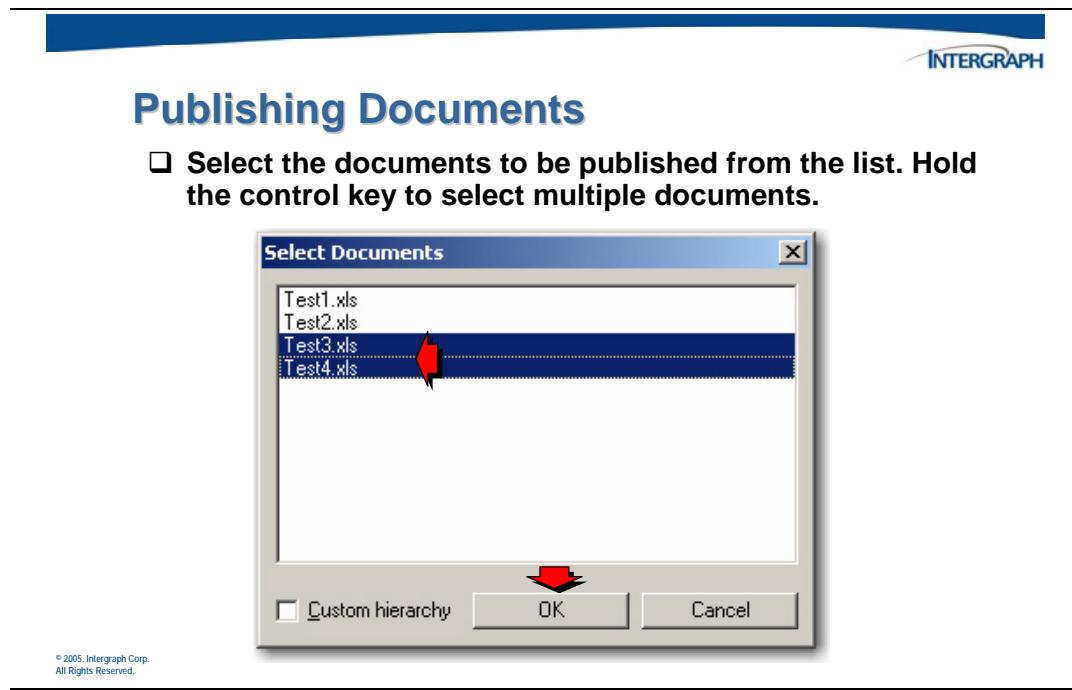
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All Rights Reserved.

A *SmartPlant Foundation Login* dialog box will be displayed, allowing you to specify a user name to be used for the publish operation.

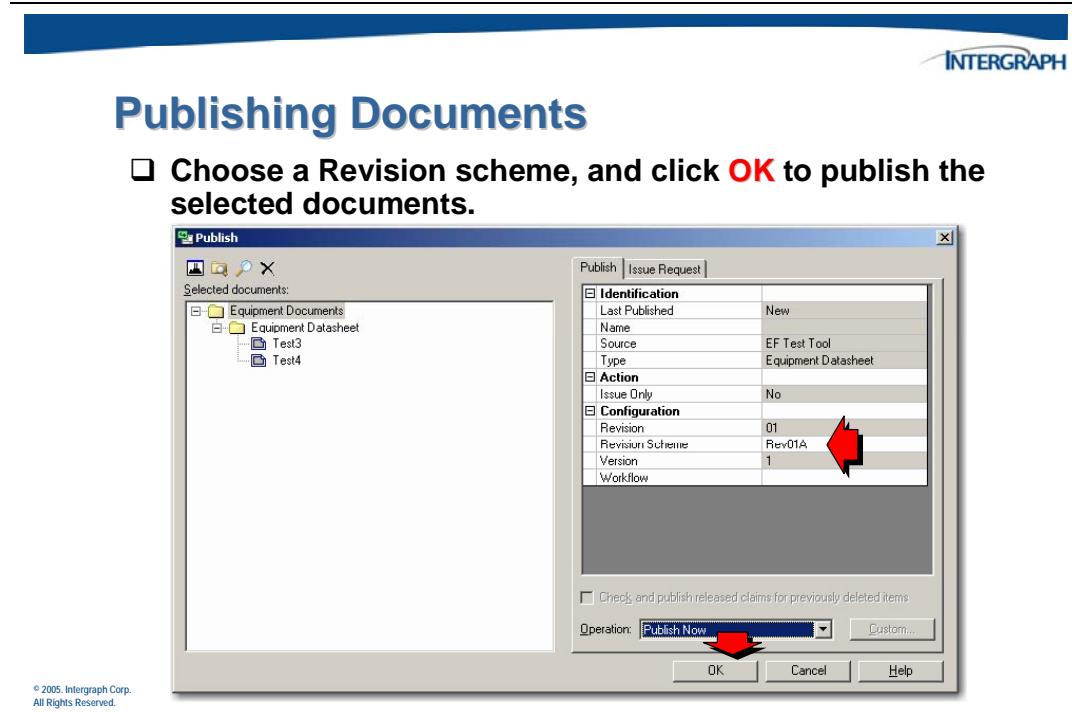


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Select one or more documents from the *Select Documents* dialog box.



On the *Publish* dialog box, choose a *Revision Scheme* for the document you are publishing. Optionally, you may select a *Workflow*, if you wish, but that selection is not necessary.



In the *Operation* field indicate when you want to publish the selected documents.



## Publishing Documents

There are actually three ways to publish documents from the authoring tool:

- Publish Now** – publishes the selected documents when you click OK.
- Background Publish** – publishes the selected documents when you click OK, but does so in the background so that you can work on other things while the publish is processing.
- Scheduled Publish** – publishes the selected documents later, by printing in the batch mode. This option is available only when supported by the authoring tool, as the authoring tool schedules and controls the batch print.

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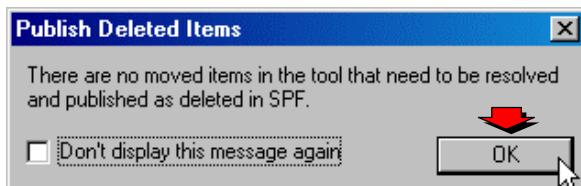
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## Publishing Documents

- If the *Publish deleted items* check box is selected on the previous dialog box, you will be prompted with a dialog box. Click **OK** to continue.



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If the *Publish deleted items* check box is not selected, this dialog box will not appear.



## Publishing Documents

The **Publishing** dialog box will display the status of the publish operation.



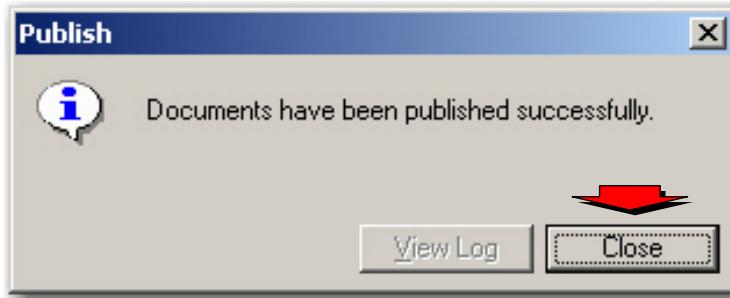
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A dialog box will display after some time to report success or failure of the publish.



## Publishing Documents

- When the results dialog box displays, click **Close**.



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## 11.2 Retrieving Documents Example

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 SmartPlant Instrumentation 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.**

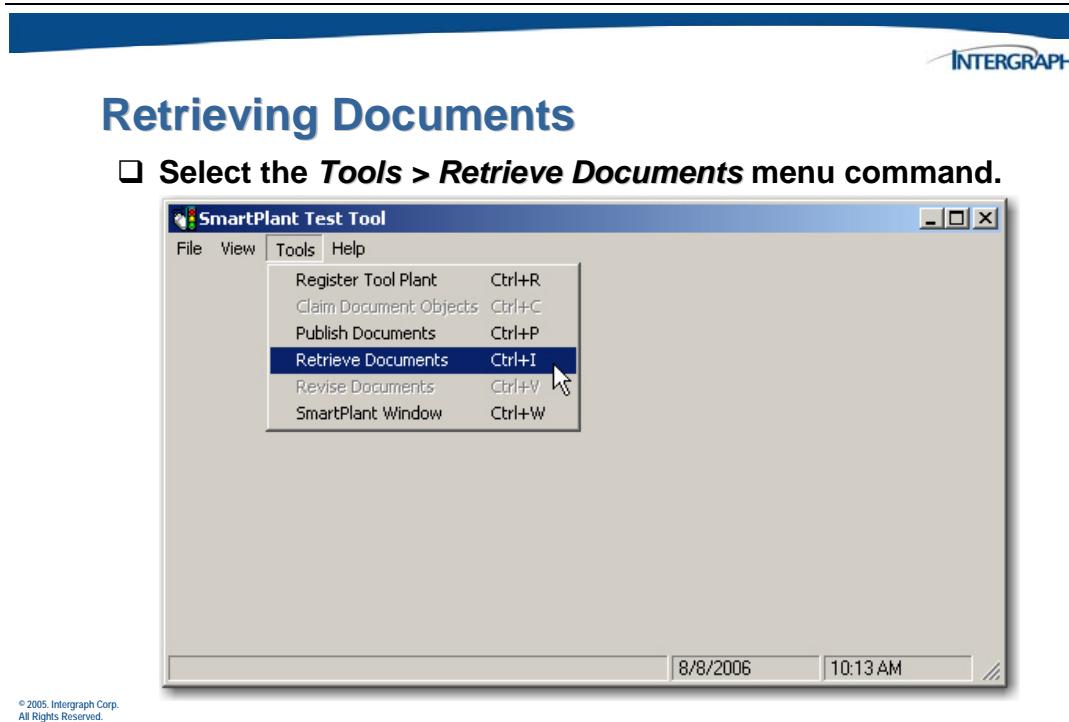
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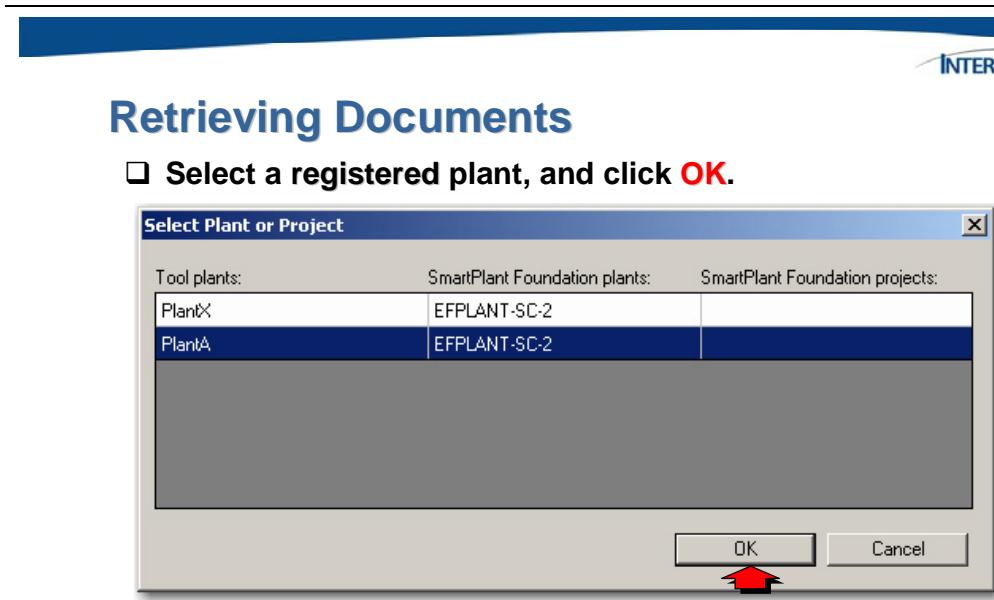
When a document is retrieved, the authoring tool determines how the system deals with changes. SmartPlant P&ID and SmartPlant Instrumentation analyze the impact of the newly retrieved data on the existing database, then place tasks on the authoring tool's **To Do** list that allow you to create, delete, 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.

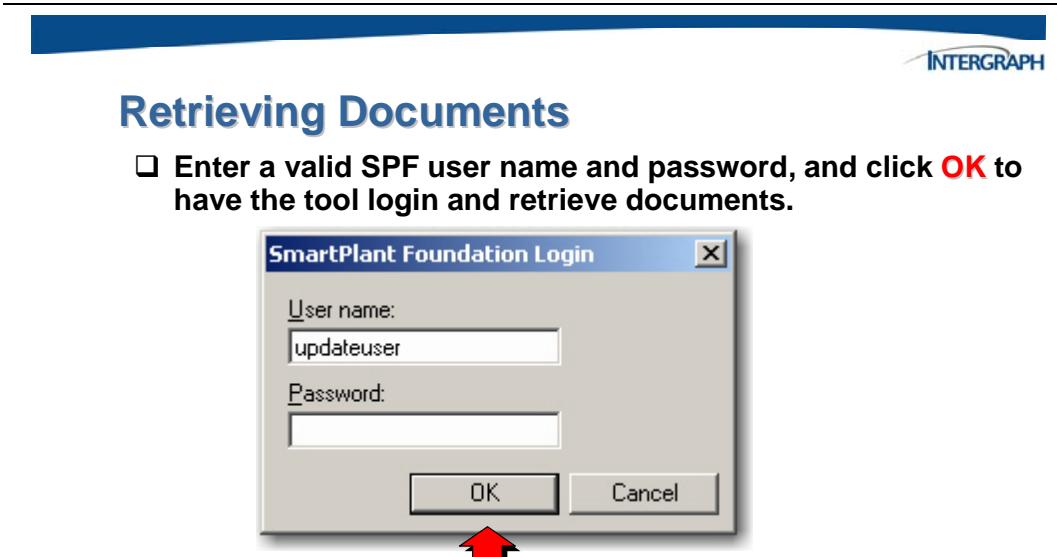
To perform a sample retrieve operation, use the **Retrieve Documents** command from the test tool.



The *Select Plant or Project* dialog box will appear.

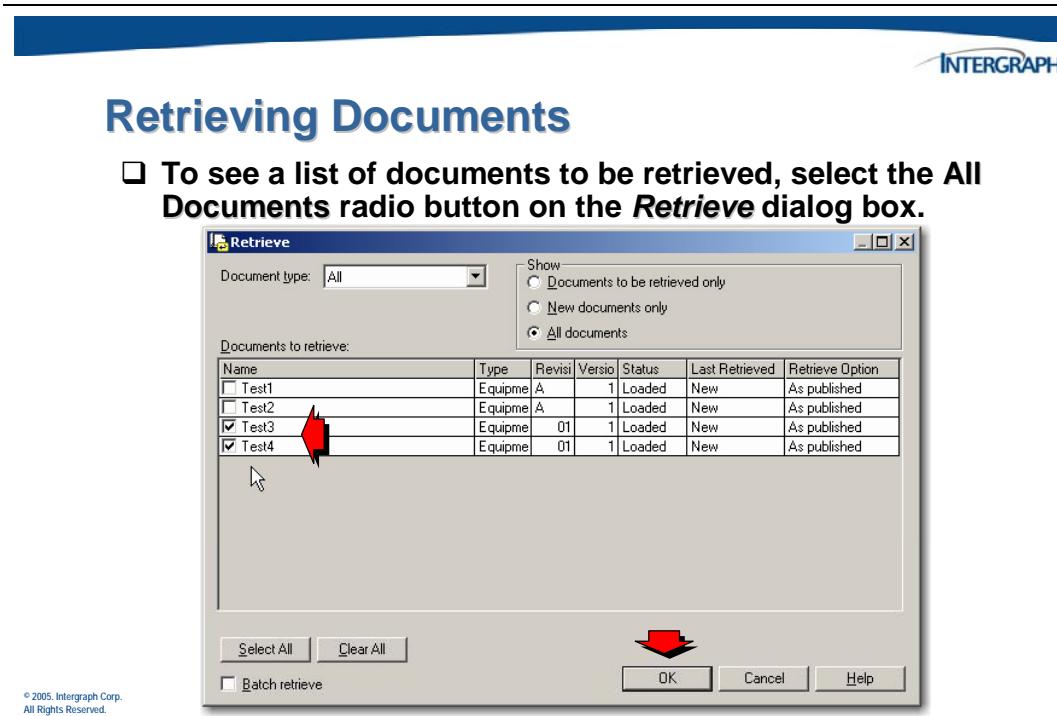


A *SmartPlant Foundation Login* dialog box will be displayed, allowing you to specify a user name to be used for the retrieve operation.



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The *Retrieve* dialog box will appear. Select the check box next to one or more of the documents in the *Retrieve* dialog box.

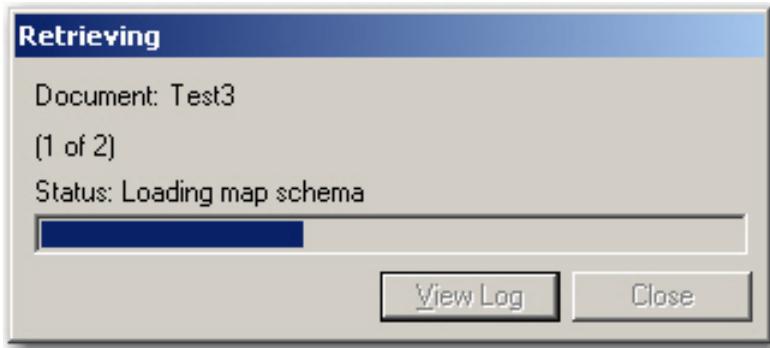


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## Retrieving Documents

The **Retrieving** dialog box will display the status of the retrieve operation.



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A dialog box will appear after some time to report success or failure of the retrieve.



## Retrieving Documents

- When the results dialog box appears, click **Close**.



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When you are finished with the publish and retrieve operations, close the test tool.



# 12

C H A P T E R

---

## Creating a Plant Breakdown Structure



## 12. Creating a Plant Breakdown Structure (PBS) in SmartPlant Foundation

The composition of the plant is based on the grouping of physical objects by their function in the plant. The plant usually occupies the top level of the hierarchy and is typically followed by subsections, such as areas, units, sites, or systems. This is commonly referred to as the **Plant Breakdown Structure** or PBS.

In this chapter, creating a PBS in SPF will be discussed. Once the PBS exists in SPF, it must be published in order to be retrieved by the authoring tools. This is necessary in order to synchronize the different authoring tools and SmartPlant Foundation as part using the SmartPlant environment.

In this class, we will be using SmartPlant P&ID and SmartPlant Instrumentation for our example. Once you have an understanding of how to publish and retrieve a PBS from SPF to these two tools, the same concepts and procedure will apply to Zyqad, SmartPlant 3D, SmartPlant Electrical, and Marian.

In previous versions of the software, you were required to use the Plant/Area/Unit hierarchy. This restriction is no longer in place, however, the following restrictions do still apply:

- You must apply the structure you create in SmartPlant Foundation across all authoring tools. For example, if you choose to use the Plant/Area/System hierarchy, you must use that structure in every tool that will be using SmartPlant. You cannot select different hierarchies for different authoring tools.
- Your structure must consist of three levels. You cannot create a structure that consists of just Plants and Areas or Plant, Area, Systems, and Units.

In this chapter, we will use the Plant/Area/Unit structure for our examples.

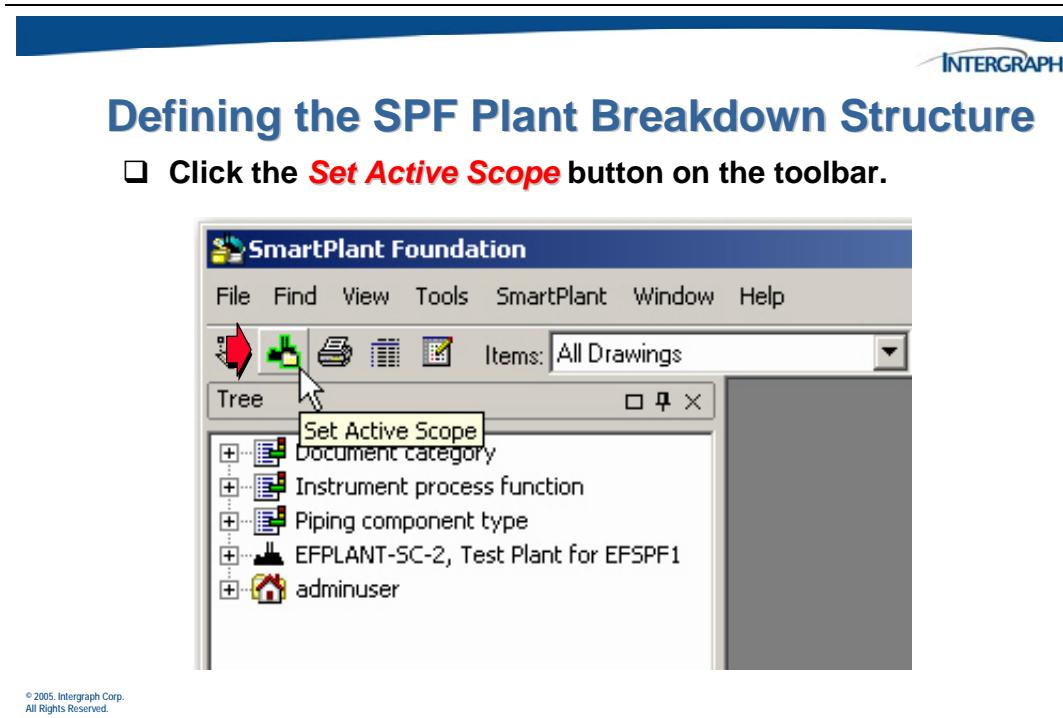
## 12.1 Creating a Plant Breakdown Structure in SPF

Before you can create an area and unit, you must create the plant using a load file. For the purposes of this example, the plant has already been created using a load file that created a new Madison plant.

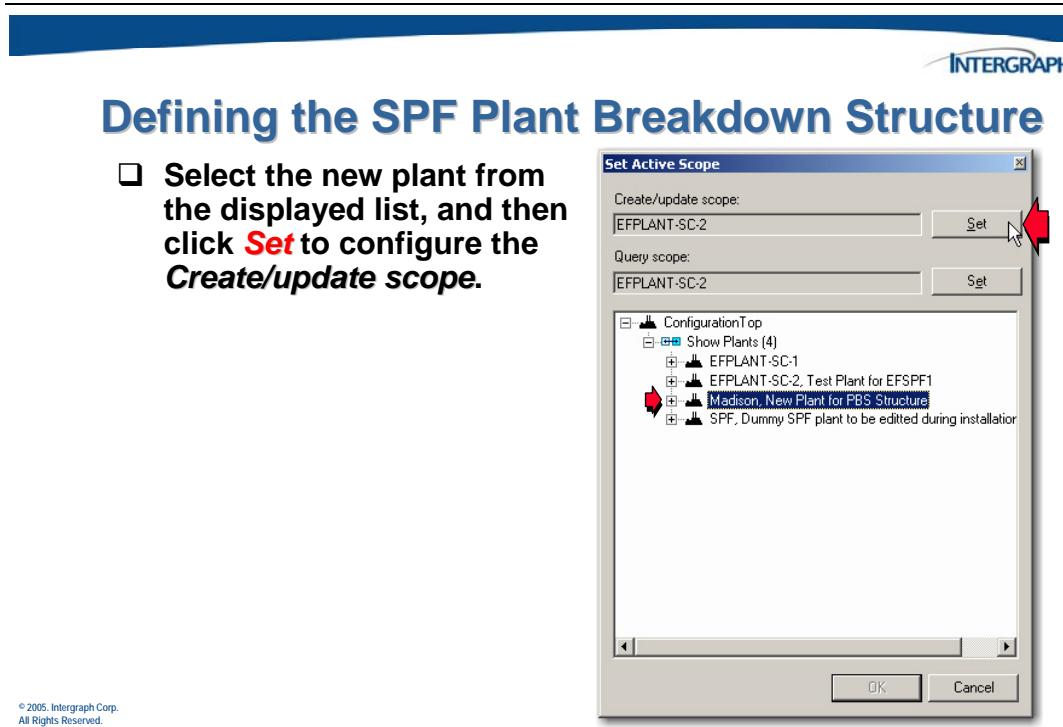
Start the SmartPlant Foundation Desktop Client.



Set the *Active Query Scope* to the correct plant.



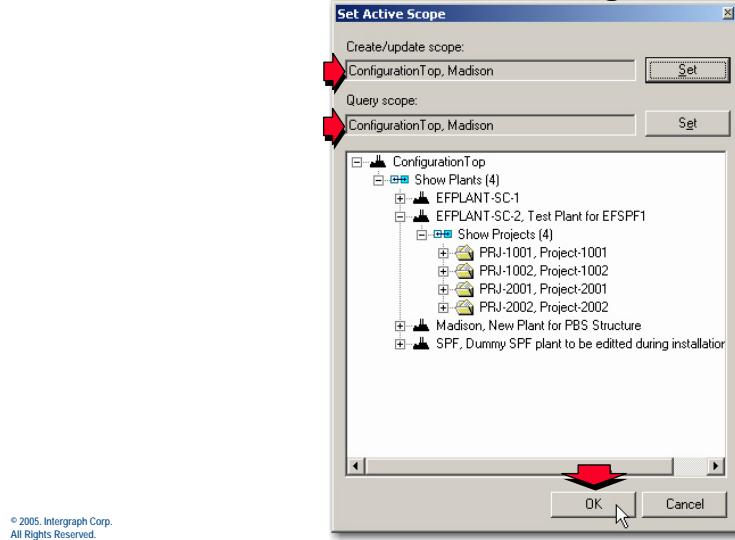
The active query scope determines the plant in which your searches take place.





## Defining the SPF Plant Breakdown Structure

- Choose **OK** to close the dialog and save the new scope.

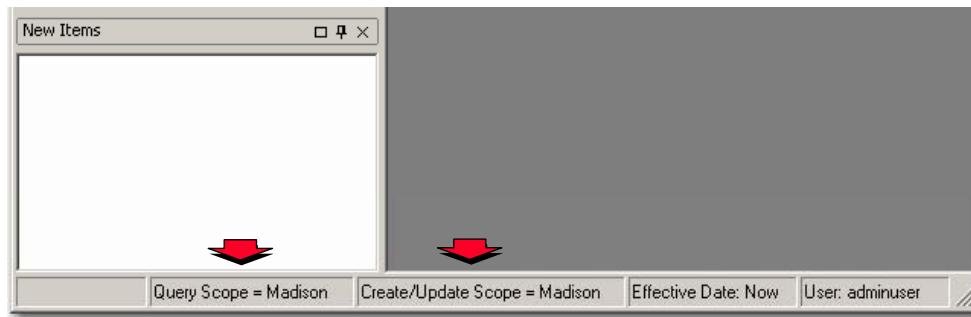


The plant you selected appears beside **Query Scope** and **Create/Update Scope** in the status bar.



