Intergraph PPM recommends that new SmartPlant 3D (SP3D) users select one of the following training tracks described below.

1. **System Support Track**

   For people interested in setting up SmartPlant 3D & databases and managing databases and applications more from systems perspective in terms of work sharing, permissions, backups etc.

   - Windows & SQL Server Admin Knowledge
   - TSMP3001 SP3D Setup & Admin
   - TSMP3005 / 7 SP3D GWC Setup (Optional)

2. **Discipline Specialist Track**

   For people interested in creating and maintaining reference data such as piping specifications, equipments for a particular discipline(s), configuration and generation of deliverables, providing first line support to end users (Designers).

   **Piping**
   - Piping Designer Track
   - TSMP3002 SP3D Piping & Equipment Ref Data
   - TSMP3006 SP3D PDS Spec Translator (Optional)
   - TSMP4001 SP3D Programming I (Optional)

   **Electrical**
   - Electrical Designer Track
   - TSMP3003 SP3D Electrical Reference Data
   - TSMP2001 SP3D Drawing Configuration
   - TSMP2005 SP3D Reports Customization

   **Structure**
   - Structure Designer Track
   - TSMP3004 SP3D Structural Reference Data
   - TSMP2001 SP3D Drawing Configuration
   - TSMP2005 SP3D Reports Customization
3. Automation Track

For people interested in programming and automating Smart 3D across various disciplines.

Visual Studio 2008 Programming and SP3D Knowledge

TSMP4001 SP3D Programming I

TSMP4002 SP3D Programming II

TSMP4003 SP3D Automation using .NET

TSMP4005 SP3D Programming III

4. Designer Track

For people interested in creating 3D models for Piping, Electrical, or Structural disciplines.

Piping

TSMP1001 SP3D Piping & Equipment Modeling

TSMP1006 SP3D Drawing Creation

Electrical

TSMP1002 SP3D Electrical Modeling

TSKT1550 SP3D Drawings Revision

Structure

TSMP1003 SP3D Structural Modeling
## V2011R1 Training Course Highlights

<table>
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<tr>
<th>Course Number</th>
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# SP 3D Curriculum Path & Training Guidelines

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SP3D Piping & Equipment Modeling
TSMP1001

This course is for Piping Designers who will create piping models and other users who will create related reference data. The course features an introduction to the graphics environment, equipment modeling, followed by routing techniques for piping modeling and generation of isometric drawings.

Major Topics:
- Overview of Common Graphics Environment
- Defining a Working Set
- SmartStep Commands and User Options
- Interactive Interference Checking
- Equipment Modeling
- 3D Routing System
- General Routing Techniques
- Hangers & Supports
- Change Management
- P&ID Integration
- Isometric Drawing Generation

Prerequisites:
- Knowledge of Industrial Piping Design
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

Length:
- 4.5 days

Pricing (USD):
- $2,750 per enrollment at Intergraph facilities
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Designer Series
TSMP1100

This course is a bundled offering that includes topics from TSMP1001, TSMP2003 and TSMP2004. First week of this course is same as TSMP1001, followed by Electrical Modeling and Structural Modeling topics during second week. It is assumed that students from electrical and structural disciplines would attend the Common App and Equipment Modeling topics in the first week and then rejoin the class in second week. This course is best suited for a team that would become core SP3D team for execution of SmartPlant 3D pilot or roll-out activities.

Major Topics:
- Overview of Common Graphics Environment
- Workspace / Filter Definitions
- Equipment Modeling
- Piping Modeling
- Electrical Modeling
- Structural Modeling

Prerequisites:
- Knowledge of Plant Design & Engineering
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

Length:
- 10 days

Pricing (USD):
- $27,750 onsite only (plus travel expenses per Intergraph Terms and Conditions)
SP3D Drawing Revision for 2D Editor
TSKT1550

This course demonstrates how to use SmartSketch Drawing Editor to revise and edit documents generated with the SmartPlant 3D Drawings and Reports task. The class will cover SmartSketch Drawing Editor basics, such as the drawing environment, document concepts, creation and modification tools, as well as best techniques, practices and tips for working with documents generated with the SP3D Drawings task.

Major Topics:
- Differences between SmartSketch and SmartSketch Drawing Editor
- Drawing Environment - Toolbars and Ribbon Bars
- Drawings Files vs. SmartSketch Files
- Documents, Sheets, and Layers, Creating and Modifying Styles,
- Creating Graphics, Drawing with PinPoint
- Selecting, Finding, and Modifying Graphics
- Dimensioning and Measurement Tools
- Text and Annotations
- Basic Symbol Creation
- Support Utilities Pack
- Drawings Revision Workflow
- Editing/Drawing Tips

Prerequisites:
- One of the SmartPlant 3D Modeling courses (TSMP1001, TSMP2003, or TSMP2004)
- Must be taken before or together with TSMP1006

Length:
- 3 days

Pricing (USD):
- $1,650 per enrollment at Intergraph facilities
- $8,250 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Drawing Creation
TSMP1006

This course is for designers involved in the generation of orthographic drawings from the SmartPlant 3D model. The course starts with conceptual explanation of the different types of drawings followed by the workflows for generating drawings and editing drawings.