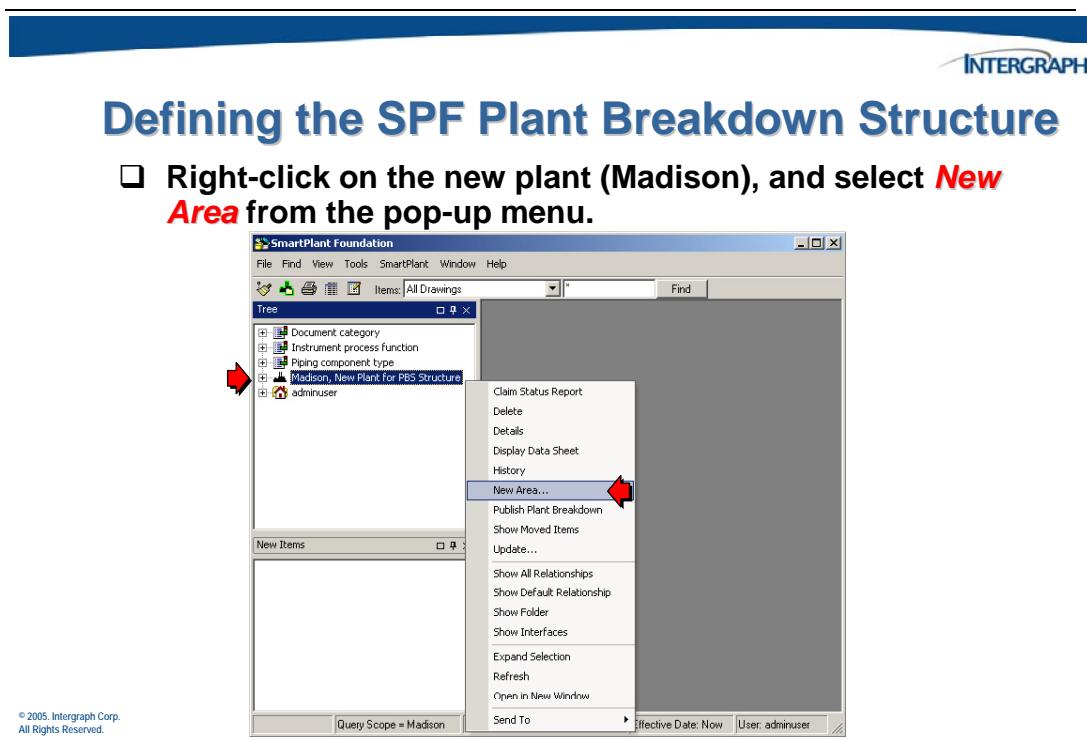
## Defining the SPF Plant Breakdown Structure

- Verify that the **Scope** is set to the new plant.

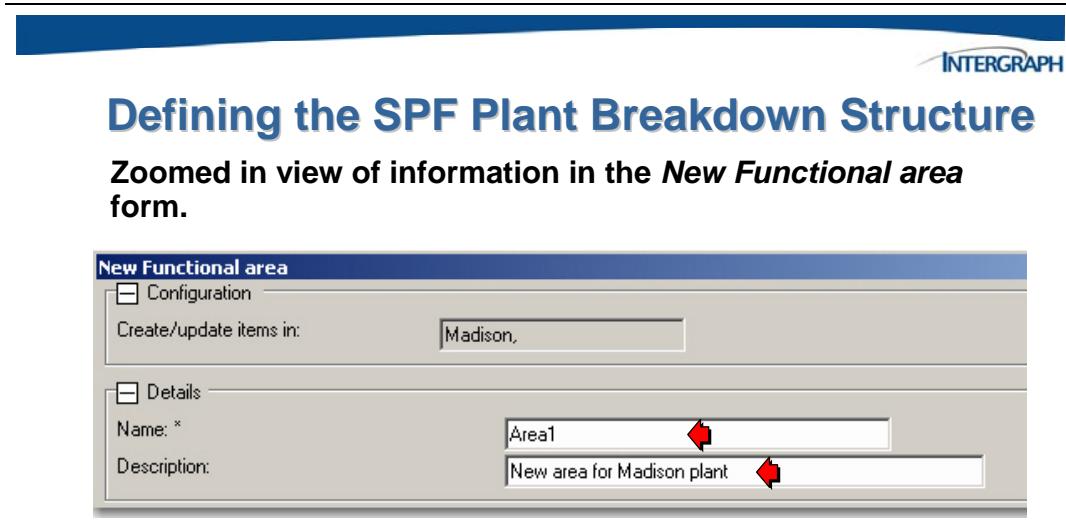
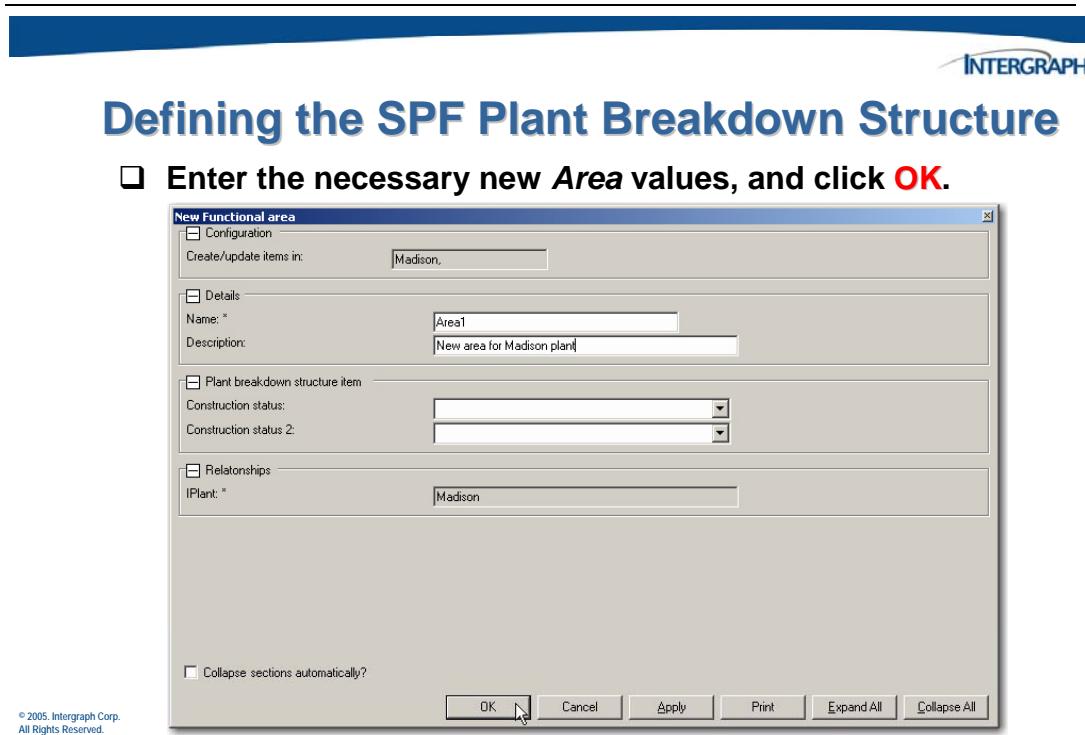


## 12.1.1 Creating a New Area

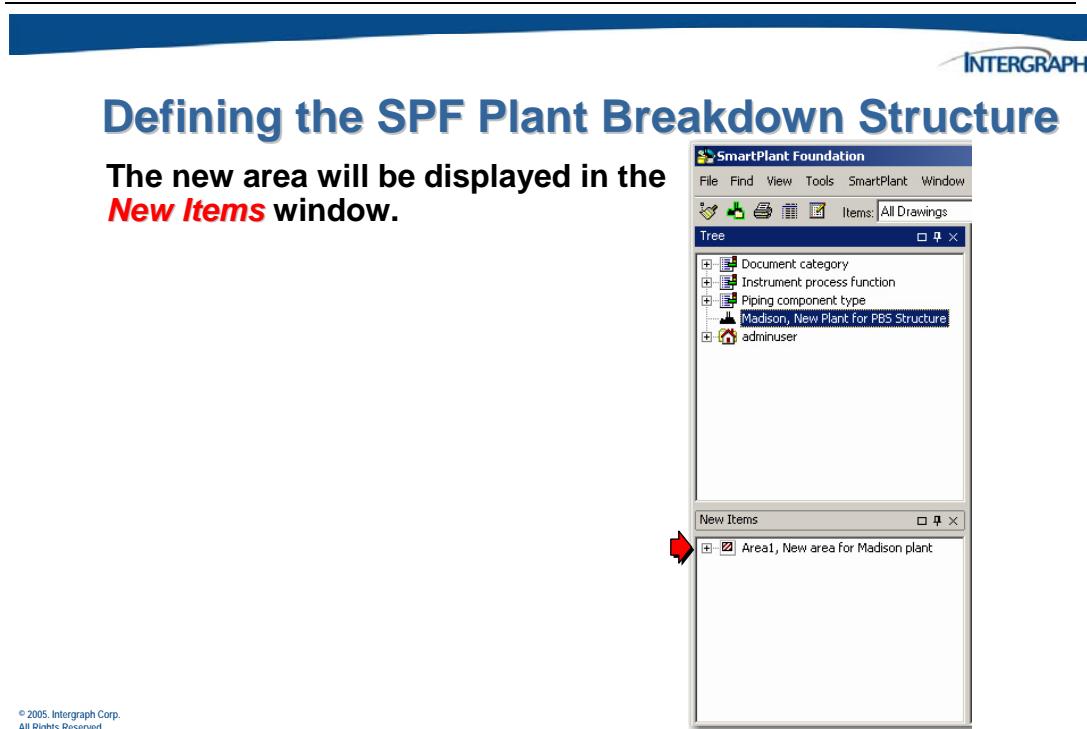
The first step, once the scope has been set, is to create a new functional area. In the tree view of the Desktop Client, right-click the plant for which you want to create an area.



Define properties for the new area, and then click **OK** to create it.



The new area appears in the **New Items** window.



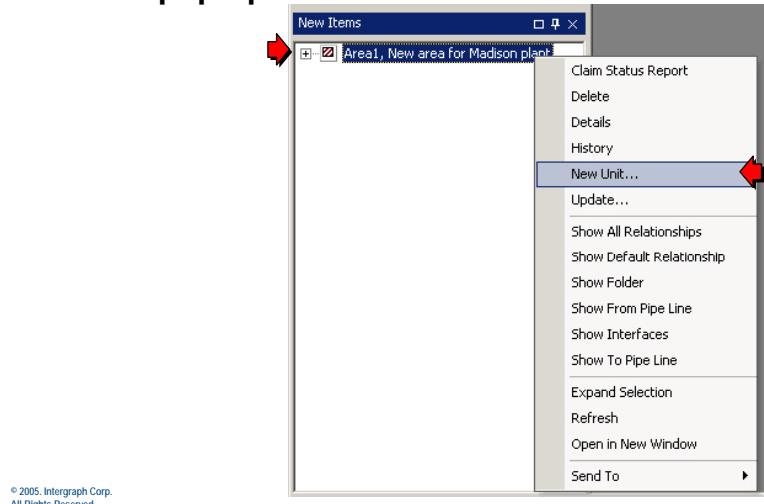
## 12.1.2 Creating a New Unit

In the **New Items** window of the Desktop Client, right-click the area you just created. On the shortcut menu that appears, click **New Unit**.



### Defining the SPF Plant Breakdown Structure

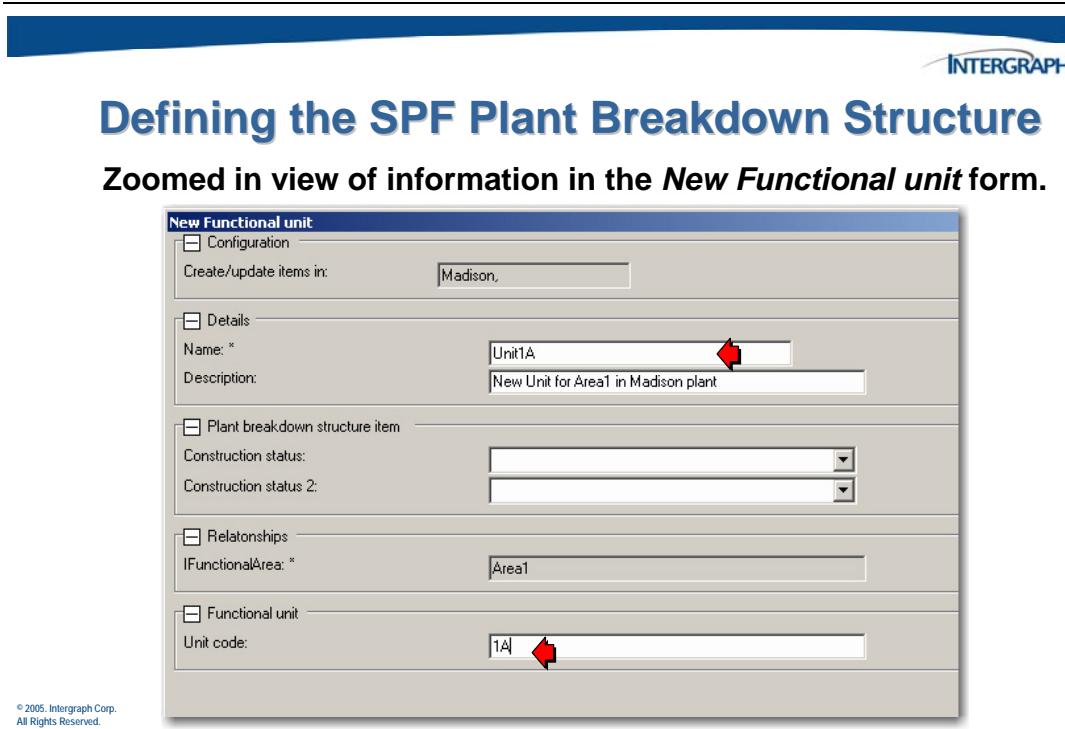
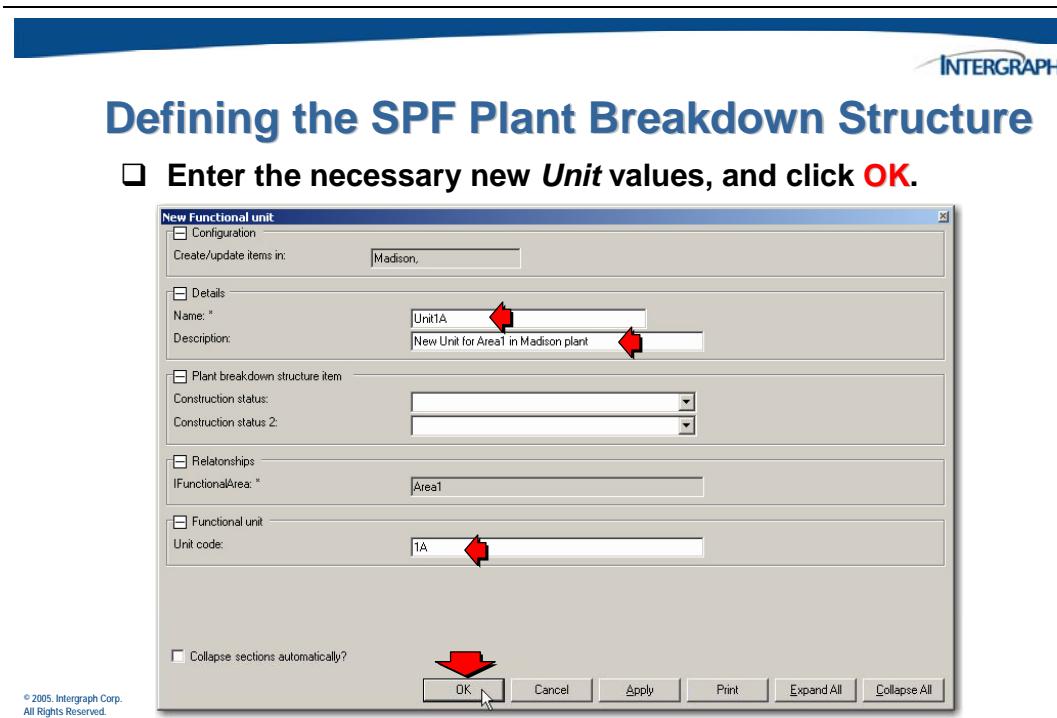
- Right-click on the new area, and select **New Unit** from the pop-up menu.



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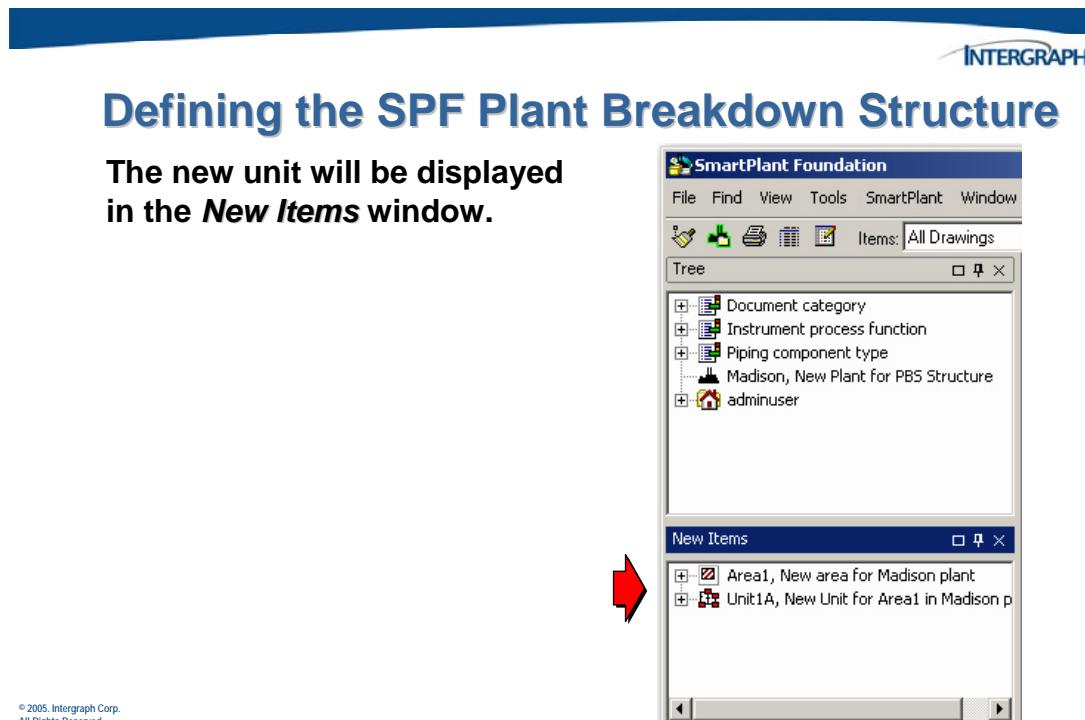
---

Define properties for the new area. Be sure that you define a value for the **Unit code** property.



The new unit appears in the **New Items** window.

---

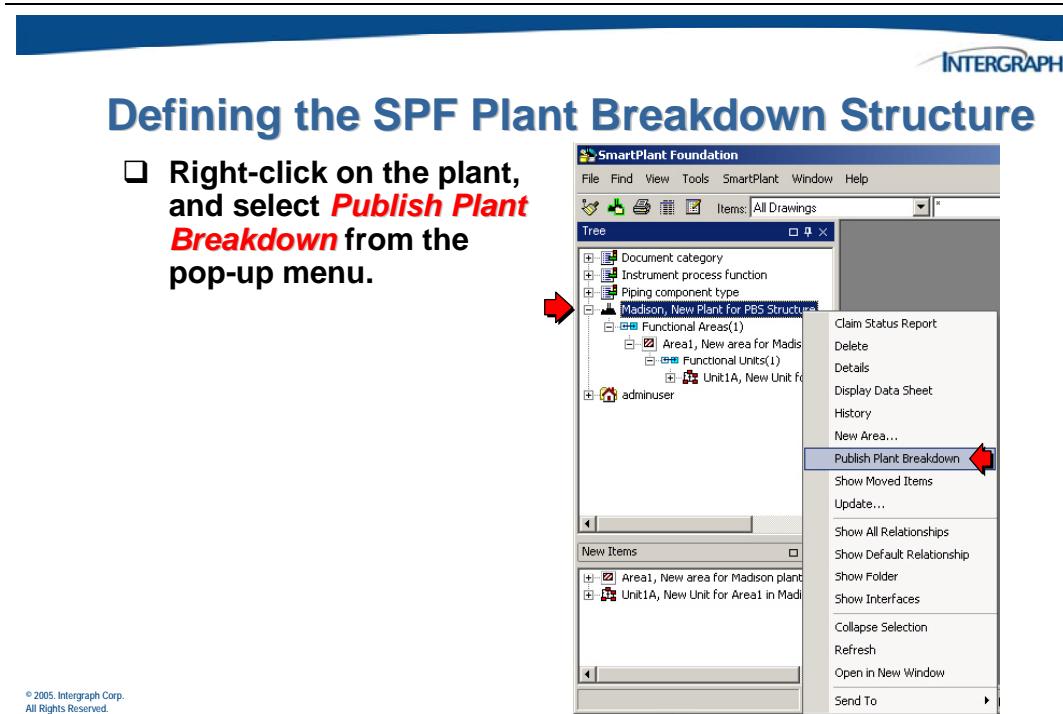


## 12.1.3 Publish the Plant Breakdown Structure (PBS) Document

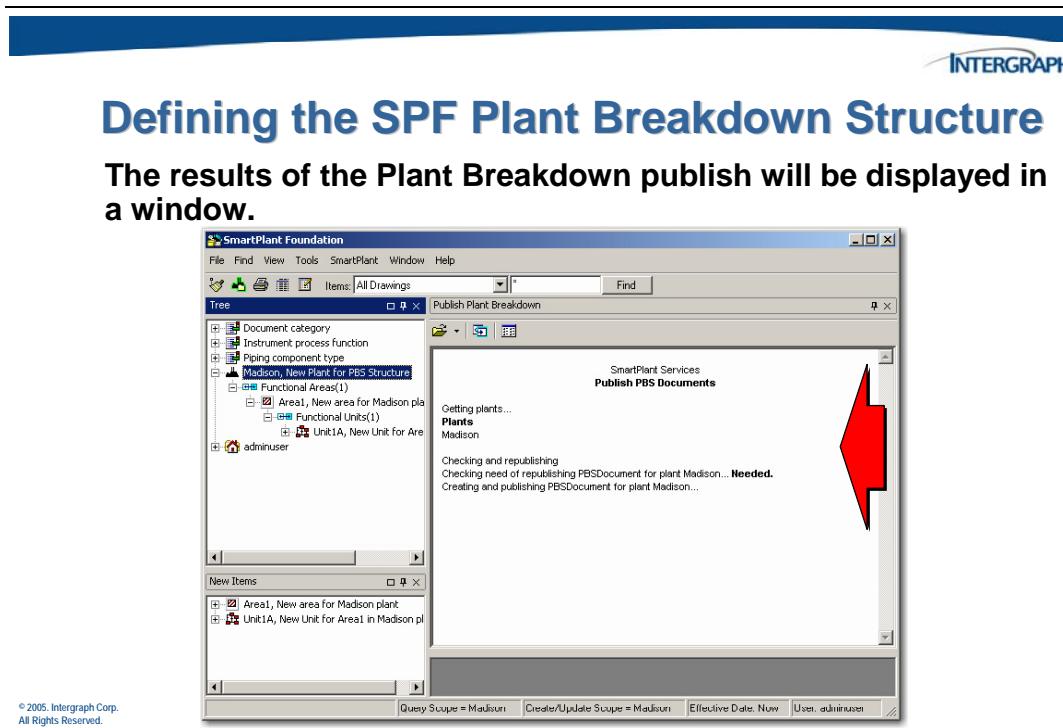
Once the new area and unit have been created for the new plant, you are ready to publish the new PBS to make the structure available to the engineering tools.



In the SmartPlant Foundation Desktop Client, right-click the plant in the tree view.



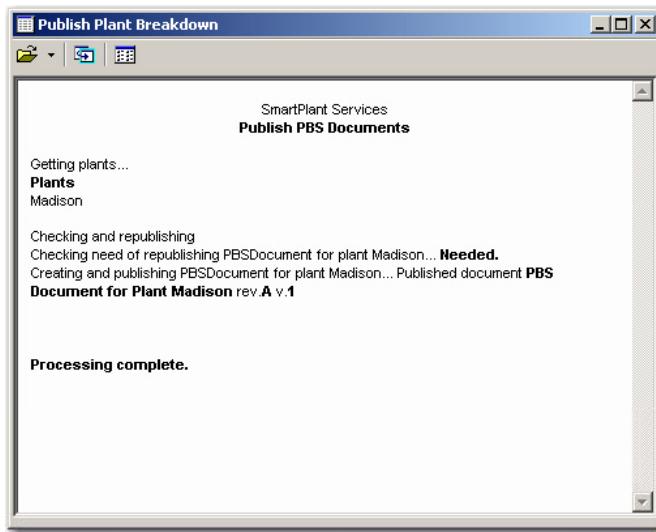
The status of the publish appears in the **Publish Plant Breakdown** window.





## Defining the SPF Plant Breakdown Structure

Zoomed in view of the completed *Plant Breakdown publish*.



---

If the plant breakdown structure is published successfully, SmartPlant Foundation is set up correctly.

## 12.2 Registering Authoring Tools

As part of the synchronization between SmartPlant Foundation and each of the engineering or authoring tools, each tool must be registered with SPF. This process associates a plant in each tool with a plant in SmartPlant Foundation.



### Registering Authoring Tools

**Before you can publish and retrieve documents from any of the authoring tools (such as SmartPlant P&ID or SmartPlant Instrumentation), you must register each plant in the authoring tool with a SmartPlant Foundation plant database.**



## 12.2.1 Creating a New SmartPlant P&ID Plant

Several administrative tasks in SmartPlant P&ID are actually conducted in the SmartPlant Engineering Manager application, including creating new plants and registering them with SmartPlant Foundation. As a result, in order to create a P&ID plant, register it with SPF, and retrieve the information from the PBS to correlate the P&ID plant with the SPF Plant, we will perform all these task using SmartPlant Engineering Manager.

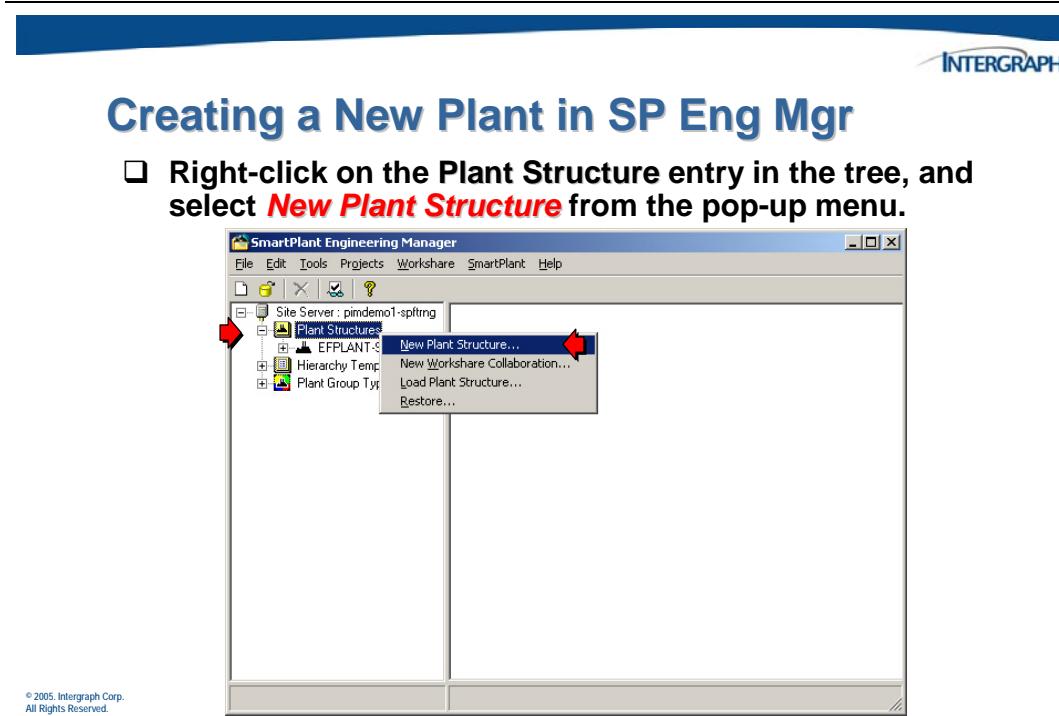
Before you can register a plant in SmartPlant Engineering Manager, you must create the site and plant, associate applications, and define roles for the plant.

Begin by starting the *SmartPlant Engineering Manager* application.



The following steps must be completed before you can register a new plant in SmartPlant Engineering Manager to be used by the SmartPlant P&ID authoring tool.

First, create a new plant structure in SmartPlant Engineering Manager to be associated with the PBS published from SPF.



The *New Plant Structure* form will appear.



Define the information for the new plant. This information should match what you have created in SPF.



Next define the paths used by this plant. These paths should use the <host>|site UNC path.





## Creating a New Plant in SP Eng Mgr

- If the specified storage directory does not exist, click **Yes** to create it.



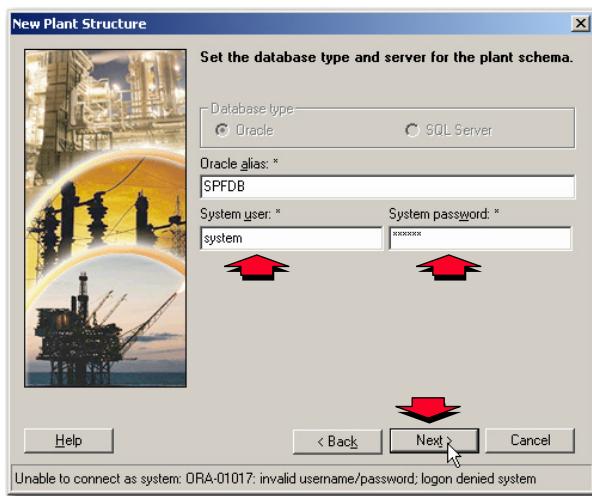
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In order to create the necessary Oracle tables, enter the necessary Oracle login information.



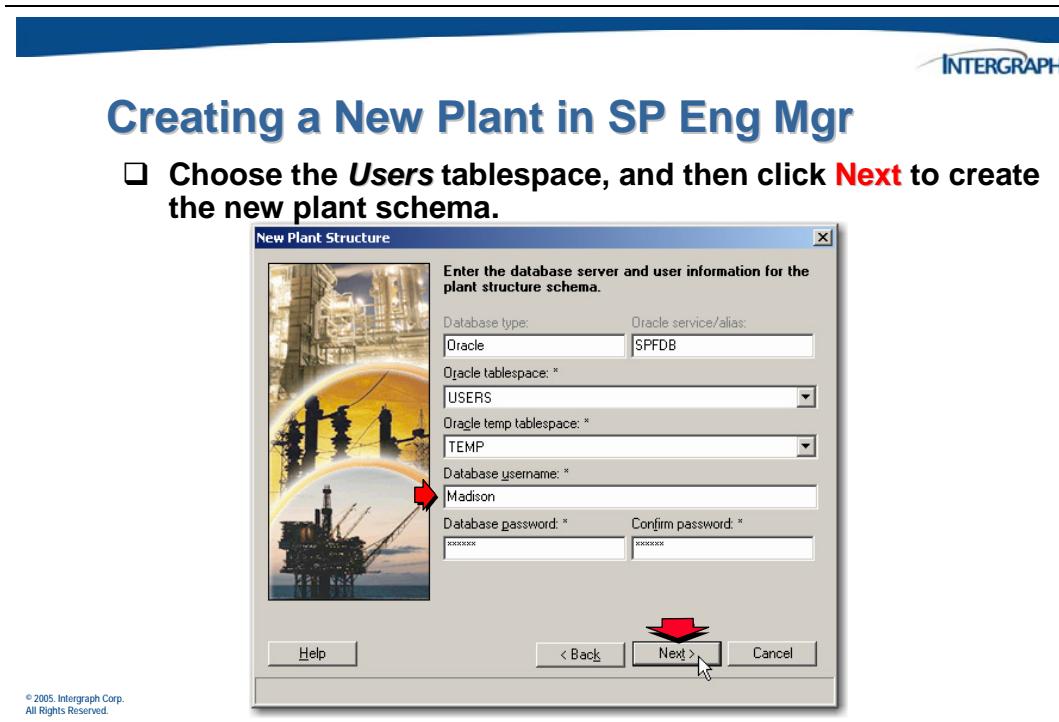
## Creating a New Plant in SP Eng Mgr

- Enter the Oracle System user name (system) and password (oracle).

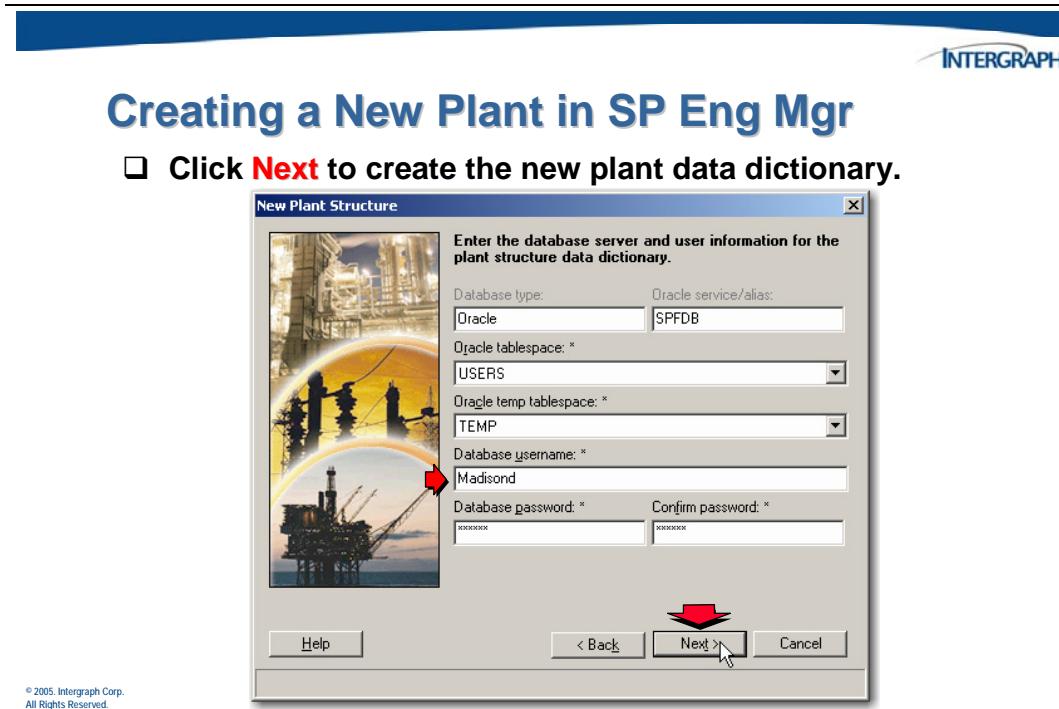


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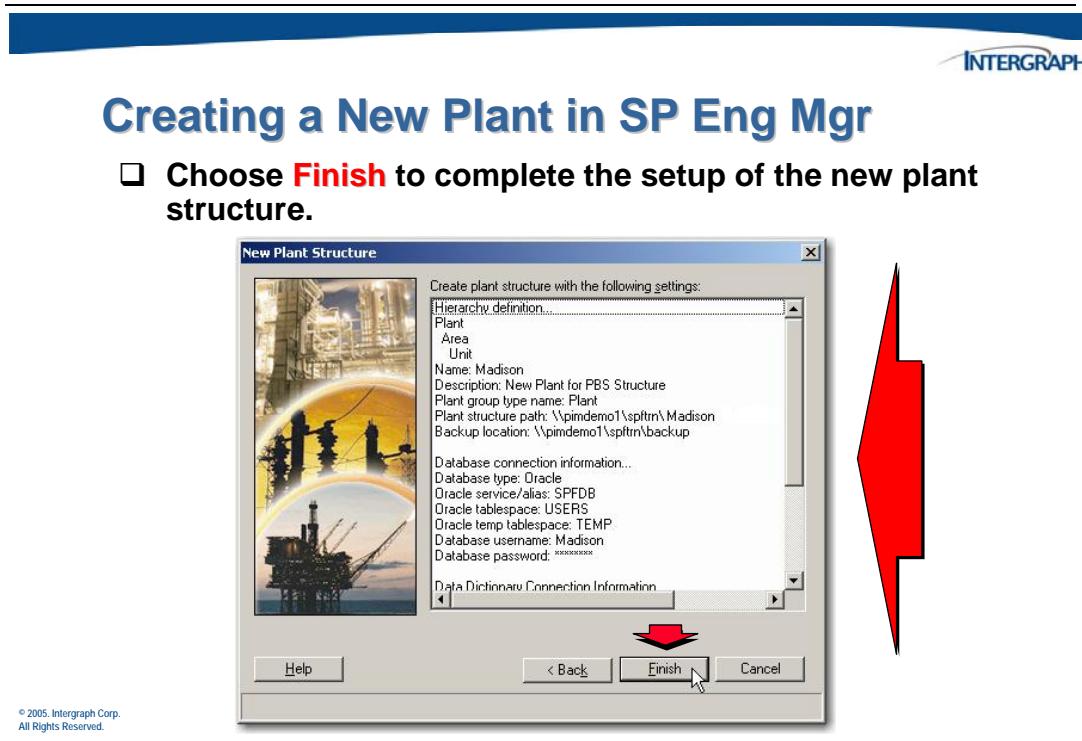
The Oracle username and password information will be filled in for you. Set the tablespace where you want to add the plant structure.



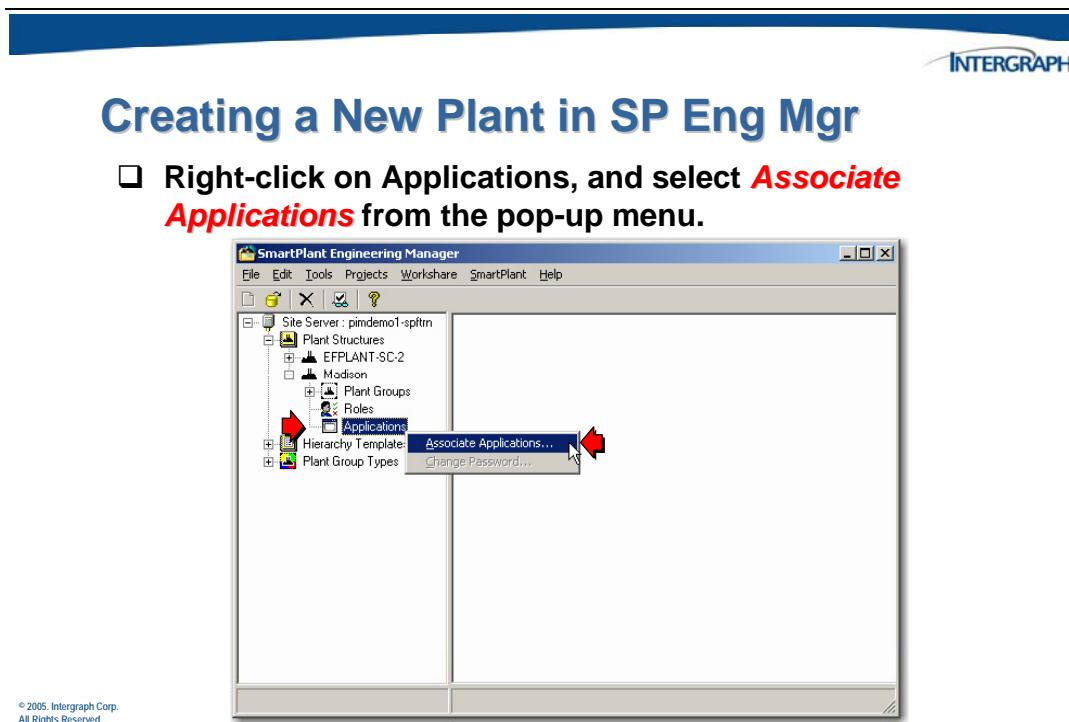
Again, the Oracle username and password information will be filled in for you. Set the tablespace where you want to add the plant data dictionary.



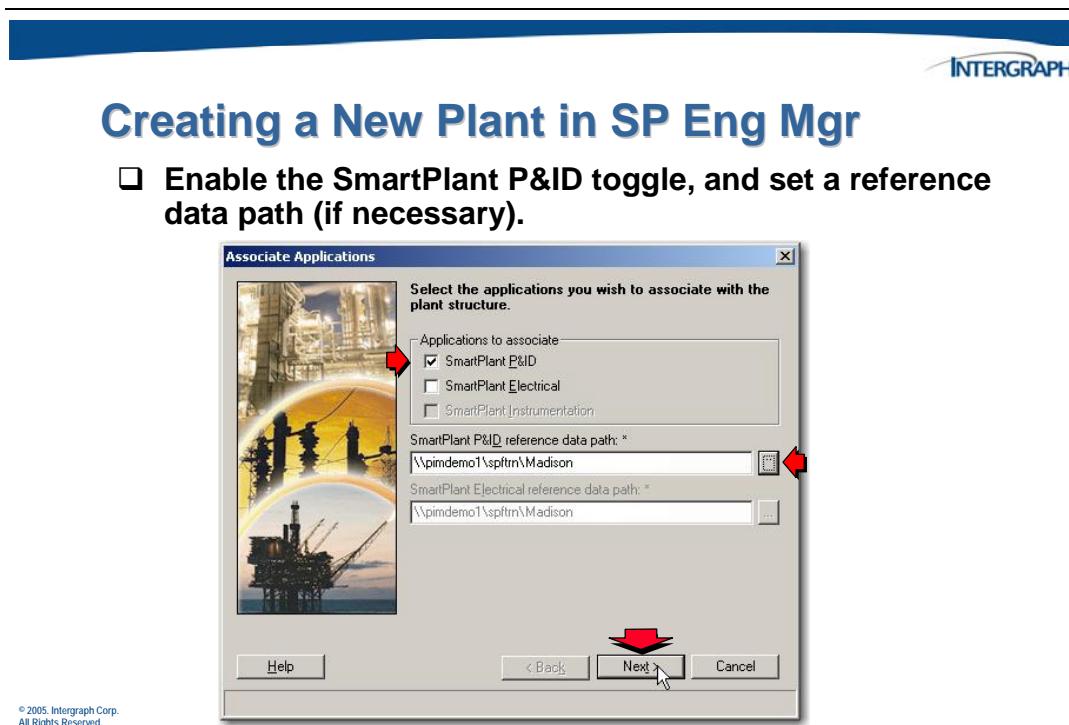
In the *New Plant Structure* dialog, note the tasks that will be performed by the setup.



Expand the new Madison plant structure.



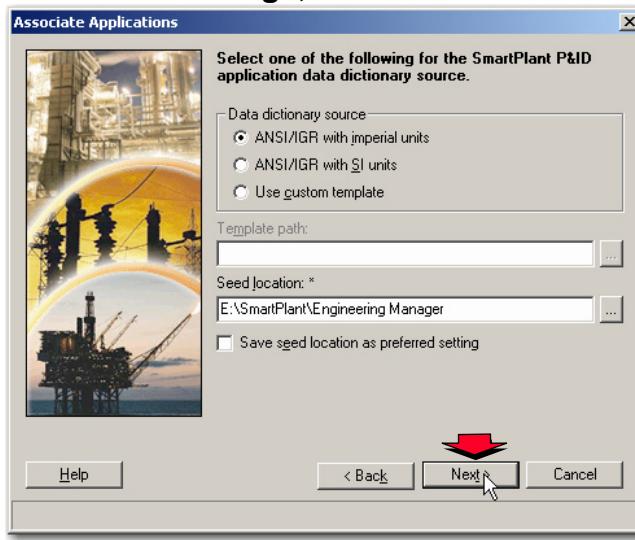
Next, associate the new plant with the SmartPlant P&ID application.





## Creating a New Plant in SP Eng Mgr

- Take the default settings, and select **Next**.



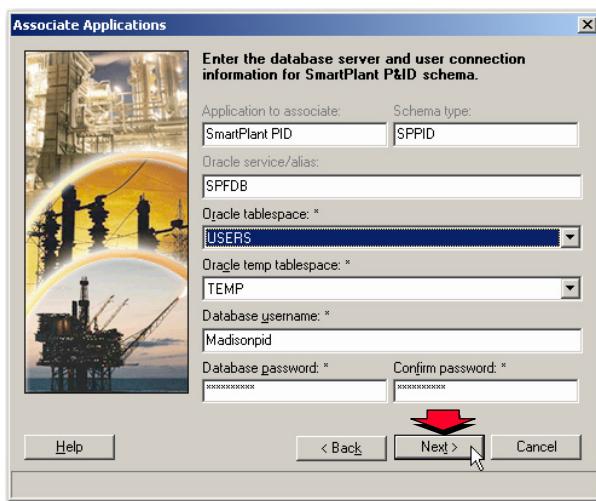
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Once again, the Oracle username and password information will be filled in for you. Set the tablespace where you want to add the SP P&ID schema.



## Creating a New Plant in SP Eng Mgr

- Confirm the correct information for the SP P&ID schema, and select **Next**.



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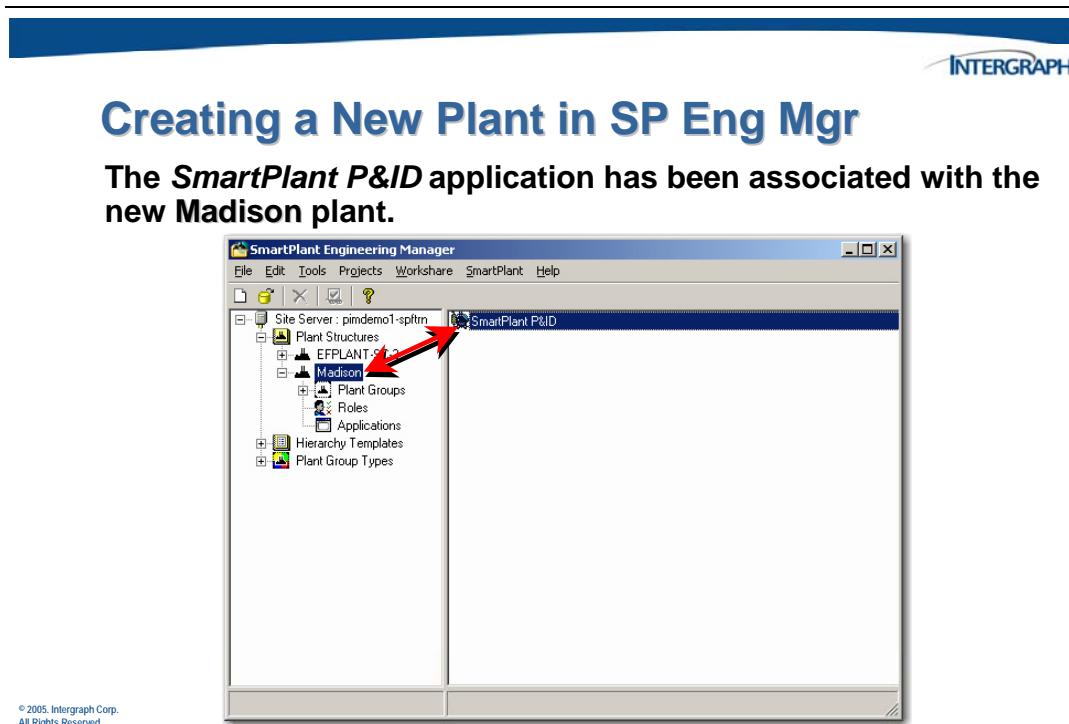
Repeat this for the SmartPlant P&ID data dictionary.



In the *Associate Applications* dialog, note the tasks that will be performed by the setup.

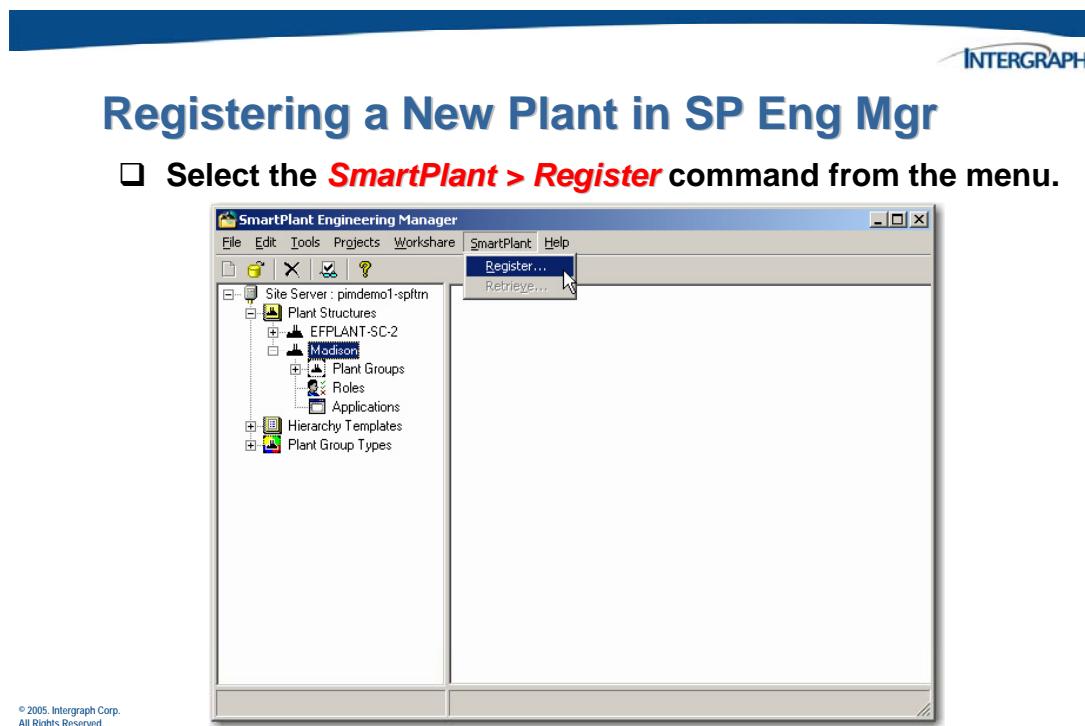


The new plant is now associated with the SmartPlant P&ID application.



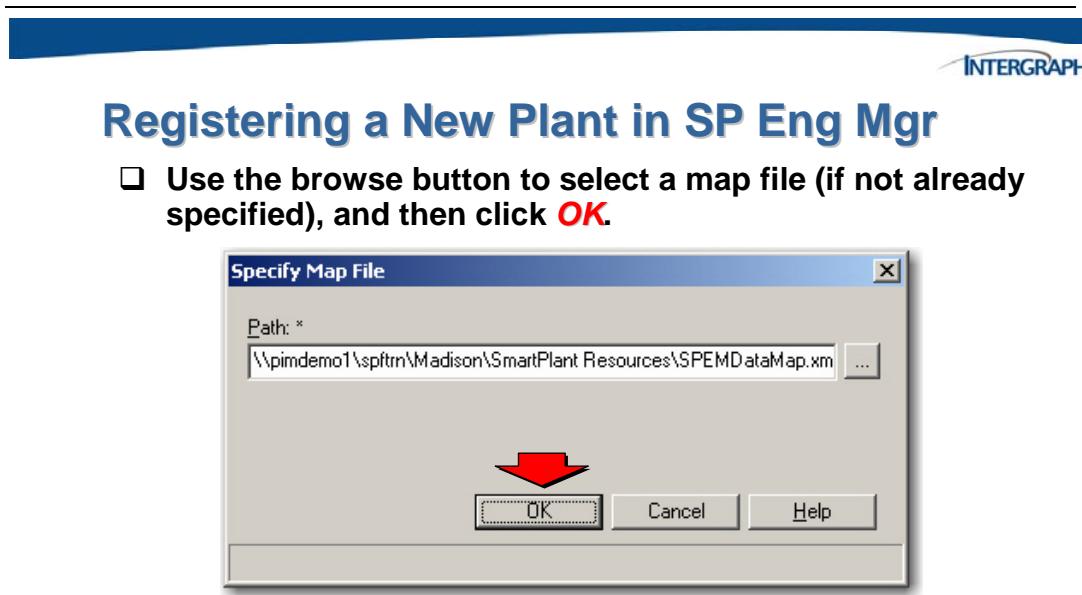
## 12.2.2 Registering SmartPlant P&ID with SmartPlant Foundation

From the Plant Structures node in the tree view, select the plant that you would like to register. On the *SmartPlant* menu, click the **Register** command, which should be available to you. If it is not available, make sure that you have selected the plant in the tree view.



You may be required to enter your SmartPlant Foundation user name and password before you can register a plant. You are not required to enter this information if your computer user name matches a user name in SmartPlant Foundation.

The *Specify Map File* dialog will display.



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After you click the **Register** command, the software displays a dialog box asking you to specify a map file for SmartPlant Engineering Manager. SmartPlant Engineering Manager uses this map file to map plant properties from SmartPlant Foundation PBS document to the plant properties in SmartPlant Engineering Manager.

By default, SmartPlant Engineering Manager places a copy of this schema map file under your plant structure. To minimize confusion and to avoid having multiple copies of this file, you can move a copy of the schema map file to a central **EFResources** folder during SmartPlant P&ID reference data configuration. The following is an example of the location of the **EFResources** folder: \\efspid1\Sites\RefData\EFResources.