Major Topics:
- Drawing Console
- Composed Drawings
- Volume Drawings
- Creating & Updating Drawings
- Section and Detail Views
- SmartSketch Drawing Editor
- Scaled Sketching
- Manual Labels and Dimensions

Prerequisites:
- One of the SmartPlant 3D Modeling courses (TSMP1001, TSMP2003, or TSMP2004)
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

Length:
- 2 days

Pricing (USD):
- $1,100 per enrollment at Intergraph facilities
- $5,500 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Drawing Configuration
TSMP2001

This course is for Application Specialists involved in the configuration and generation of orthographic drawings from the SmartPlant 3D model. The course starts with workflows for generating drawings and editing drawings, followed by various configuration and customization techniques. Note: The first two days of this course coincide with TSMP1006.

**Major Topics:**
- Drawing Console
- Creating & Updating Drawings
- Drawing Editor
- Smart Labels
- Drawing Templates
- Bulkload Utility
- Drawing Types (Snapshot, Volume & Drawings by Query)

**Prerequisites:**
- One of the SmartPlant 3D Modeling courses (TSMP1001, TSMP2003, or TSMP2004)
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

**Length:**
- 4.5 days

**Pricing (USD):**
- $2,750 per enrollment at Intergraph facilities
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Report Configuration
TSMP2005

This course is for Application Specialists involved in the customization of reports form SmartPlant 3D databases. The course starts with workflows for generating reports, followed by various configuration and customization techniques.

**Major Topics:**
- Defining New Reports
- Understanding the data model
- Report Definitions/Excel Data
- Creating Report Templates
- Labels

**Prerequisites:**
- One of the SmartPlant 3D Modeling courses (TSMP1001, TSMP2003, or TSMP2004)
- Knowledge of Databases and SQL statements
- Knowledge of 3D Plant Design CAD Concepts

**Length:**
- 4 days

**Pricing (USD):**
- $2,200 per enrollment at Intergraph facilities
- $11,000 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Isometric Drawings
TSMP2002

This course is for Application Specialists involved in the configuration and generation of piping isometric drawings. The course starts with workflows for generating isometric drawings, followed by various configuration and customization techniques.

**Major Topics:**
- Drawing Console
- Creating & Updating Piping Isometrics
- Isogen Options
- Atext (Alternate Text) Definitions
- Symbols and Symbol keys
- Customizing Isometric Drawing Styles
- Configuring Isometric Drawing Content

**Prerequisites:**
- SP3D Piping & Equipment Modeling course (TSMP1001)
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

**Length:**
- 4 days

**Pricing (USD):**
- $2,200 per enrollment at Intergraph facilities
- $11,000 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Electrical Modeling
TSMP1002

This course is for Cableway/Cable tray users involved in modeling and creation of reference data. The course features an introduction to the graphics environment, equipment modeling, and routing techniques for cableway, conduit and cable tray. Later part of the course is focused on creation and modification of reference data such as tray specifications.

Major Topics:
- Overview of Common Graphics Environment
- Defining a Working Set
- SmartStep Commands
- Interactive Interference Checking
- Equipment Modeling
- Cableway and Cabletray Modeling
- Duct bank Modeling
- Conduit Routing
- Hangers & Supports
- Routing Cables

Prerequisites:
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

Length:
- 4.5 days

Pricing (USD):
- $2,750 per enrollment at Intergraph facilities
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Structural Modeling
TSMP1003

This course is for Structural Designers who will create structural models, and other users who will create related reference data. The course features an introduction to the graphics environment followed by equipment & structural modeling techniques. Later part of the course is focused on creation of reference data such as user defined sections etc.

Major Topics:
- Overview of Common Graphics Environment
- Defining a Working Set
- SmartStep Commands and User Options
- Interactive Interference Checking
- Grid System
- Modeling Members
- Managing Connections
- Fireproofing Members
- Modeling Slabs, Walls and Openings
- Modeling Stairs, Ladders and Handrails
- Modeling Footings and Equipment Foundations
- Solid Modeling
- Importing and Exporting Solids as SAT files
- Adding Loads, Releases, Boundary Conditions for Structural Analysis
- Creating Mapping file for CIMSteel
- Creating CIMSteel file for Structural Analysis and Physical Model

Prerequisites:
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

Length:
- 4.5 days

Pricing (USD):
- $2,750 per enrollment at Intergraph facilities
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
Smart3D Hangers and Supports User Training
TSMP1005

This course is for designers and engineers who will work with pipe supports in an S3D model. The course starts with pipe supports and its types, followed by a support placement and modification techniques. This course is presented as a combination of lecture sessions followed by hands-on activity periods.