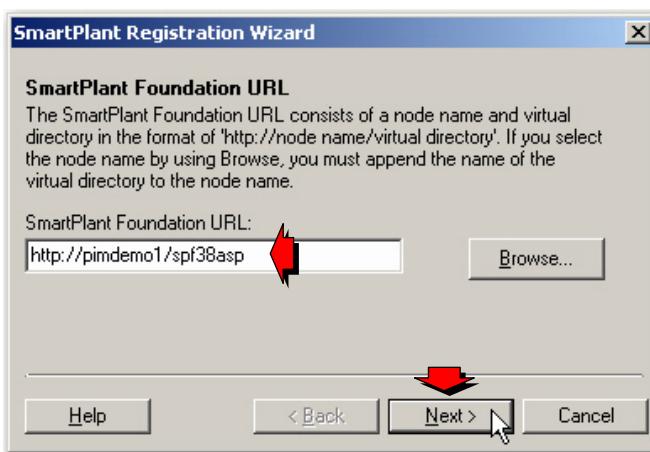
When you select a location for the map file, you can accept the default location without any problems later with publish and retrieve.

After you specify the schema map file for SmartPlant Engineering Manager, the *SmartPlant Registration Wizard* appears. The SmartPlant Registration Wizard user interface is part of the Common UI and is incorporated by all authoring tools from Intergraph.



## Registering a New Plant in SP Eng Mgr

- Enter the URL for the SPF Web Client, and click **Next**.



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In the *SmartPlant Foundation URL* field, type the node name and virtual directory of the SmartPlant Foundation database with which you want to register your plant. Use the following format: `http://<SPFServer>/<VirtualDirectory>`. For example, **http://pimdemo1/spf38asp**.

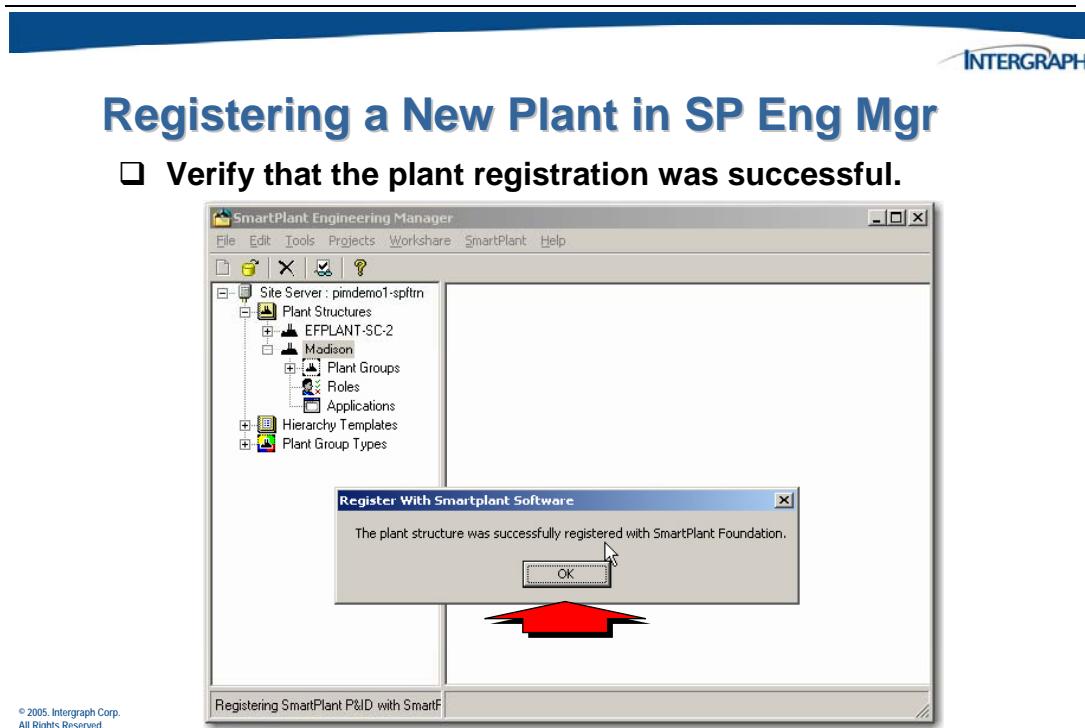
For the next step, you will need to know the SmartPlant Foundation plant to which you are registering. In this example, we will register to the **Madison** plant that was created earlier.



In the *Plant name* list, select the **Madison** plant.



If the registration is completed successfully, the *Register With SmartPlant Software* message box appears, as illustrated below.

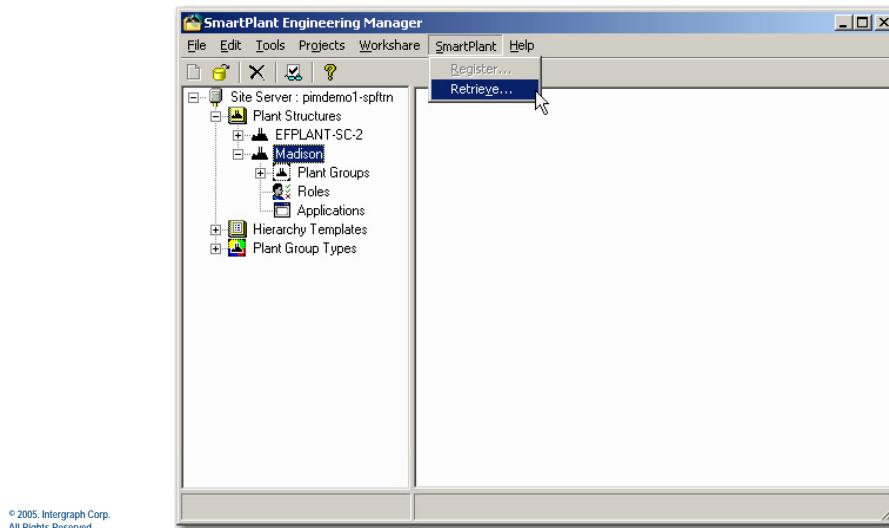


### 12.2.3 Retrieve the PBS Document from SmartPlant Foundation

After you register your plant, you can retrieve the PBS document from SmartPlant Foundation. The PBS document can be used to update the plant and create the appropriate area and unit.

#### Retrieving the PBS from SPF

- Select the **SmartPlant > Retrieve** command from the menu.

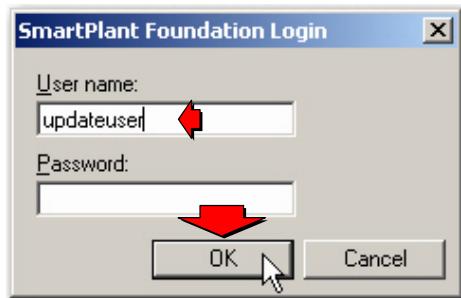


You may be required to enter your SmartPlant Foundation user name and password before you can retrieve from SmartPlant Foundation. You are not required to enter this information if your computer user name matches a user name in SmartPlant Foundation.



## Retrieving the PBS from SPF

- ❑ Enter a valid SPF *User name* and *Password* to log on to the SPF server from the authoring tool.

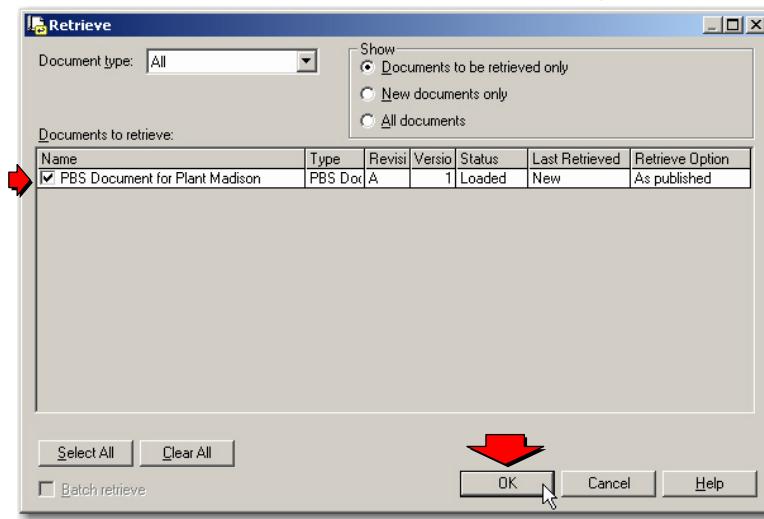


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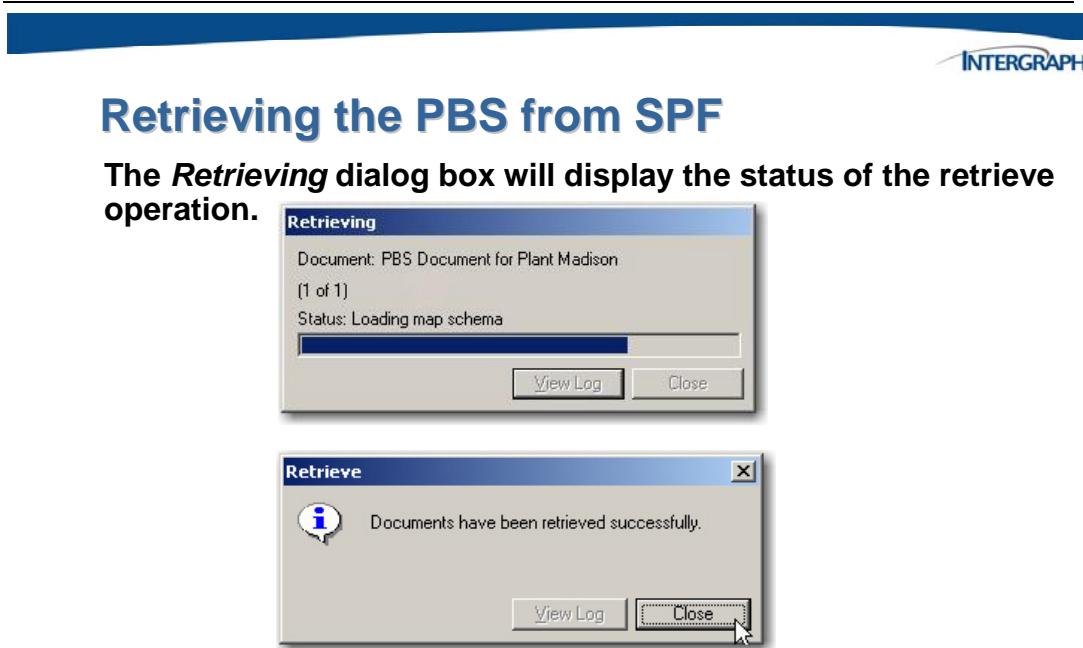
## Retrieving the PBS from SPF

- ❑ Select the PBS document to be retrieved, and click **OK**.



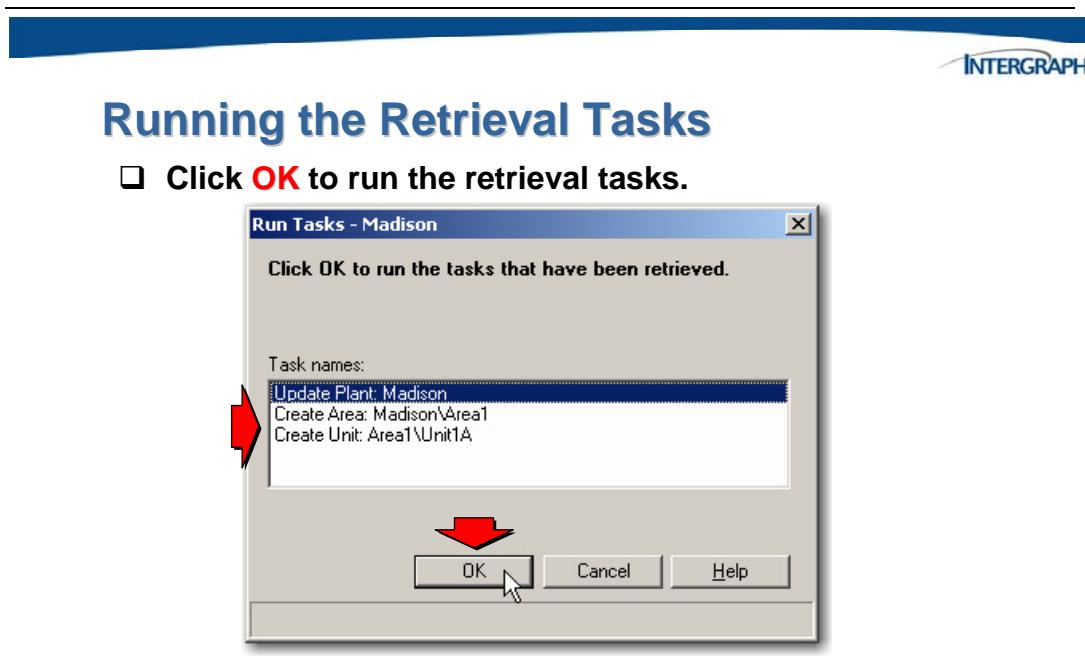
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The software displays the retrieve status in the *Retrieving* message box. When the document has been retrieved, the software displays a message box to let you know that the retrieve was successful.



## 12.2.4 Reviewing the Results of the Retrieve

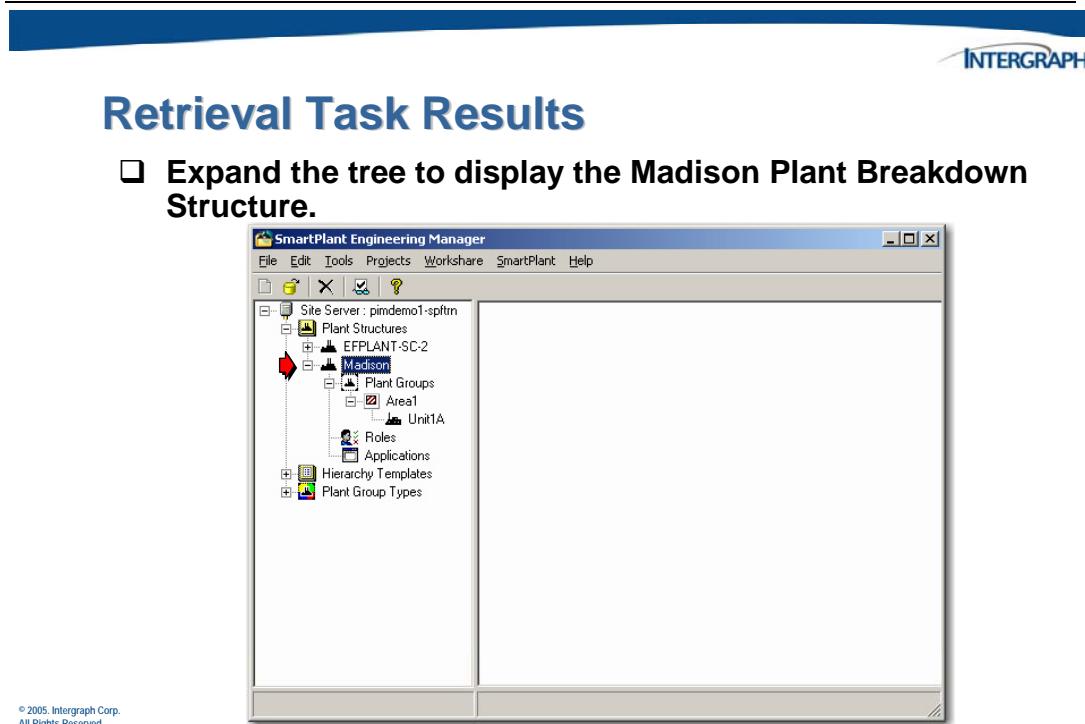
When you retrieve the PBS into SmartPlant Engineering Manager, the Run Tasks dialog box appears.



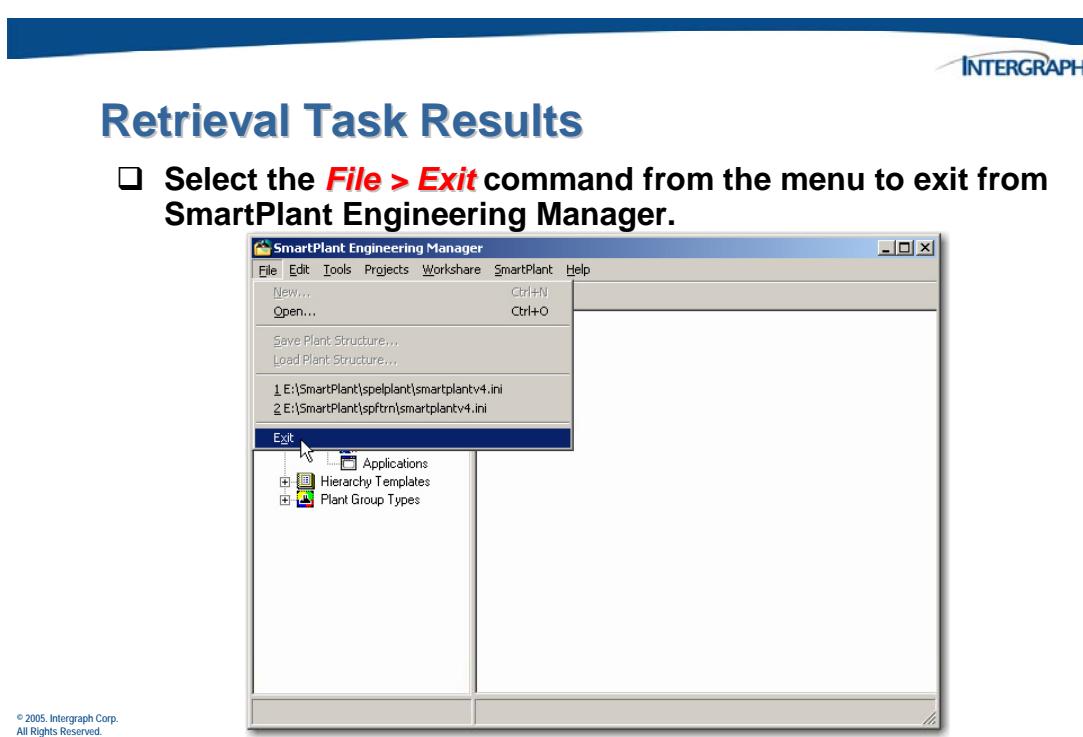
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When you click **OK**, the software automatically runs all the tasks that are generated by the retrieve process.

In SmartPlant Engineering Manager, you can now see the area and unit that were created in SmartPlant Foundation and that were added to the new P&ID plant as a result of retrieving the PBS.



Now that the plant has been registered and the PBS structure retrieved and updated in SmartPlant Engineering Manager, you can exit the application.



## 12.2.5 Creating a New SmartPlant Instrumentation Plant

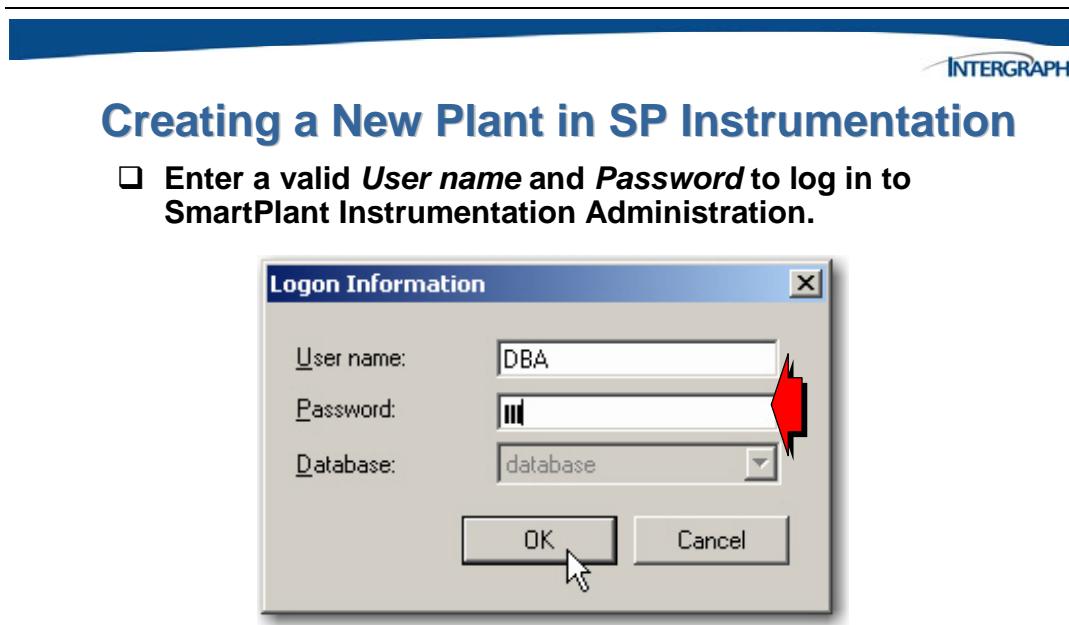
Again, before you can register a plant in SmartPlant Instrumentation, you must create the plant. For the purposes of this example, these tasks are shown being completed in SmartPlant Instrumentation.

Begin by starting the *SmartPlant Instrumentation Administration* application.

---

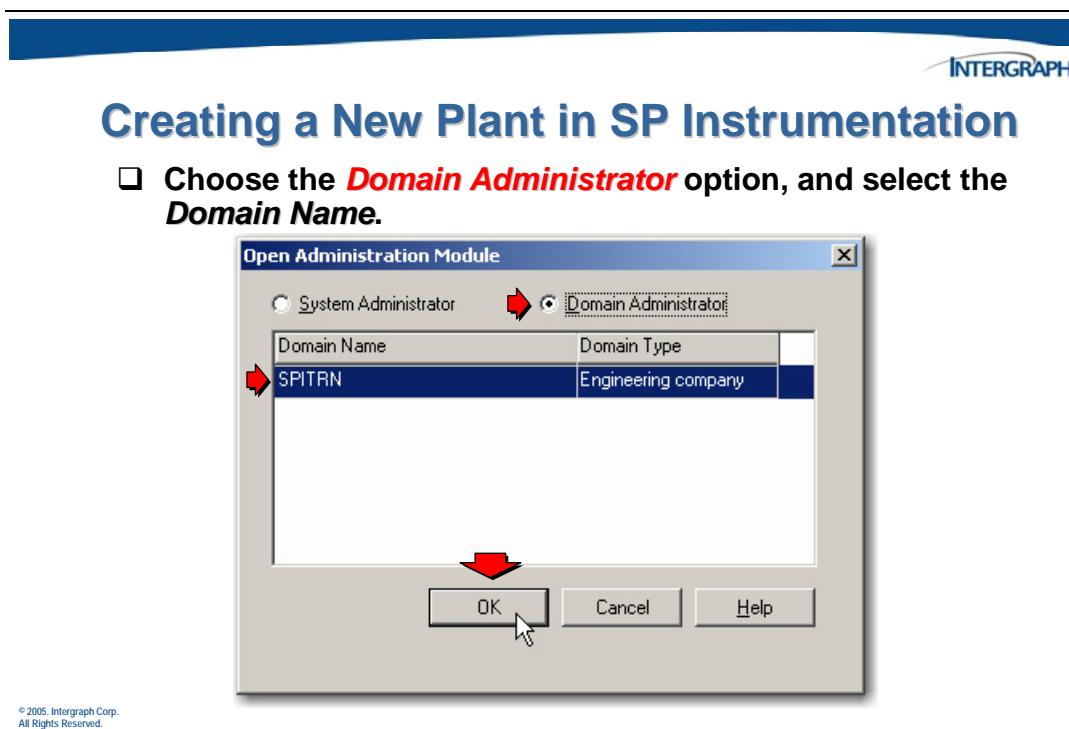


Log on to SmartPlant Instrumentation using the default user name and password. The default user name and password are DBA/DBA, and they are not case sensitive.



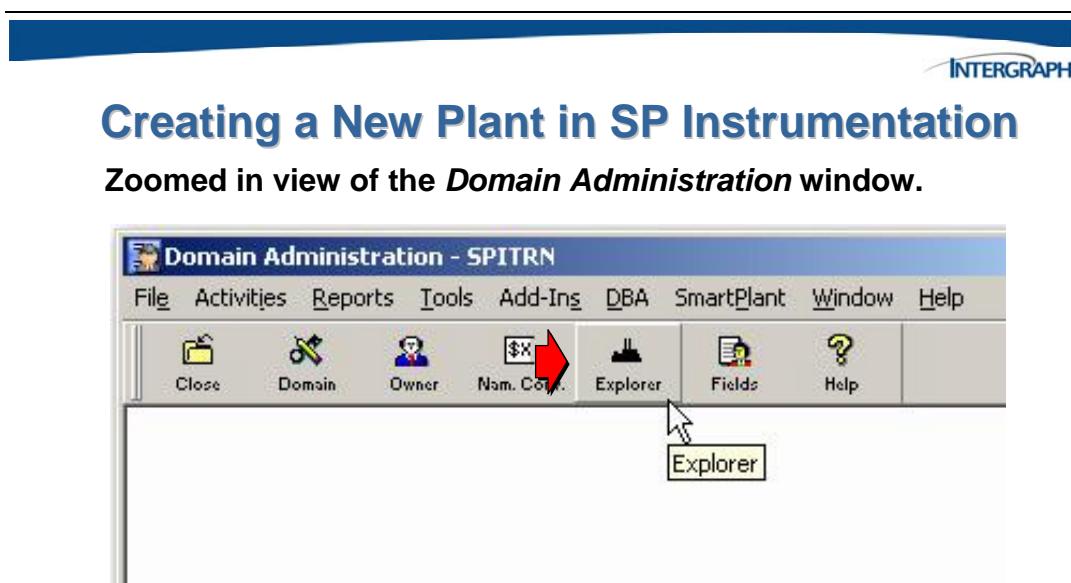
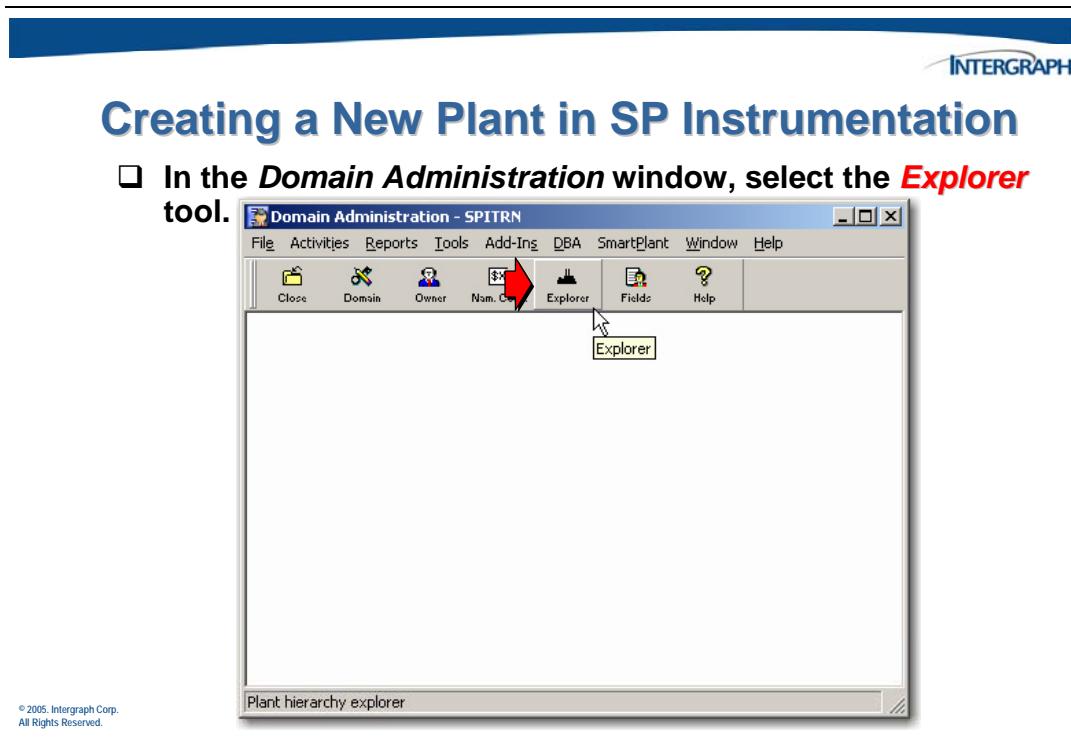
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The *Open Administration Module* dialog will be displayed.

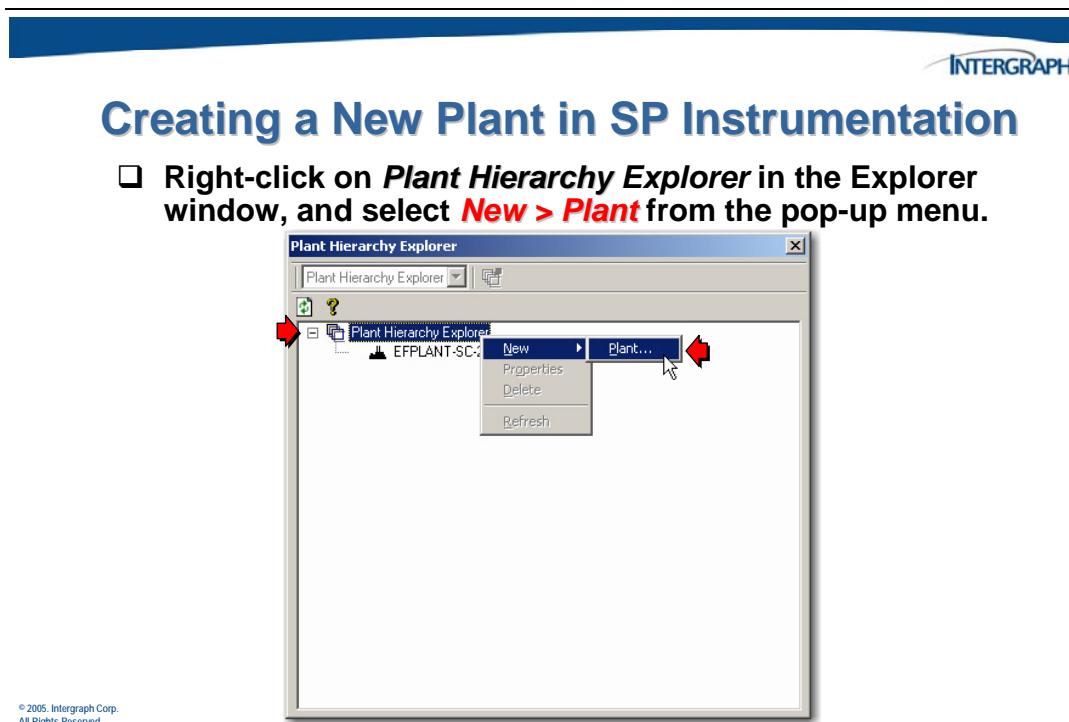


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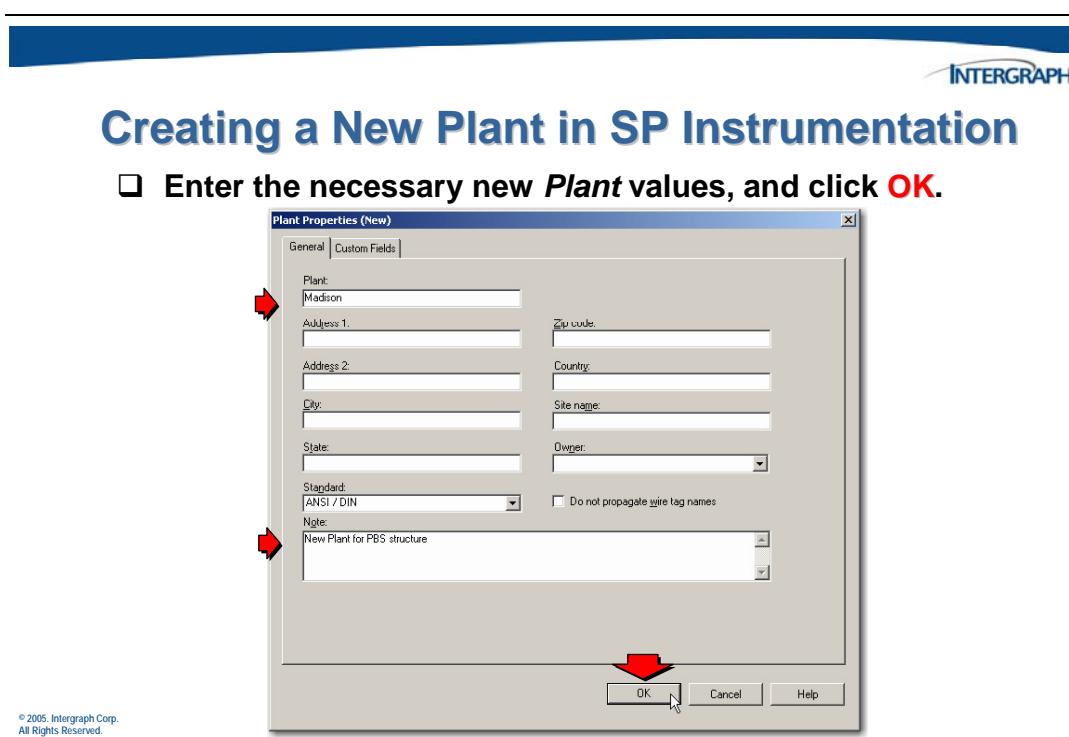
Next, open the *Plant Hierarchy Explorer* window.



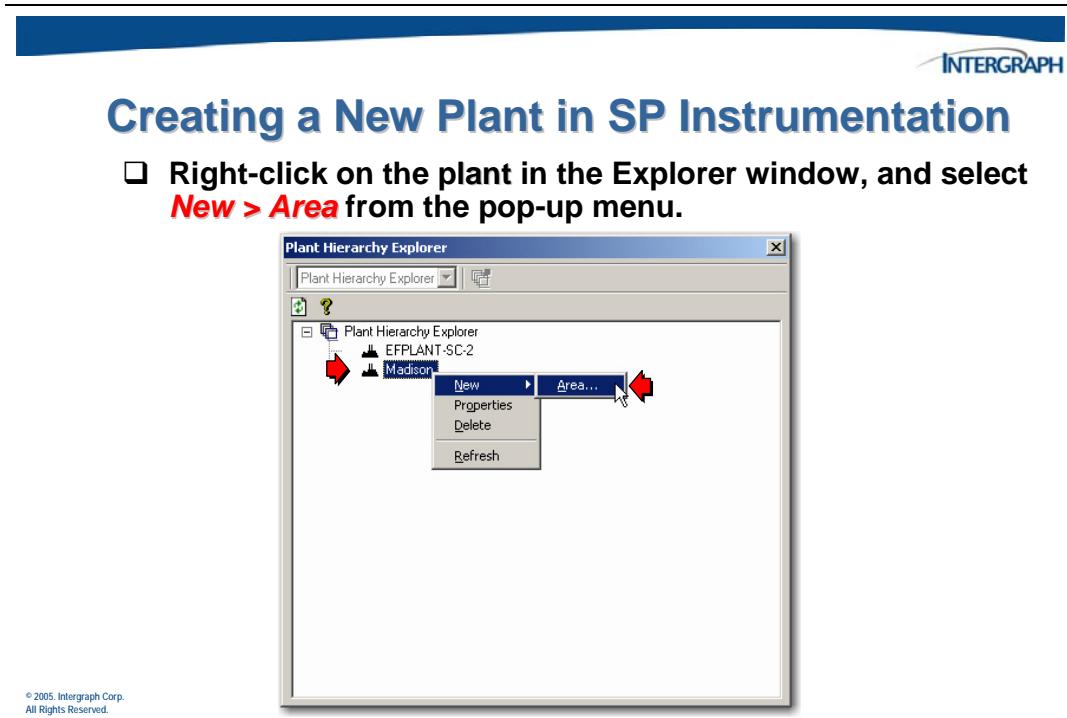
The *Plant Hierarchy Explorer* window will appear.



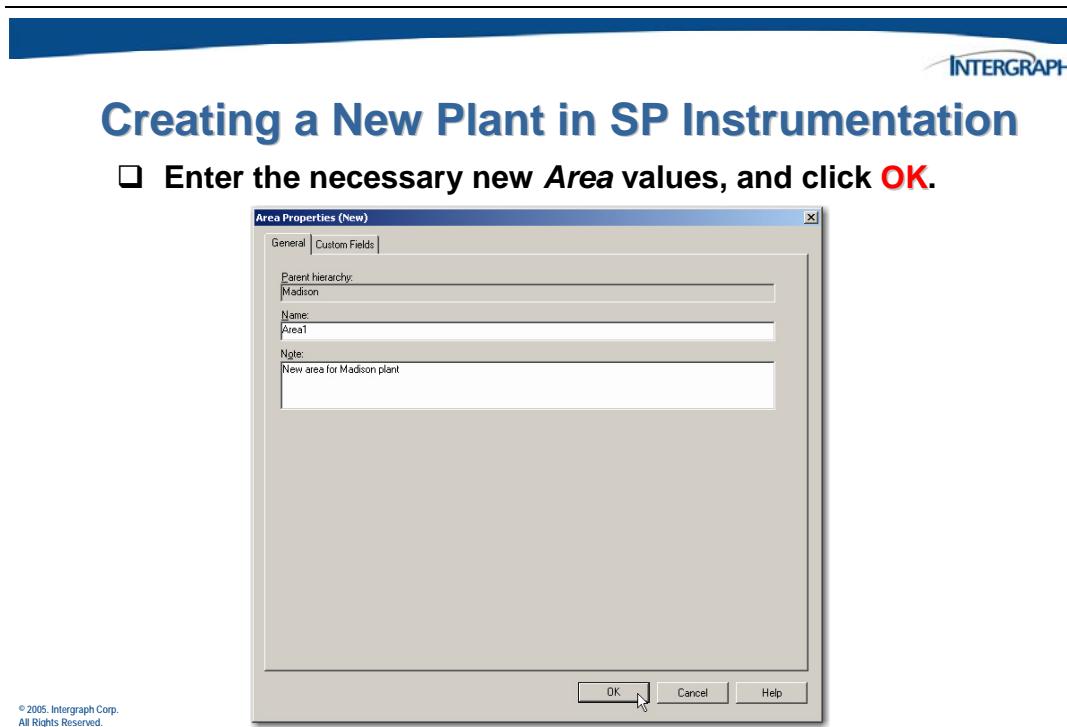
The *Plant Properties (New)* dialog will appear.



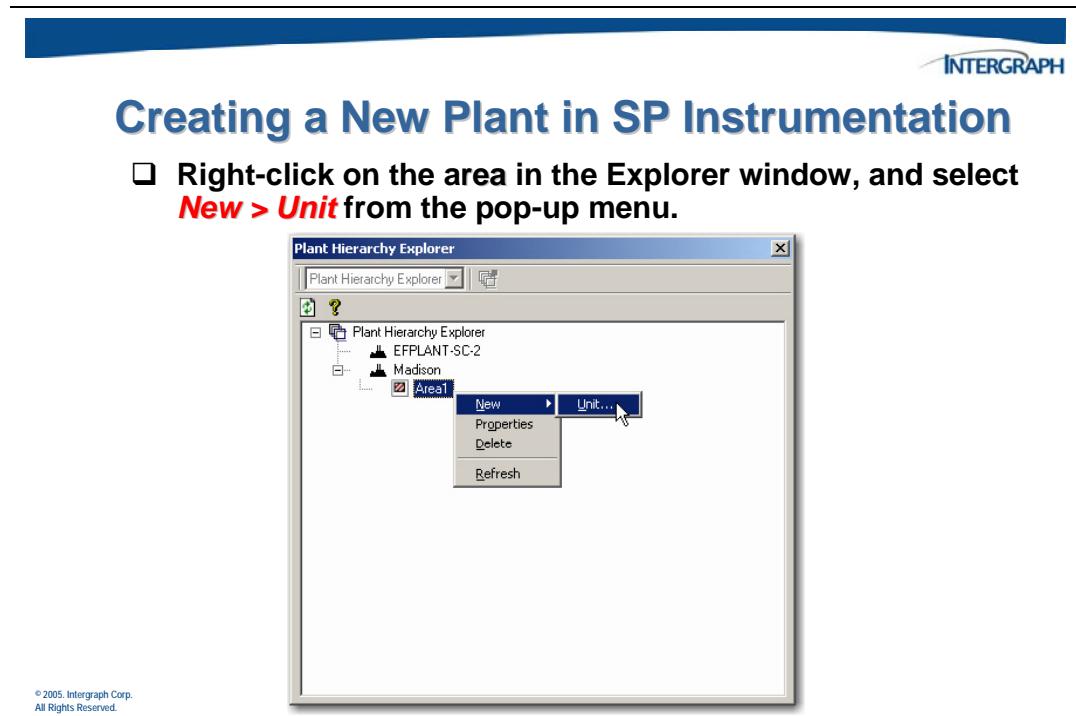
Next, create a new **Area** for the newly defined *Madison* plant.



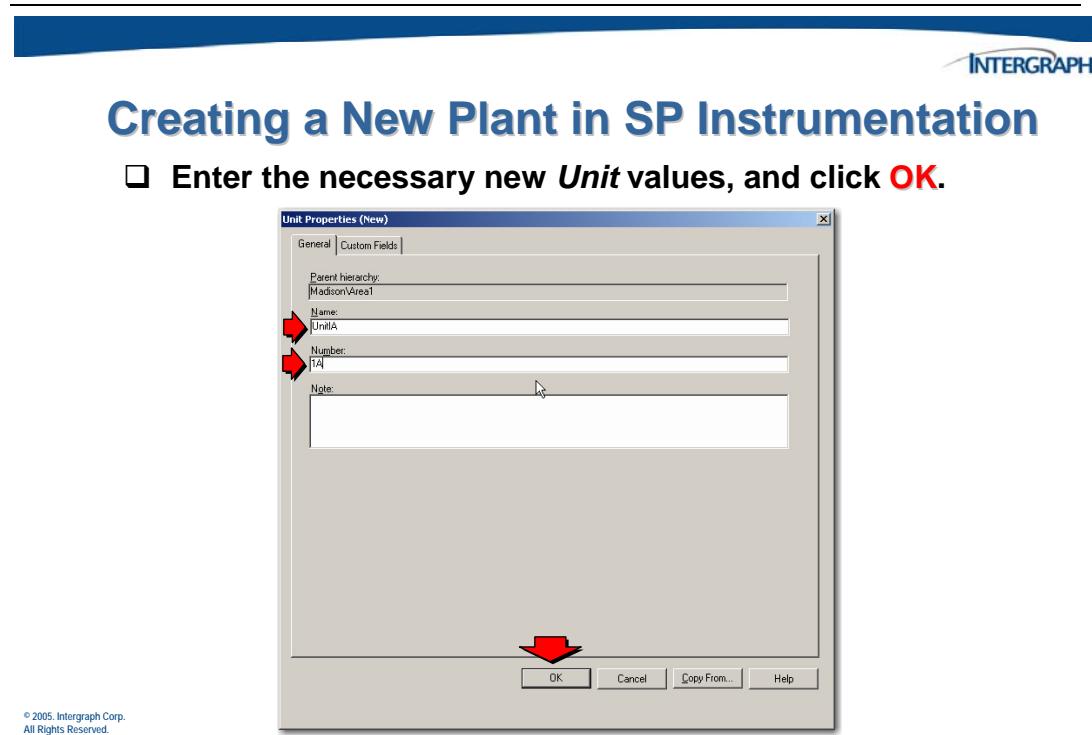
The *Area Properties (New)* dialog will appear.



Finally, create a new **Unit** for the new *Area1*.



The *Unit Properties (New)* dialog will appear.

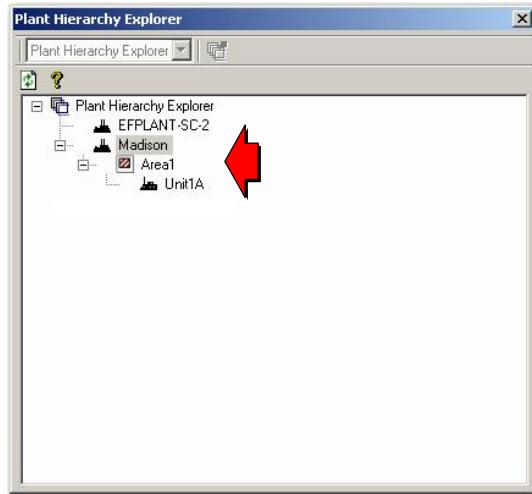


Review the new plant, area, and unit (PAU) structure that you have just defined in SmartPlant Instrumentation.



## Creating a New Plant in SP Instrumentation

- Expand the new plant relationships to verify the new area and unit for this plant.**



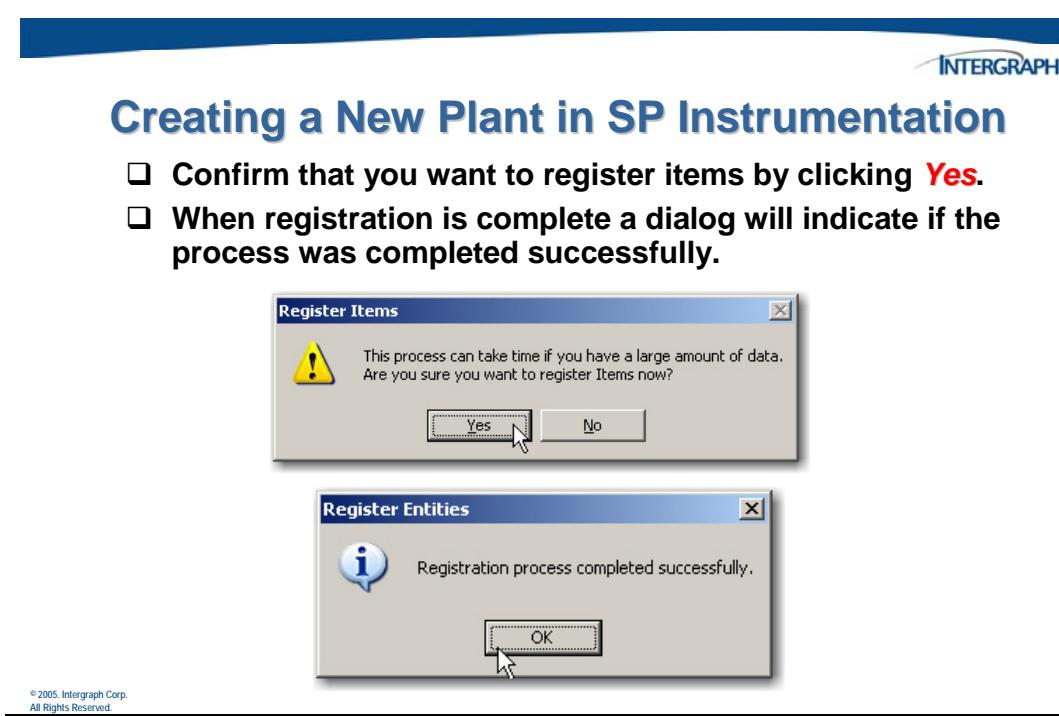
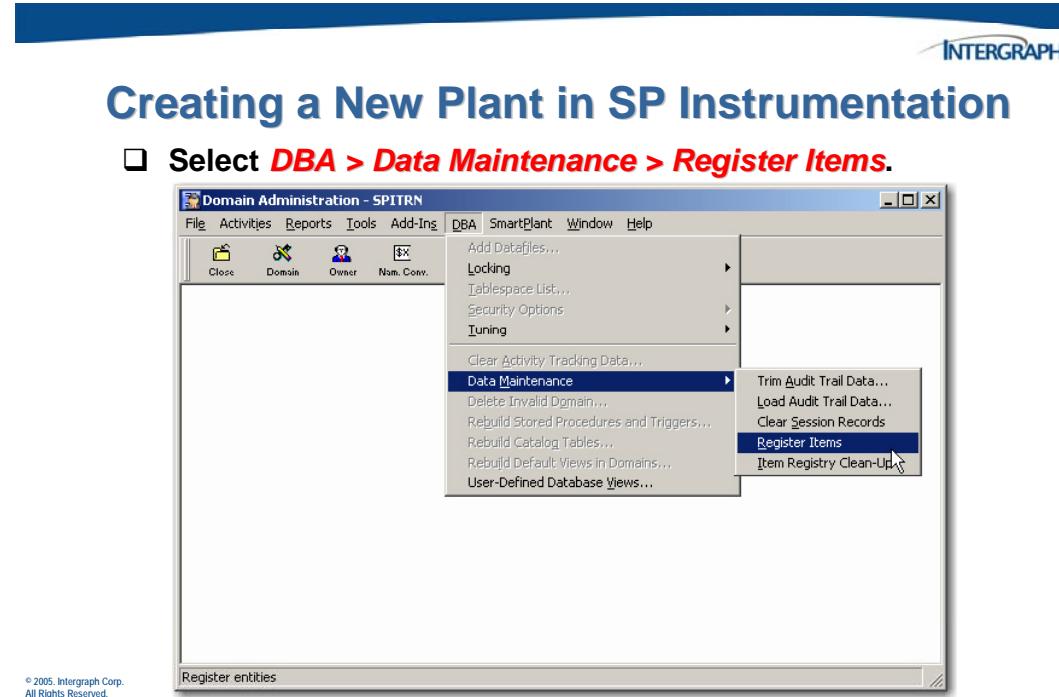
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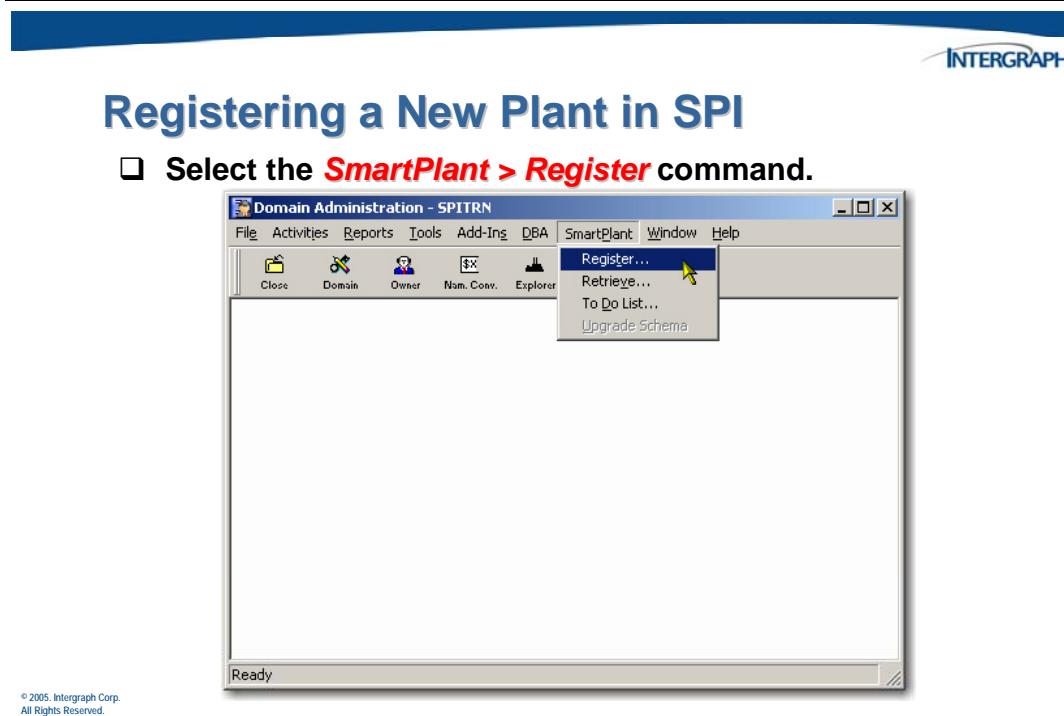
Note: If you experience a problem performing the plant register operation, use the following **Register Items** command.

---



## 12.2.6 Registering SmartPlant Instrumentation with SmartPlant Foundation

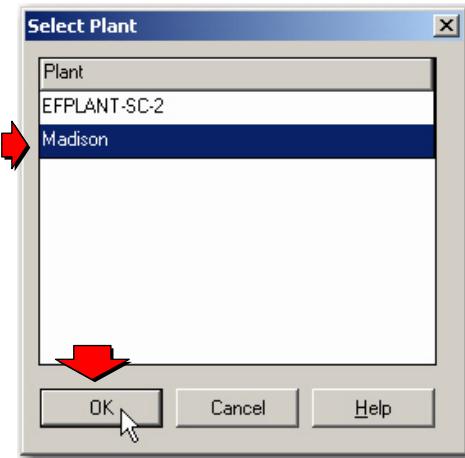
To register the new plant, select *SmartPlant > Register* from the menu.



The *Select Plant* window will appear. Select the plant you just created.

## Registering a New Plant in SPI

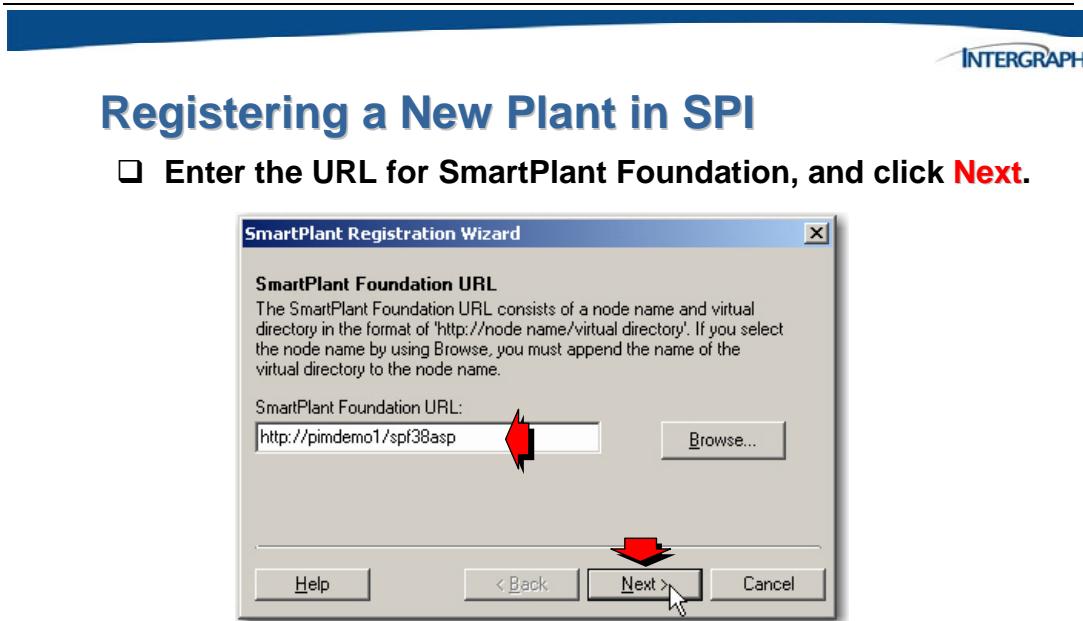
- Select the plant to be registered, and click **OK**.