Major Topics:
- Review commonly used tools
- Support Types
- Support Placement Commands
- Support Properties
- Support Modification
- Demonstration of support libraries delivered with product

Prerequisites:
- Knowledge of S3D piping, structural and common tasks

Length:
- 1 day

Pricing (USD):
- $2,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Setup & Administration
TSMP3001

This course is for System Support personnel who are familiar with the Windows Operating System, networking, and databases, and who will be responsible for loading and configuring the software, keeping the system running, and trouble-shooting problems. Project Support personnel, who will be configuring the software, will also benefit from this course, which includes topics such as software setup, database setup, configuring access control, project level settings. The course is in a lecture/lab format.

Major Topics:
- Overview of SmartPlant 3D System Architecture
- Database Wizard
- Project Management Environment
- Managing Plants
- Backup & Restore
- Access Control and Approval Status
- Work-share Setup
- Common Environment
- Systems & Specs
- Filters
- Session Templates
- Space Management
- Interference Checker Server

Prerequisites:
- Supporting Windows Operating System
- Experience with Microsoft SQL Server
- Knowledge of 3D Plant Design CAD Concepts

Length:
- 4.5 days

Pricing (USD):
- $2,750 per enrollment at Intergraph facilities
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Equipment & Piping Reference Data
TSMP3002

This course is for Application Specialists involved in the configuration of reference data for Equipment and Piping modeling. This course concentrates on the most common workflows, such as adding a new component to the piping specification, adding new catalog equipment, creating a piping specification, and modifying the delivered catalog data. These workflows are presented in lecture/lab format providing insights into the reference data structure along the way.

Major Topics:
- Catalog & Specification Databases
- Bulkload Utility
- General Format of Bulkload Files
- Adding New Equipment to the Catalog
- Creating a New Piping Materials Class
- Adding a New Piping Component to a Specification
- Adding a New Part to the Catalog
- Piping Specification Rules

Prerequisites:
- SmartPlant 3D Piping & Equipment Modeling course (TSMP1001)
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

Length:
- 4.5 days

Pricing (USD):
- $2,750 per enrollment at Intergraph facilities
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Electrical Reference Data  
TSMP3003

This course is for Electrical Discipline Specialists who will create Electrical reference data.

**Major Topics:**
- Catalog & Specification Databases
- Bulkload Utility
- General Format of Bulkload Files
- Adding a New Part to the Catalog
- Cableway Specifications
- Cabletray Specifications
- Cable Specifications
- Conduit Specifications

**Prerequisites:**
- SmartPlant 3D Electrical Modeling course (TSMP1002)
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

**Length:**
- 2 days

**Pricing (USD):**
- $1,100 per enrollment at Intergraph facilities
- $5,500 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Structural Reference Data
TSMP3004

This course is for Structural Discipline Specialists who will create structural reference data.

Major Topics:
- Catalog & Specification Databases
- Bulkload Utility
- General Format of Bulkload Files
- Symbol 2D
- Adding User Defined Sections
- Adding a New Slab Type

Prerequisites:
- SmartPlant 3D Structural Modeling course (TSMP1003)
- Familiarity with Windows User Interface
- Knowledge of 3D Plant Design CAD Concepts

Length:
- 2 days

Pricing (USD):
- $1,100 per enrollment at Intergraph facilities
- $5,500 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D PDS Spec Translation Workshop
TSMP3006

This workshop is for Application Specialists involved in the configuration of reference data for Equipment and Piping modeling. During this workshop a sample set of PDS piping specifications will be translated to SmartPlant 3D, followed by testing of specifications within SmartPlant 3D. A small part of this workshop involves a presentation on translation procedure. Remaining part is designed to be one-on-one instruction and hands-on training using customers data.

**Major Topics:**
- Overview of Translation Process
- Translation Rules
- Prepare PDS Dataset
- Translation Process
- Review Logs
- Prepare SP3D Dataset
- Testing of Translated Data

**Prerequisites:**
- SmartPlant 3D Piping & Equipment Reference Data course (TSMP3002)

**Length:**
- 3 days

**Pricing (USD):**
- $8,250 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Global Work Share Setup  
TSMP3005

This course is for Application Specialists involved in setting up and maintaining global work share configuration (GWC) for SmartPlant 3D. Objective of this workshop is to create a fully configured GWC setup and test various administrative and end user workflows. This course is based on SQL Server 2005 database system.