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The *SmartPlant Registration Wizard* appears. The SmartPlant Registration Wizard user interface is the same for other authoring tools.



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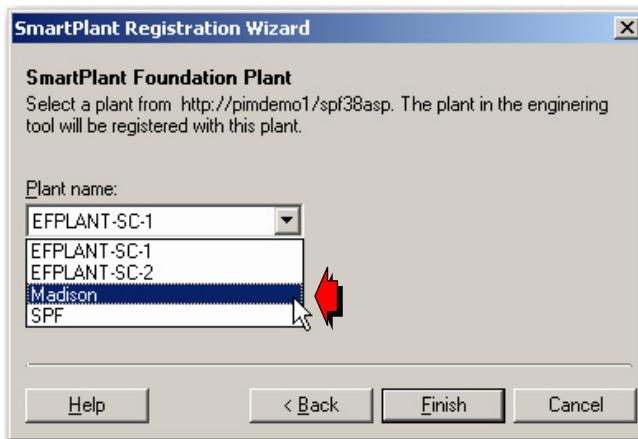
---

In the *SmartPlant Foundation URL* field, type the node name and virtual directory of the SmartPlant Foundation database with which you want to register your plant. Use the following format: `http://<SPFServer>/<VirtualDirectory>`. For example, **http://pimdemo1/spf38asp**.



## Registering a New Plant in SPI

- Select the new plant from the *Plant name* list.



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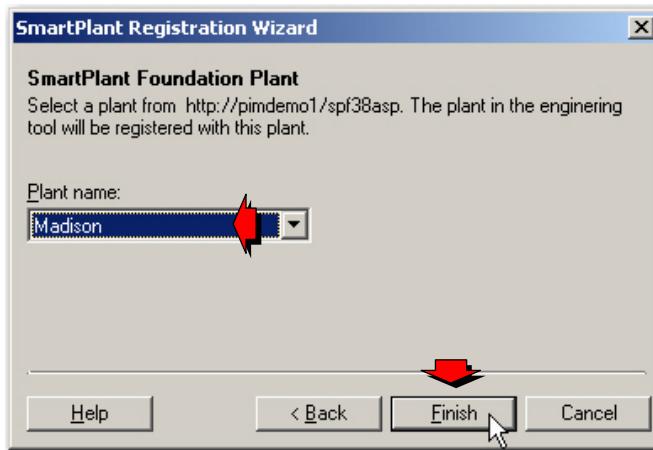
For the next step, you need to know the SmartPlant Foundation plant to which you will register. In this case, register to the **Madison** plant that was created earlier.

In the *Plant name* list, select the **Madison** plant.



## Registering a New Plant in SPI

- Once the plant to register has been selected, click **Next**.



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If the registration is completed successfully, a message box appears.

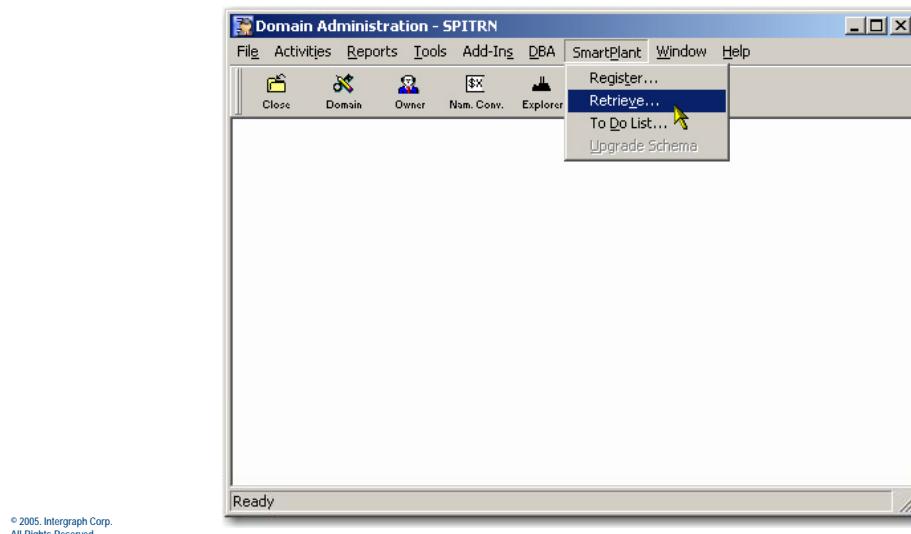


## 12.2.7 Retrieve the PBS Document into SmartPlant Instrumentation

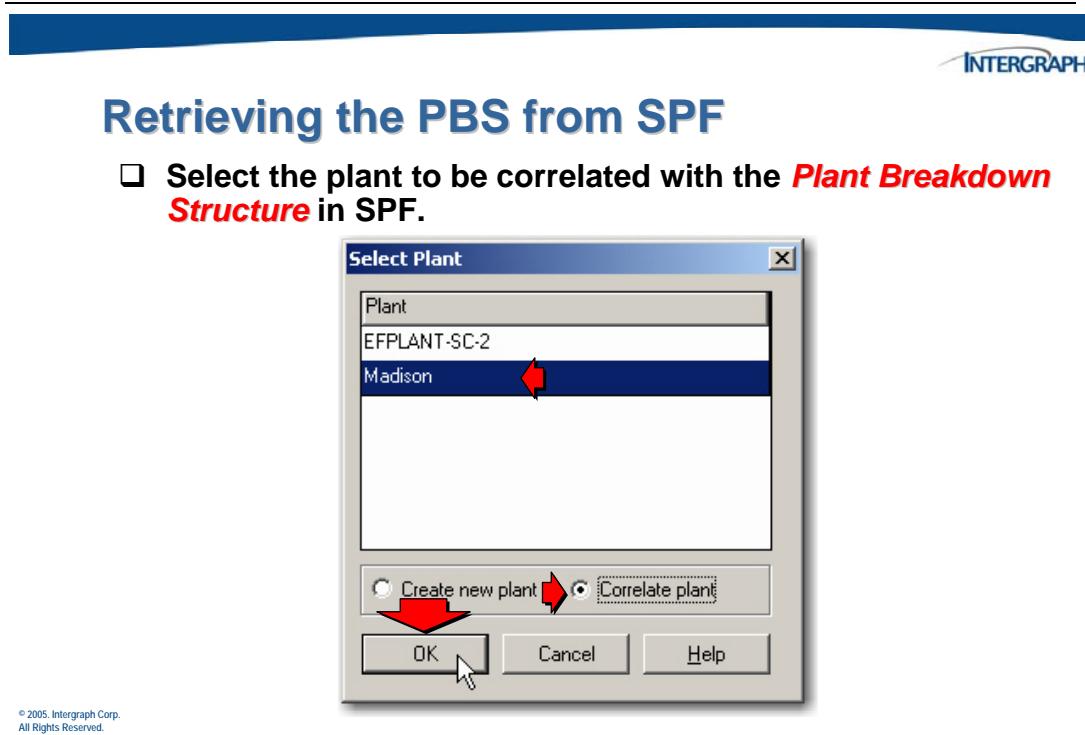
After you register your plant, you can retrieve the PBS document from SmartPlant Foundation. In this instance, the PBS document will correlate to the plant, area and unit structure that was defined in SmartPlant Instrumentation.

### Retrieving the PBS from SPF

- Select the **SmartPlant > Retrieve** command.



The **Select Plant** window will appear.



The *Correlate plant* option will correlate the plant structure in SmartPlant Instrumentation with the PBS structure that will be retrieved from SPF. The plant names and structure must match in order to use the correlate option.

The *SmartPlant Foundation Login* dialog will appear.



## Retrieving the PBS from SPF

- Enter a valid SPF *User name* and *Password* to log in to the SPF server from the authoring tool.

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The *Retrieve* dialog will appear, listing the PBS document that was published from SPF.



## Retrieving the PBS from SPF

- Select the PBS document to be retrieved, and click **OK**.

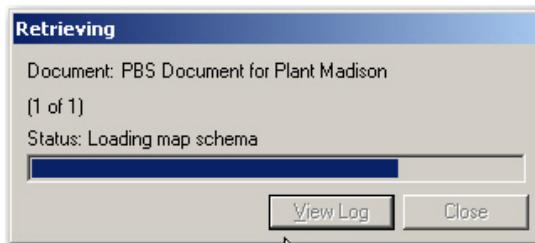
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The software displays the retrieve status in the *Retrieving* message box.



## Retrieving the PBS from SPF

- The *Retrieving* dialog box will display the status of the retrieve operation.



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When the document has been retrieved, the software displays a message box to let you know that the retrieve was successful.



## Retrieving the PBS from SPF

- Click **Close** to dismiss the *Retrieve* dialog.



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## Retrieving the PBS from SPF

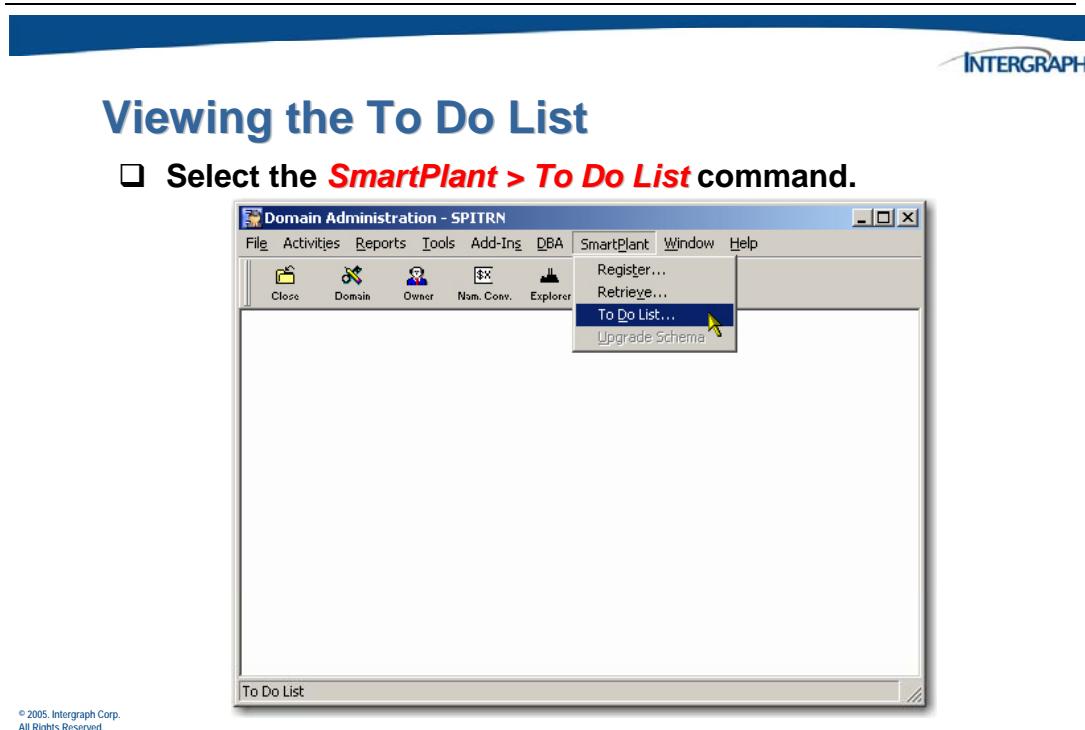
Click **Cancel** to close the *Select Plant* dialog.



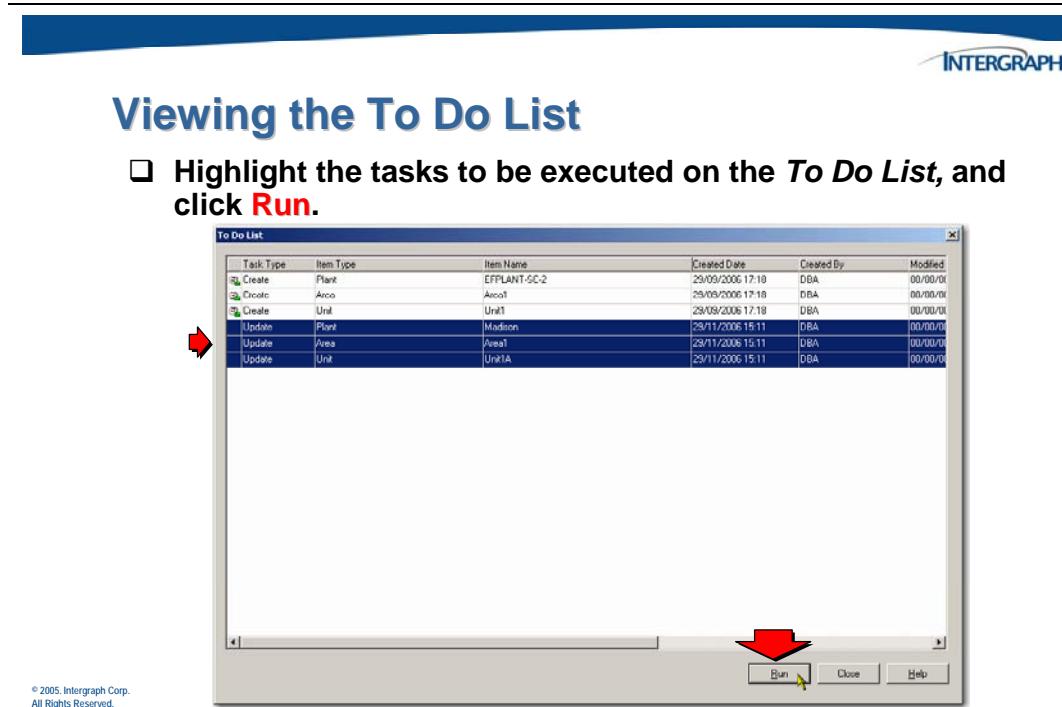
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All Rights Reserved.

## 12.2.8 Run Tasks in the SmartPlant Instrumentation To Do List

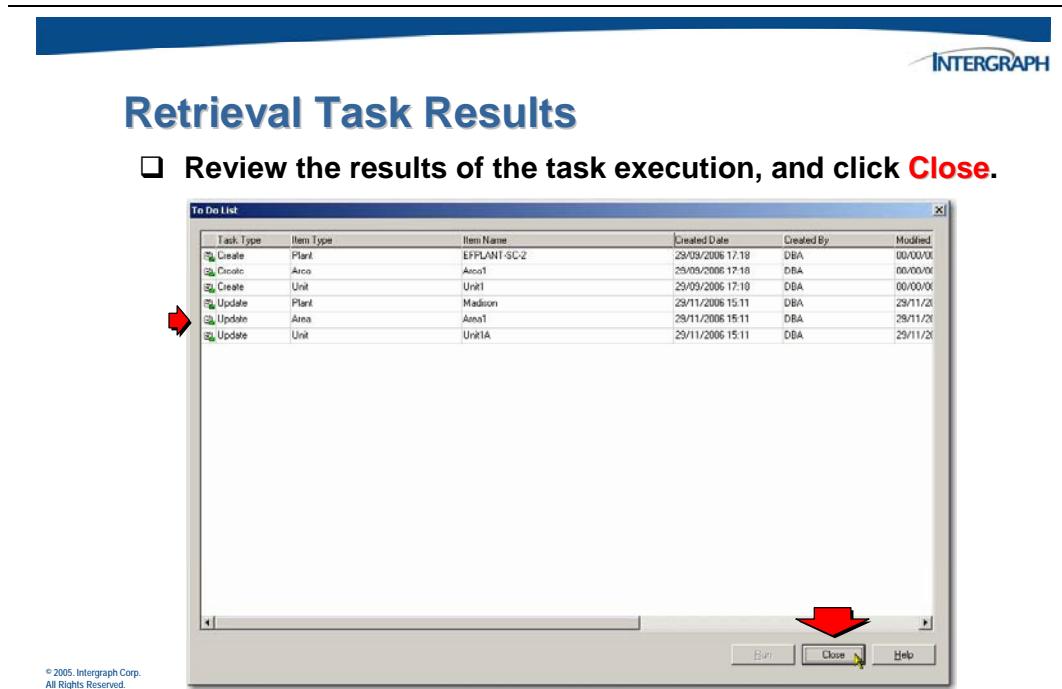
To see the PBS information and tasks that need to be performed, display the *To Do List* window.



The *To Do List* window will be displayed showing all tasks, including those that have already been run. The tasks without an icon to the left are the new ones resulting from the latest retrieve and are ready to be executed.



A check mark ✓ appears in the left most column of the *To Do List* when the tasks have been completed.





## 12.3 Activity – Creating a Plant Breakdown Structure

The objective of this activity is to allow you to gain some practical experience in creating a new Plant Breakdown Structure (PBS) in SPF. You will then associate this structure with the SmartPlant P&ID authoring tool and the SmartPlant Instrumentation authoring tool.

1. Login to SPF Desktop Client as **adminuser**.
2. Set the *Active Scope* to be the **Madison** plant. This is the plant to be used in creating a new PBS.
3. Verify in the *Status Bar* that the new plant scope is **Madison**. There should be no project.
4. Create a new area called **Area1**. Give this area a description.
5. Create a new unit called **Unit1A**. Give this area a description and a *Unit Code* of **1A**.
6. Verify the new Plant/Area/Unit relationships.
7. Publish this new Plant Breakdown Structure.
8. Start SmartPlant Engineering Manager and create a new Plant Structure. Use the information in section 12.2.1 of this chapter to accomplish this. Call this plant the **Madison** plant to match the SPF plant structure.
9. Associate the SmartPlant P&ID application to the new plant. Use the information in section 12.2.1 of this chapter to accomplish this.
10. Set up a new role for this plant. Use the role name **Administrators**. Use the information in section 12.2.1 of this chapter to accomplish this.

11. **Register** the Madison plant with SmartPlant Foundation. Use the information in section 12.2.2 of this chapter to accomplish this.
12. **Retrieve** the PBS structure from SPF.
13. Run the tasks that were retrieved to associate the plant in SP P&ID to the PBS structure in SPF.
14. Verify the updated *Plant Structure* in SmartPlant Engineering Manager.
15. Exit from SmartPlant Engineering Manager.
16. Start SmartPlant Instrumentation and create a new Plant Structure. Log in as DBA/DBA. Select **Domain Administrator** and the **SPITRN** domain.
17. Use the information in section 12.2.5 of this chapter to create the new plant structure. Call this plant the Madison plant to match the SPF plant structure.
18. **Register** the Madison plant with SmartPlant Foundation. Use the information in section 12.2.6 of this chapter to accomplish this.
19. **Retrieve** the PBS structure from SPF. Use the information in section 12.2.7 of this chapter to accomplish this.
20. Display the **To Do List** and view the tasks listed.
21. Run the tasks that were retrieved to associate the plant in SmartPlant Instrumentation to the PBS structure in SPF.
22. Set up naming conventions for this new plant using the steps in section 12.2.9 of this chapter.

23. Exit from SmartPlant Instrumentation.
24. Optional: You may want to try and go into SmartPlant P&ID and create a simple P&ID drawing. Try to publish a document containing instruments, vessels, and pipelines to test your new Madison PBS. This P&ID must contain instruments, vessels, and pipelines in order to be able to publish.



A P P E N D I X

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# A

## Registering Additional Tools



## A. Registering Additional Tools

In this appendix, examples of registering additional authoring tools will be shown.

### A.3 Registering Zygad with SmartPlant Foundation



#### Registering Zygad

- In Zygad Administration, expand the appropriate workspace
- If no workspace appears in the tree view, click Actions > New Workspace to create a workspace that connects to the appropriate server

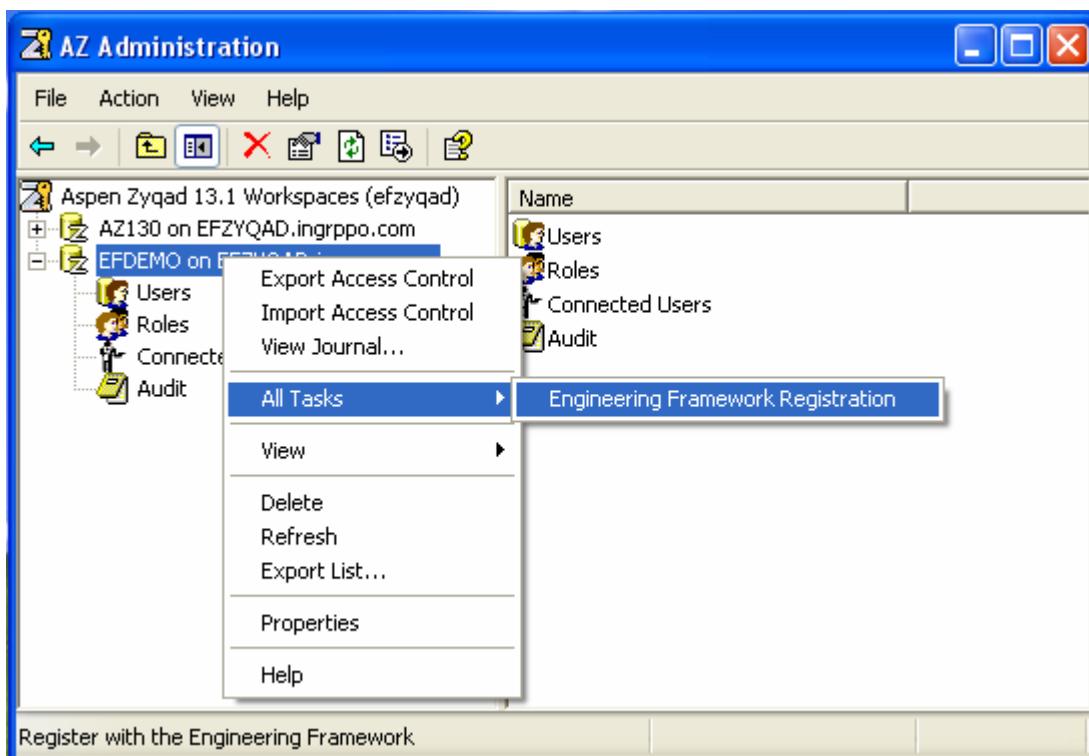
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1. In Zygad Administration, expand the appropriate workspace.

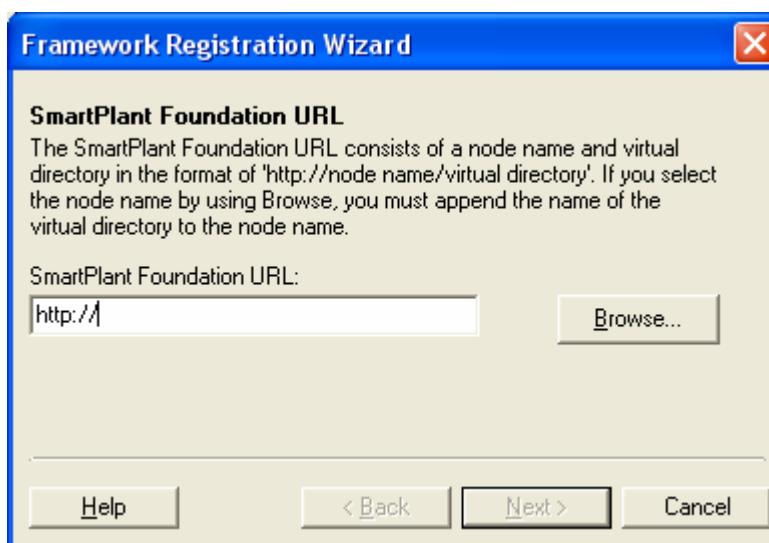
#### Tip

If no workspace appears in the tree view, click **Actions > New Workspace** to create a workspace that connects to the appropriate server.

2. Right-click the workspace, and then click **All Tasks > Engineering Framework Registration**.

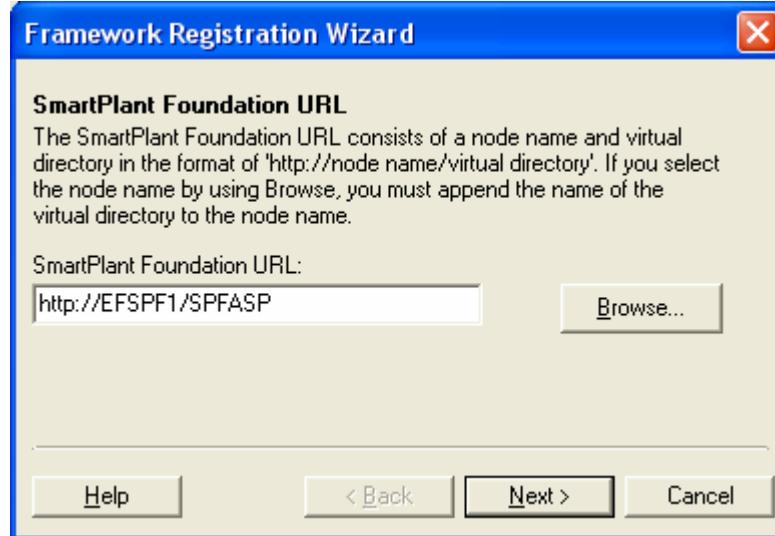


The **Framework Registration Wizard** appears. The **Framework Registration Wizard** user interface is the same for other authoring tools.



3. In the **SmartPlant Foundation URL** box, type the node name and virtual directory of the SmartPlant Foundation database with which you want to

register your plant, and then click **Next**. Use the following format:  
`http://<SPFServer>/<VirtualDirectory>`. For example, <http://EFSPF1/SPFASP>.



For the next step, you need to know the SmartPlant Foundation plant that you will register to. In our case, we will register to EFDEMO plant that we created earlier.

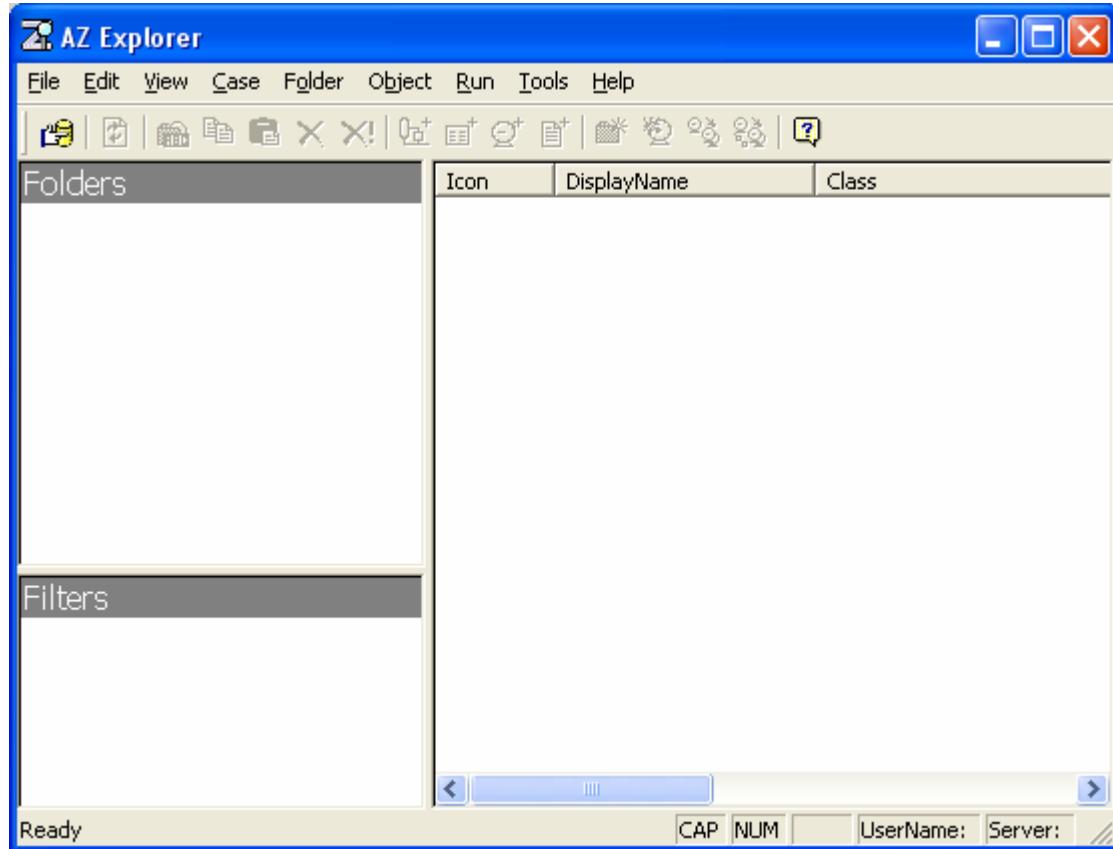
4. In the **Plant name** list, select the plant.



5. Click **Finish**. If the registration completes successfully, a message box appears.

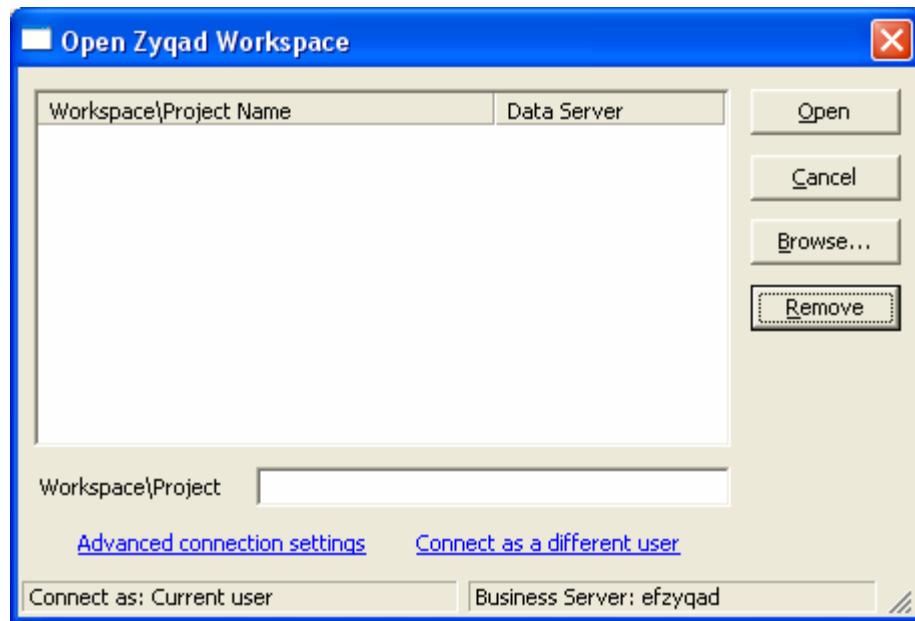
## A.1.1 Open the Zygad Workspace

6. Open the Zygad Explorer.

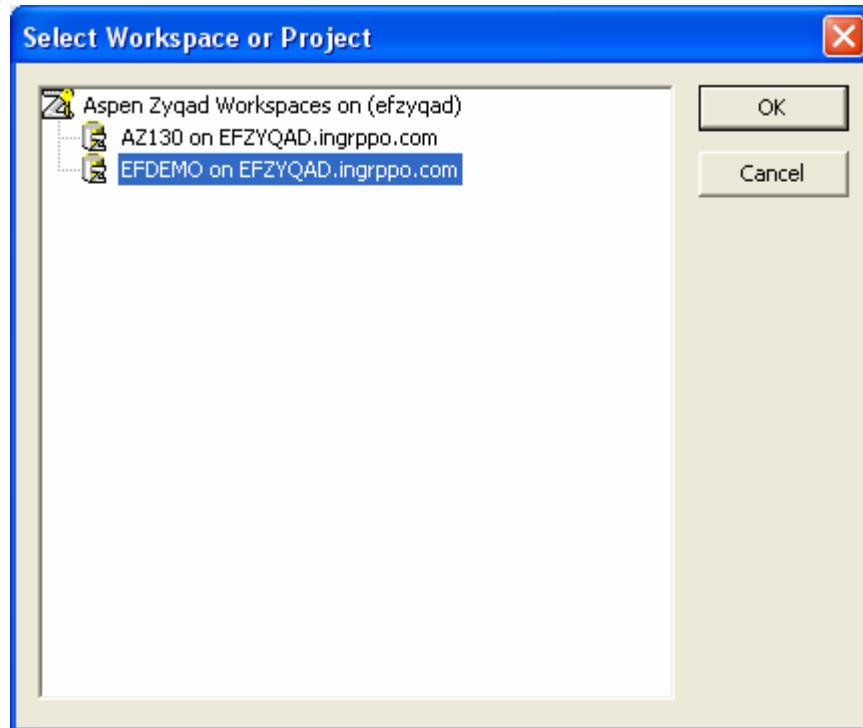


7. Click **File > Open Workspace**.

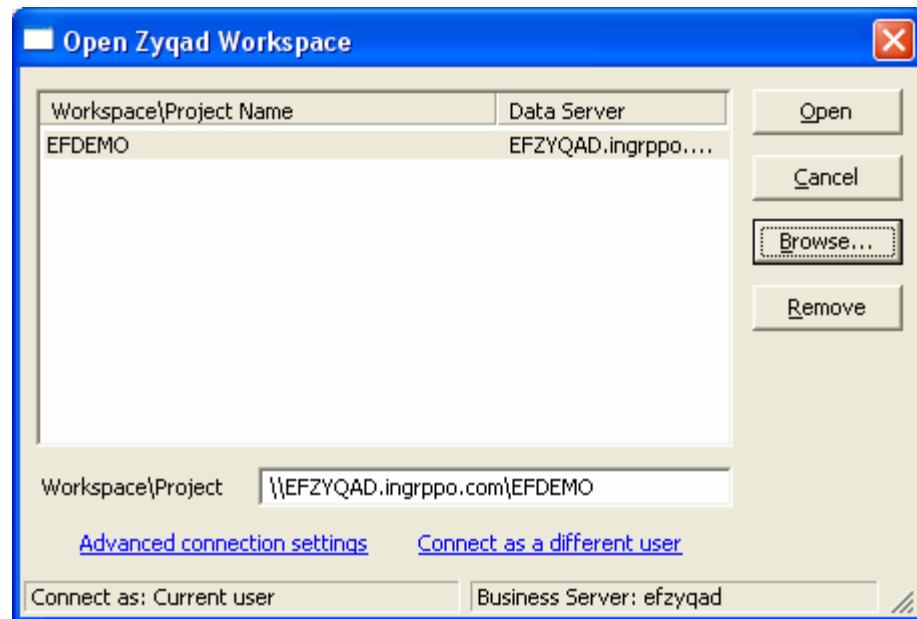
8. In the **Open Zygad Workspace** dialog box, click **Browse**.



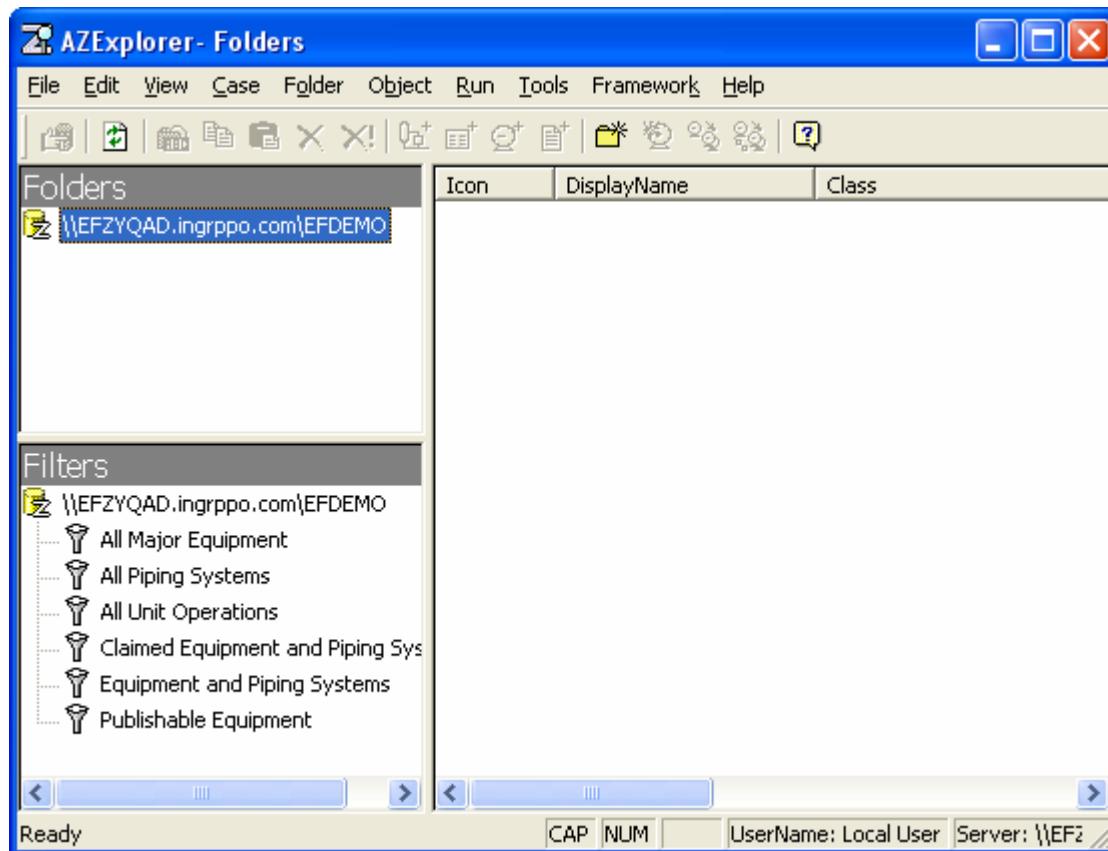
9. In the **Select Workspace or Project** dialog box, click the workspace that you want to open, and then click **OK**.



10. In the **Open Zyzqad Workspace** dialog box, click **Open**.

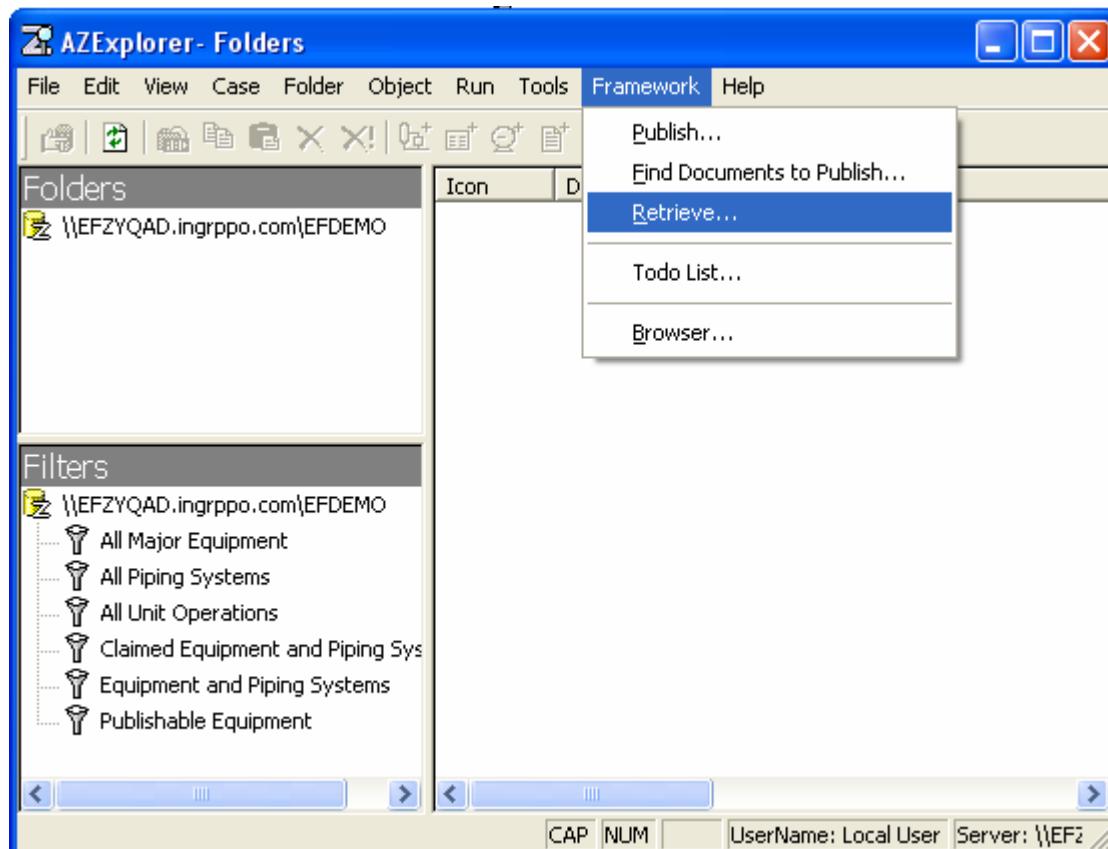


The **Folders** view and **Filters** view in the Zyzqad Explorer contain the appropriate objects for the workspace you selected.

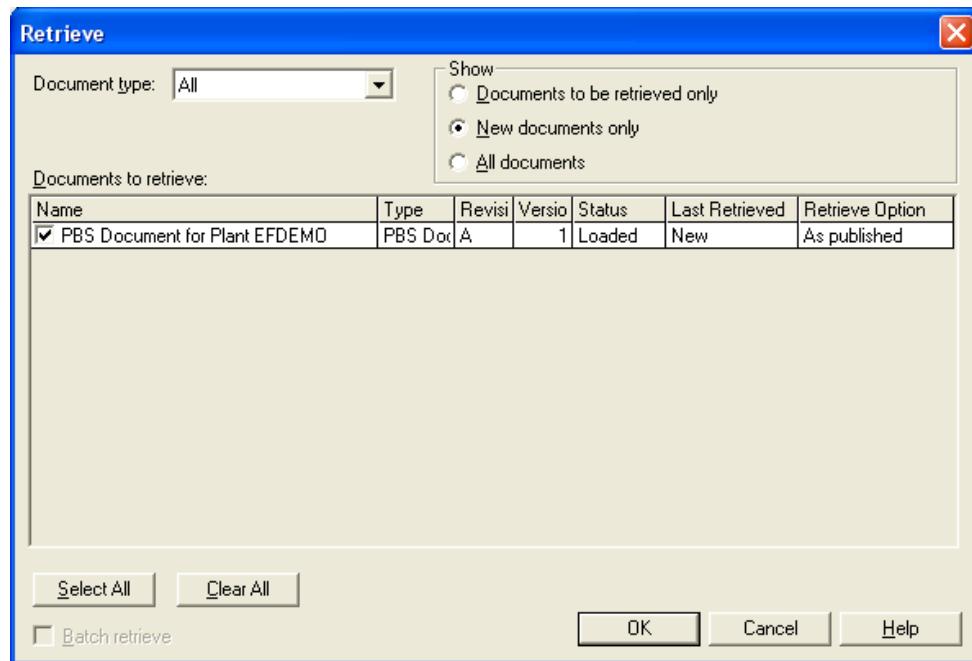


## A.1.1 Retrieve the PBS Document from SmartPlant Foundation

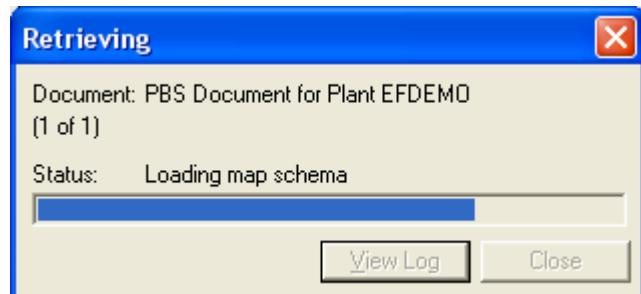
11. In Zygad Explorer, click **Framework > Retrieve**.



12. Select the PBS document in the **Retrieve** dialog box, and then click **OK**.



The software displays the retrieve status in the **Retrieving** message box.



When the document has been retrieved, the software displays a message box to let you know that the retrieve was successful.



When you retrieve the PBS document from SmartPlant Foundation into Zygad, the software automatically updates the database. No tasks will appear in the Zygad **To Do List**.

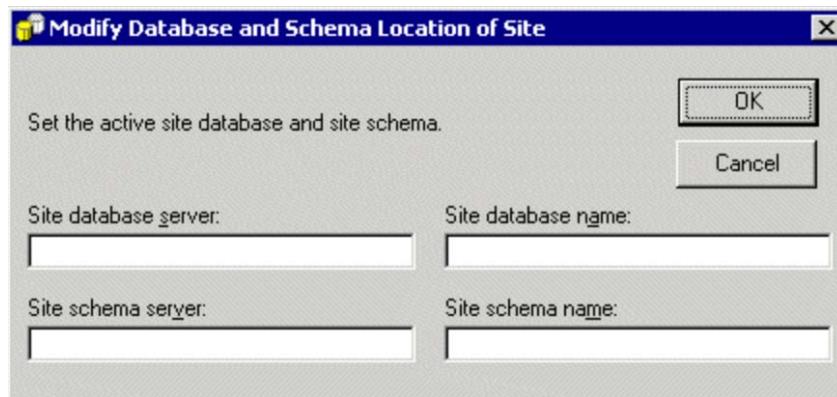
## A.4 Registering SmartPlant 3D with SmartPlant Foundation

To register SmartPlant 3D with SmartPlant Foundation, you must use the Project Management task. Define the Site Database and Schema Servers



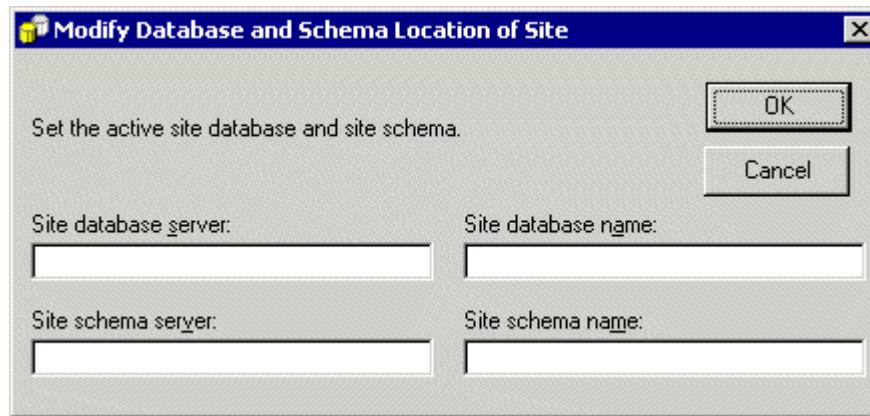
### Registering SmartPlant 3D

- To register SmartPlant 3D with SmartPlant Foundation, you must use the Project Management task
- Define the Site Database and Schema Servers



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1. Open SmartPlant 3D Project Management.
2. On the **Modify Database and Schema Location of Site** dialog box, type the name of the server on which the site database resides in the **Site database server** box.



 **Caution**

The strings are case-sensitive.

3. In the **Site database name** box, type the name of the site database.
4. In the **Site schema server** box, type the name of the server on which the site schema resides.
5. In the **Site schema name** box, type the name of the site schema.

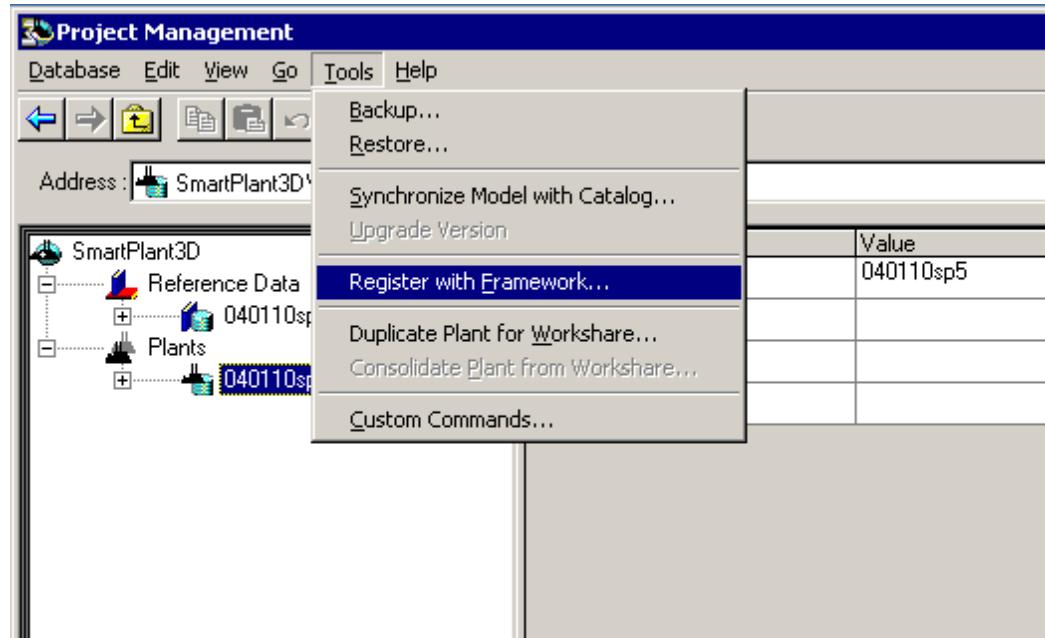
 **Tip**

You can find the names in the **SQL Server Enterprise Manager** on the server.

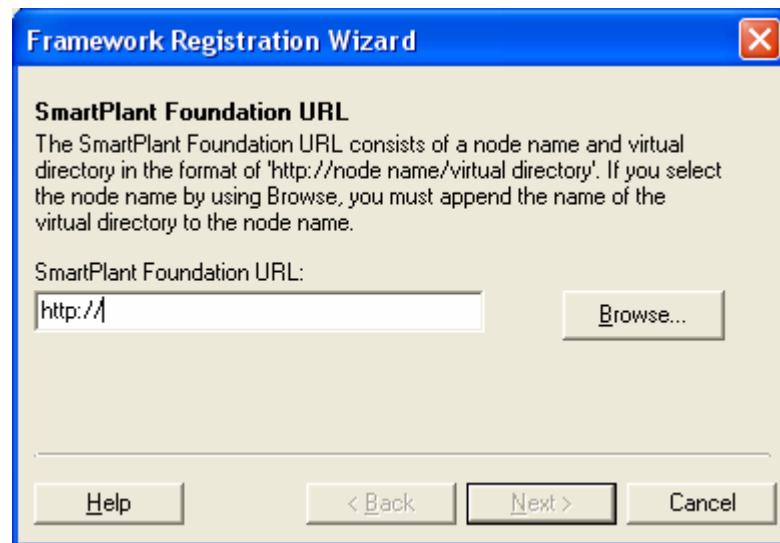
6. Click **OK**.

## A.1.1 Register SmartPlant 3D

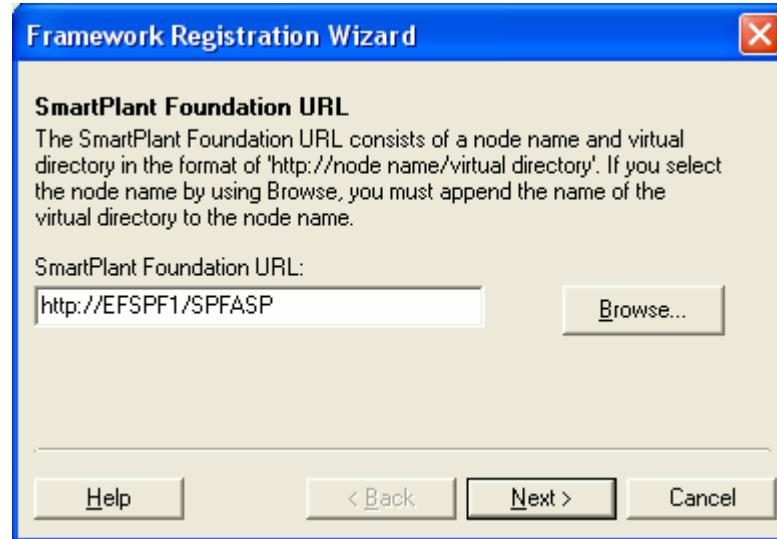
7. In Project Management, click **Tools > Register with Framework**.



The **Framework Registration Wizard** appears. The **Framework Registration Wizard** user interface is the same for other authoring tools.



8. In the **SmartPlant Foundation URL** box, Type the node name and virtual directory of the SmartPlant Foundation database with which you want to register your plant, and then click **Next**. Use the following format: `http://<SPFServer>/<VirtualDirectory>`. For example, `http://EFSPF1/SPFASP`.

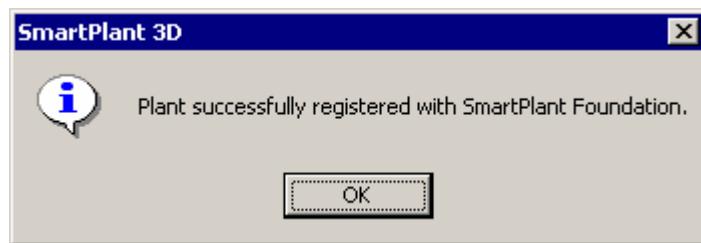


For the next step, you need to know the SmartPlant Foundation plant that you will register to. In our case, we will register to EFDEMO plant that we created earlier.

9. In the **Plant name** list, select the EFDEMO plant.



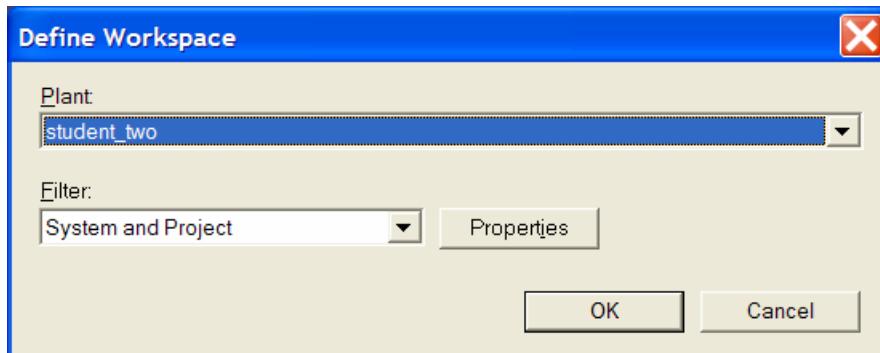
10. Click **Finish**. If the registration completes successfully, a message box appears.



## A.1.1 Retrieve the PBS Document from SmartPlant Foundation

After you register your plant, you can retrieve the PBS document from SmartPlant Foundation. The PBS document updates the plant and creates the appropriate area and unit.

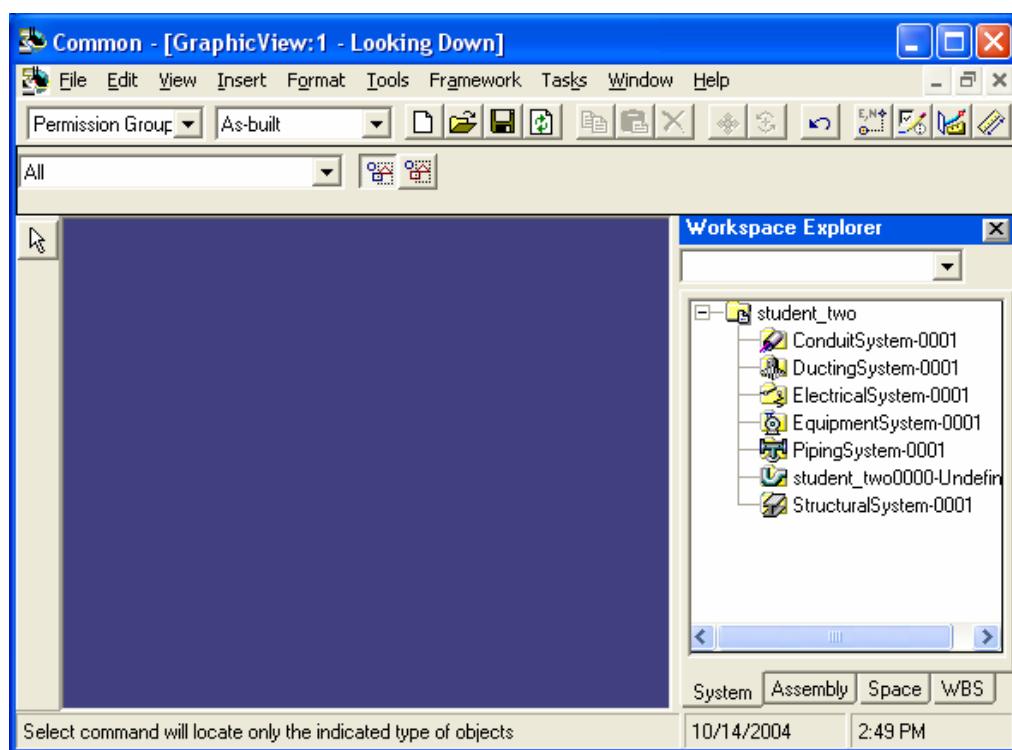
11. Open SmartPlant 3D.
12. Define a workspace and select the system and project compound filter.



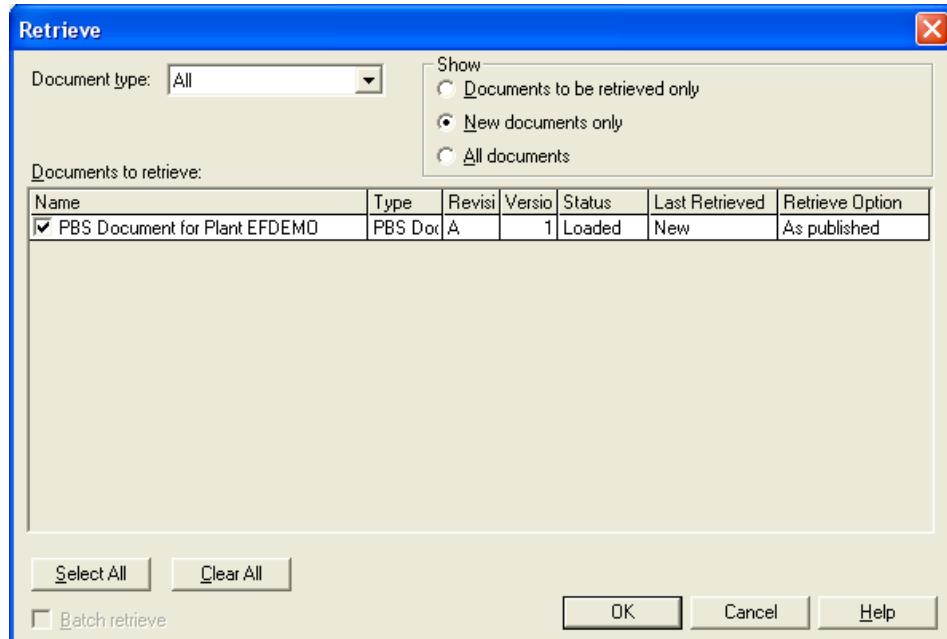
### Retrieve the PBS Document

- In the Workspace Explorer, click the WBS tab
- Right-click the plant, and click Create WBS Project on the shortcut menu
- Create a WBS project with the name As-built and a project purpose of As-built, and click OK
- Select As-built as the active WBS item in the list box on the main toolbar

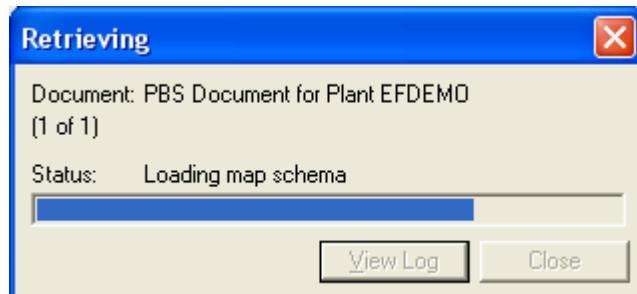
13. In the **Workspace Explorer**, click the **WBS** tab.
14. Right-click the plant, and click **Create WBS Project** on the shortcut menu.
15. Create a WBS project with the name **As-built** and a project purpose of **As-built**, and click **OK**.
16. Select **As-built** as the active WBS item in the list box on the main toolbar.



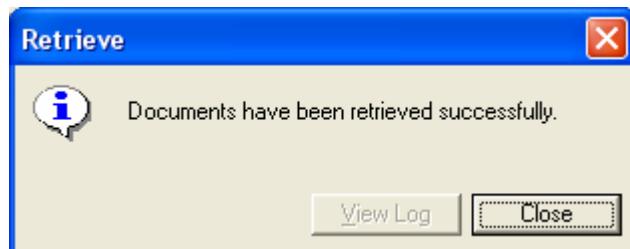
17. Click **Framework > Retrieve** in any SmartPlant 3D task.
18. Select the PBS document in the **Retrieve** dialog box, and then click **OK**.



The software displays the retrieve status in the **Retrieving** message box.



When the document has been retrieved, the software displays a message box to let you know that the retrieve was successful.

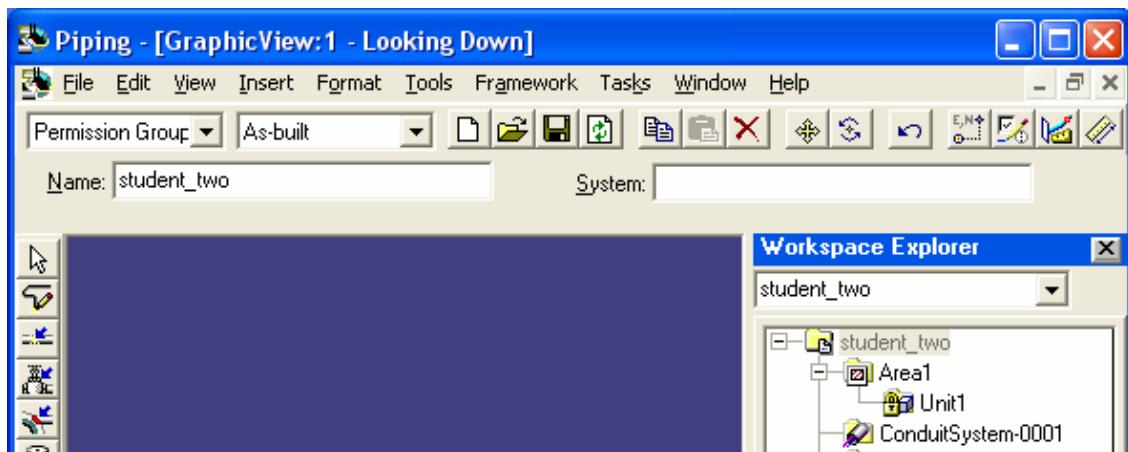


Retrieving the PBS creates the area and unit in SmartPlant 3D.

19. Click **File > Save** to save your settings in a session file. You can double-click the session file to open SmartPlant 3D.

## A.1.1 Review PBS Structure in the Workspace Explorer

After you retrieve the PBS document from SmartPlant Foundation, you can see the new area and unit on the **System** tab of the **Workspace Explorer** in SmartPlant 3D.



A P P E N D I X

# B

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## Glossary



**A****access control**

The settings that a SmartPlant Foundation system administrator uses to specify which data a user can view or manipulate.

**access control list**

A setting that restricts user access to display items on certain forms in SmartPlant Foundation.

**active scope**

A configuration in which you may view, create, modify, and delete information in the SmartPlant Foundation client.

**adapter**

Authoring tool software that facilitates the sharing of data between the authoring tool and SmartPlant. Tool adapters generate XML files for publish operations and consume XML when tools retrieve documents from SmartPlant.

**API**

Application Programming Interface.

**attribute**

An object characteristic.

**authoring tools**

Applications where documents are created and then shared with SmartPlant, including Zygad, SmartPlant P&ID, SmartPlant Instrumentation, SmartPlant 3D, and SmartPlant Foundation.

**B****batch printing**

Printing files at a specified date and time from the SmartPlant Foundation client.

**brownfield**

An existing plant or site that is modified by one or more projects.

**business object**

A key element of the SmartPlant Foundation system that has default behaviors and relationships. The hierarchical nature and the relationships of these objects in the data model represent the structure and associations of the objects over the life of the plant.

**C****cache**

Memory that stores recently-accessed data so that subsequent requests to access the same data can be processed quickly.

**cases**

Configurations for instruments that may include specific parameters, settings, or even components for use in a specific situation.

**change notification**

An e-mail message sent to a user when an action is performed on an object in SmartPlant Foundation.

**check out**

Allows you to make changes to an existing document in SmartPlant Foundation. Only the user who has checked out a document can save changes to it.

**checklist**

A series of items, tasks, or questions that the user finishes before a completing a step in a workflow. Checklists can be optional or required. Checklists are defined in Change Management Administration.

**class definition**

A named description of a set of objects in the schema that support or realize the same interface definitions and share the same property definitions and relationships.

**class view map**

A schema object that specifies a set of class definitions and the default view definition that should be used for each one.

**client API**

A .dll (dynamic link library) that performs a particular function in SmartPlant Foundation. Client APIs are processed by a specific section of code in a component.

**common UI**

An ActiveX control that provides a standard user interface for SmartPlant functionality, such as publish, retrieve, and register. The authoring tools display the common UI when the user clicks particular Framework commands in the authoring tool.

**component**

A .dll (dynamic link library) that handles requests on the SmartPlant Foundation server. Components are also called business service layers (BSLs).

**component schema**

A subdivision of the complete Framework schema that contains the set of class definitions that are used within a specific domain or application area.

**condition**

An object that can restrict access to a method, workflow, or relationship based on specified criteria.

**configuration tree**

A representation in a tree list, which may include plant, projects, and changes, that indicates the structure in which the data is stored in SmartPlant Foundation.

**container**

An object used by the tool adapters and the Framework software components to pass data back and forth between a tool and SmartPlant Foundation. A container may hold data or metadata related to the data model or actual instance data.

**contract**

A group of documents that are collected and issued for bid, construction, review, and so on.

**correlation**

The relationship between items that appear in multiple authoring tools and represent the same component.

**create scope**

A configuration for data creation, modification, and termination in SmartPlant Foundation.

**current document**

A document that has been signed off. Current documents can be revised in SmartPlant Foundation, but not checked out or in.

**D****database**

Collection of files of comprehensive information that have predefined structure and organization; a specific program can communicate, interpret, or process these files.

**data sheet**

A file that allows users to view, edit, and print object data in a customizable format.

**data sheet definition**

An XML file that specifies the relationships and properties to retrieve from the SmartPlant Foundation database for a data sheet in the business object model.

**data sheet template**

An HTML file that defines the layout of a datasheet in the SmartPlant Foundation business object model.

**design basis**

An item in an authoring tool that represents an item from a upstream application (an application used earlier in the lifecycle of the plant). Plant items placed with the authoring tool correspond to a particular design basis item.

Design basis items provide a means of determining if the plant items within the authoring tool are consistent with the items from the upstream application and help users maintain consistency as changes are made in all authoring tools.

**design file**

A file generated by a design tool, such as SmartPlant P&ID or Zygad.

**digest**

See e-mail digest.

**display item**

Object used to present data or relationships on a form in SmartPlant Foundation.

**distribution matrix**

A list of people who will receive a transmittal created in SmartPlant Foundation and an indication of what is expected from each recipient.

**document**

A business object used to track revisions to a design file in SmartPlant Foundation.

**document master**

A business object used to group all the revisions of a document in SmartPlant Foundation.

**document revision**

An officially recognized change to a document.

**dump file**

A file that contains data exported from the SmartPlant Foundation data or system administration database. You can import and export database dump files using your database tools.

**E****edge definition**

Single or multiple relationship definitions with direction. In the schema, an edge definition is used to traverse from a starting object to related objects.

**effective date**

The period of time for which historical data is displayed in SmartPlant Foundation.

**e-mail digest**

A collection of notification messages from SmartPlant Foundation that are sent together instead of separately. You can set a user preference in the Desktop Client to receive digests instead of individual e-mail messages.

**enumerated entry**

See enumerated value.

**enumerated list**

See enumerated set.

**enumerated set**

A list of possible string property values defined for a property definition in the Framework schema. Enumerated sets are sometimes called enumerated lists, picklists, codelists, and lookups.

**enumerated value**

A member of an enumerated set that defines one possible value for a property in the Framework schema. Enumerated values are sometimes called enumerated entries.

**exposes**

The relationship between interface definitions and property definitions in the Framework schema. Interface definitions *expose* the property definitions for class definitions.

**F****file server**

A service that handles direct file transfer between vaults and the SmartPlant Foundation client.

**file type**

A setting in SmartPlant Foundation that specifies the format of attached files based on file extension. This setting determines how files are viewed, edited, and printed in SmartPlant Foundation.

**form**

An interface that allows users to specify values for business object or class definition properties in SmartPlant Foundation.

**Framework schema**

An XML file that describes the structure of the XML files generated by SmartPlant authoring tools in much the same way as a data dictionary describes the structure of a database. As tools publish documents in XML format, those documents must adhere to the format defined by the schema to ensure that the XML data can be loaded into SmartPlant Foundation and retrieved into the other authoring tools.

**FTR**

Full-Text Retrieval; a separate module of SmartPlant Foundation that allows you to store, index, and search for text contained in or associated with objects managed by SmartPlant Foundation. Full-text retrieval creates an inverted index (a list of the individual words with locations in the files) and uses this index at search time.

**G****governing case**

The specific case used for an instrument.

**graph definition**

A connected network of edge definitions with structure. Each graph definition in the Framework schema starts at an interface definition and traverses through one or more relationship definitions to another interface definition at the other end. Graph definitions are sometimes referred to as directed graph definitions.

**graphic report**

A filtered view of a drawing or model, displayed graphically in SmartPlant Foundation.

**graphic report definition**

A set of rules defined to display a drawing or model as a graphic report, saved and available for use with any number of drawings or models in SmartPlant Foundation.

**greenfield**

A new plant on a site with no existing infrastructure.

**H****hierarchy**

A classified structure with superiors, or roots, and subordinates, or dependents, used for grouping data.

**host**

A computer that stores files.

**hotspot**

Graphical notification that a user can click a drawing item in a drawing or viewable file to display the properties for the item in SmartPlant Foundation.

**I****implies**

The relationship between two interface definitions in the Framework schema. If an interface definition *implies* another interface definition, then any class definition that realizes the first interface definition can also realize the implied interface definition.

**interface definition**

A named collection of property definitions that represents a role for a class definition in the Framework schema.

**issue**

To release a document as part of a transmittal. The document is not considered issued until the status of the transmittal has been changed to issued.

**issue request**

A staging of documents and drawings to be issued with a transmittal. An issue request means that the documents or drawings are ready to be issued with a transmittal, but does not actually cause the transmittal to be issued.

**L****lookup**

A group of related values used to populate a picklist in the SmartPlant Foundation business object model.

**M****master file**

A document file that references other files.

**merge**

To combine project data from all the authoring tools with the as-built data. Project and as-built data must be merged in all authoring tools and a final publish of the as-built documents must occur before a merge can occur in SmartPlant Foundation.

**meta schema**

A set of schema objects that describe the objects in the Framework schema. The meta schema provides the building blocks upon which the Framework schema is built.

**method**

A call to an API that allows users to perform actions on business objects or interfaces in SmartPlant Foundation.

**O****owning group**

The user group to which an object is assigned in SmartPlant Foundation. In order to be an owning group, a user group must have the **Owning Group Indicator** set to True in System Administration.

**P****picklist**

A list of applicable values for a given property in SmartPlant Foundation.

**plant**

A business object that can represent the top level in the delivered SmartPlant Foundation data hierarchy. If you use a custom hierarchy with SmartPlant, the object at the top level of the hierarchy may have a different name.

**Plant Breakdown Structure (PBS)**

The composition of the plant based on the grouping of physical objects by their function in the plant. The plant usually occupies the top level of the hierarchy and is typically followed by areas and units.

**plant list**

A group of plants. Plant lists are used in SmartPlant Foundation to help control user access to plants.

**print server**

A computer that processes print requests for a defined list of printers in SmartPlant Foundation.

**process cases**

Configurations for instruments that may include specific parameters, settings, or even components for use in a specific situation.

**project**

A logical unit of data that is a subset of the items that make up a plant. A project is used for making controlled, incremental changes to the data in a plant. There can be multiple projects for a plant at any given time.

**property**

An object characteristic.

**property definition**

A basic attribute shared by all members of a class. Property definitions are grouped using interface definitions in the Framework schema.

**publish**

To share a document and its data with other authoring tools by exporting an XML file containing the document data and relationships to SmartPlant Foundation. When a document is published, the software places the XML file in the appropriate SmartPlant Foundation vault and loads the data from the XML file into the SmartPlant Foundation database. After the document is published, users can retrieve the data from the XML file located in the SmartPlant Foundation vault into other authoring tools.

**Q****query**

A detailed search based on object properties.

**query scope**

A configuration for data queries and relationship expansions in SmartPlant Foundation.

**R****realizes**

The relationship between class definitions and interface definitions in the Framework schema. Class definitions *realize* interface definitions. The interface definitions that are realized by a class definition expose the properties for that class definition.

**reference file**

Files associated with a master file in SmartPlant Foundation.

**relationship**

An association between two objects.

**relationship definition**

Associations between interface definitions in the Framework schema. Relationship definitions identify two specific objects that fulfill the roles on each end of the relationship.

**report definition**

An object used to link one or more view definitions and a template definition for an ad-hoc report in SmartPlant Foundation. View definitions identify which objects, relationships, and properties are to be included in the report.

**revision**

An officially recognized change to a document. Each revision of a document may have multiple versions.

**revision scheme**

A numbering convention for document revisions.

**Reason For Issue (RFI)**

The reason a document is released as part of a transmittal.

**Reason For Receipt (RFR)**

The reason why a specific recipient was included on a transmittal.

**S****schema**

A model used to describe and validate the structure of XML files.

**Schema Component**

A suite of ActiveX components that provide functionality surrounding the creation, parsing, validation, and comparison of the Framework schema and data. The tool adapters interact with the Schema Component to read the Framework schema.

**scoped by**

The relationship between property definitions and property types in the Framework schema. The *scoped by* relationship specifies the property type that defines acceptable values, or scopes, a particular property definition. Every property definition in the Framework schema is scoped by one and only one property type. All properties of that property definition must be of that property type.

**section**

A collection of display items used on SmartPlant Foundation forms.

**server**

A computer that stores or processes files.

**shared object definition**

A schema object used to group together similar class definitions that define the same object in different domains. Class definitions that can be shared have a Sharing relationship with shared object definitions in the Framework schema.

**sharing**

The relationship between class definitions and shared object definitions in the Framework schema. This relationship indicates that a class definition can be shared.

**SI**

International System of Units, sometimes referred to as the metric system. When values for units of measure are published to SmartPlant, they are converted to SI units and stored, regardless of the units of measure selected when the user defined the value in the authoring tool.

**sign off**

To approve a particular revision of a document in SmartPlant Foundation. Signing off a document sets the document to be the current released revision, makes it official, and supersedes any previous released revisions. Document revisions that have been signed off are frozen and cannot be checked out.

**SmartPlant**

Technology that standardizes and improves the communication among the various authoring tools used in the course of designing, constructing, and operating a plant. SmartPlant manages data exchange among these authoring tools, which enables sharing and re-use of plant information throughout the plant lifecycle. Formerly referred to as The Engineering Framework (TEF).

**status**

The state of a change object at the completion of each step in a workflow.

**step**

A process that must be performed in order to complete a workflow.

**subscribe**

To register interest in a document so that you receive a notification when the document is modified. In an integrated SmartPlant environment, the software sends you an e-mail message when a document you subscribe to is published. Outside of the integrated SmartPlant environment, the software sends you an e-mail message when any changes are made to the document.

The software automatically subscribes you to all the documents that you publish and retrieve through SmartPlant at least once. You can manually subscribe to other documents in the SmartPlant Foundation client.

**superseded**

Indicates that a newer, working version of the selected document exists.

**symbology**

Settings that determine how a drawing or model will appear when displayed as a graphical report in SmartPlant Foundation.

**T****TEF**

See SmartPlant.

**terminate**

To change the status of a SmartPlant Foundation object to terminated without removing it from the SmartPlant Foundation database. Terminating objects, instead of deleting them, allows you to continue to see the history of the object after termination.

**title block**

The portion of a drawing that contains information about the drawing, such as who created the drawing, when it was created, who approved it, and so on. The type of information included in the title block varies by drawing type, industry, and organization.

**To Do List**

A graphical list of tasks that require attention from the user. In SmartPlant Foundation, the **To Do List** contains workflow steps assigned to the user. In the authoring tools, such as SmartPlant P&ID and SmartPlant Instrumentation, the **To Do List** contains create, delete, and update tasks generated when a user retrieves a document

**token**

A license that provides timed access to users of SmartPlant Foundation. When a user opens the software, a token is activated.

There are two types of tokens: daily and perpetual. Daily tokens are available to all users and are valid for 12 consecutive hours after the user logs on to SmartPlant Foundation. When a daily license token is checked out, a token is depleted from the daily token file. If there are no tokens left in the daily token file, then other users cannot access the software. Perpetual tokens are only available to a select group of system users and provide unlimited access to the software.

**tombstone**

Delete instructions for an object that has been removed in one of the authoring tools. Upon retrieval of a tombstone, delete tasks are created in the authoring tool's **To Do List** to allow the tool to delete the object from its database.

**tool**

See authoring tool.

**tool adapter**

See adapter.

**tool schema**

A set of schema objects that describe the data in the authoring tool databases before it is transformed into the format prescribed by the Framework schema. The tool schema also specifies the mapping between objects in the tool database and the Framework schema.

**tool signature**

A unique identifier for the relationship between a project in SmartPlant Foundation and a specific project in an authoring tool database. The relationship is created when an authoring tool registers with SmartPlant Foundation.

**transmittal**

A controlled package of documents used to perform, track, and record the distribution of project documentation among different design teams.

**U****unit**

Group of parts of the schematic and individual worlds of a plant that together perform a given process function. The identifying number of the unit is unique within the project and within the plant. Most companies, but not all, use the concept of unit.

**unit of measure display set**

A collection of units in one measurement system mapped to the corresponding units in another measurement system. Unit of measure (UoM) display sets are used by SmartPlant Foundation to automatically convert a UoM value from one UoM to another when the user changes the display set in the SmartPlant Foundation client.

**unit of measure set**

A collection of different units that measure the same property in SmartPlant Foundation.

**UoM**

A unit of measurement.

**user**

An object that specifies data about a particular SmartPlant Foundation user.

**user group**

A collection of users with common job functions or access in SmartPlant Foundation.

**user profile**

Information about windows, configuration, and interface settings, saved by the SmartPlant Foundation client when you close the application and used to configure the application when you reopen it.

**V****vault**

A folder where files are stored on a host computer.

**version**

An intermediate update to an existing document that is tracked by the SmartPlant Foundation software.

**view definition**

A named group of properties extracted from the possible properties that a graph definition exposes. View definitions are used in SmartPlant to provide a different view of data from that provided by the underlying schema.

**virtual directory**

A Web folder created in IIS that points to a physical folder on the Web server. Virtual directories are used by SmartPlant Foundation to run applications and services from the SmartPlant Foundation server and to transfer files between file servers and clients.

**W****wildcard**

A character that helps you narrow your search for objects in the SmartPlant Foundation database. You can use wildcards in any text box in the **Find** and **Query** dialog boxes.

Text wildcards in SmartPlant Foundation include the following:

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

**workflow**

A series of steps defining actions to be taken on an object in SmartPlant Foundation.

**working document**

A document that has not been signed off in SmartPlant Foundation.

**Work Breakdown Structure (WBS)**

The composition of the plant based on the construction work to be completed. The plant usually occupies the top level of the hierarchy; it is typically followed by projects, contracts, and documents.

**X****XML**

Extensible Markup Language; the format for all documents published to SmartPlant or retrieved from SmartPlant. These XML files must conform to the structure defined by the Framework schema.





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**SmartPlant/SmartPlant Foundation Introduction and Administration I**

***Course Guide***