Major Topics:
- Overview of GWC
- Planning GWC Setup
- GWC Setup Workflow
- Maintaining GWC Setup
- GWC Impacts on SP3D User Workflows
- Consolidation
- Backup Restore Strategies

Prerequisites:
- SP3D Setup & Administration (TSMP3001)
- Working Knowledge of SQL Server 2005 Database Administration

Length:
- 4.5 days

Pricing (USD):
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Global Work share Setup - Oracle
TSMP3007

This course is for Application Specialists involved in setting up and maintaining global work share configuration (GWC) for SmartPlant 3D. Objective of this workshop is to create a fully configured GWC setup and test various administrative and end user workflows. This course is based on Oracle 10g database system.

Major Topics:
- Overview of GWC
- Planning GWC Setup
- GWC Setup Workflow
- Maintaining GWC Setup
- GWC Impacts on SP3D User Workflows
- Consolidation
- Backup Restore Strategies

Prerequisites:
- SP3D Setup & Administration (TSMP3001)
- Working Knowledge of Oracle 10g Database Administration

Length:
- 4.5 days

Pricing (USD):
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
Smart3D Hangers and Supports
Maintenance & Customization
TSMP3008

This course is for application specialists who will work with pipe supports, including maintenance and customization of support libraries. The course starts with explanation of H&S related excel workbooks, followed by various customization techniques. This course is presented as a combination of lecture sessions followed by hands-on activity periods.

Major Topics:
- Excel workbooks
  - Parts
  - Assemblies
  - Codelists
  - Steel
- Code Overview
  - Parts
  - Assemblies
- Support Customization
  - Excel – Change data, add new row, etc
  - Excel – SmartPart Customization
  - Code – Change pipe size rule, BOM, etc
  - Miscellaneous – Changing values of codelist, adding a new codelist, etc

Prerequisites:
- Hangers & Support User Training
- S3D Reference Data Training
- Microsoft Excel
- Knowledge of SQL

Length:
- 4 days

Pricing (USD):
- $11,000 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Programming I (Part Symbols and Rules)
TSMP4001

This course is for Application Specialists involved in the configuration of reference data for SmartPlant 3D. This course concentrates on naming rules, symbol definitions for piping items, interference rules and report query interpreter. Naming rules allow automatic naming of objects during placement and modification based on user defined logic. Course involves extensive use of Visual Basic .NET development environment. Course is presented in lecture/lab format.

Major Topics:

- SmartPlant 3D Symbol Creation Concepts
- Geometry Creation Reference
- General Format of Bulkload Files
- Navigating Data Model using Schema Browser
- Creating naming rules
- Creating interference rules
- Creating report query interpreter

Prerequisites:

- Understanding of SP3D Reference Data gained through TSMP3002 or TSMP3003
- Working knowledge of Visual Basic .NET Programming and Visual Studio 2008 SP1 development environment (with .NET Framework 3.5 SP1)

Length:

- 4.5 days

Pricing (USD):

- $2,750 per enrollment at Intergraph facilities
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Programming II (Smart Symbols)
TSMP4002

This course is for Application Specialists involved in the configuration of reference data for SmartPlant 3D. This course concentrates on symbol definitions and user defined forms for equipment. Course involves extensive use of Visual Basic .NET development environment. Course is presented in lecture/lab format.

Major Topics:

- SmartPlant 3D Symbol Creation Concepts
- Geometry Creation Reference
- Creating Equipment Symbols
- Creating Equipment Component Symbols
- Creating User Defined Forms

Prerequisites:

- Understanding of SP3D Reference Data gained through TSMP3002 or TSMP3003
- Working knowledge of Visual Basic .NET Programming and Visual Studio 2008 SP1 development environment (with .NET Framework 3.5 SP1)

Length:

- 3 days

Pricing (USD):

- $1,650 per enrollment at Intergraph facilities
- $8,250 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Automation using .NET
TSMP4003

This course is for Application Specialists involved in the development of Automation for Smart 3D applications. The course starts with concepts of the S3D .NET API, explains what kind of Automation can be developed and further elaborates on the Programming Model and the available Services/Components for use in developing Automation components.

Major Topics:

- S3D .NET API Architecture
- Developing Custom Commands
- Standalone Applications
- Access Metadata – Classes, Interfaces, Attributes, Relationships, Navigate Relationships
- Creating and Modifying SP3D objects e.g. Filters, Systems, Equipment, Piping, Spaces

Prerequisites:

- One of the SmartPlant 3D Modeling courses (TSMP1001, TSMP2003 or TSMP2004)
- Knowledge of 3D Plant Design CAD Concepts
- Programming Knowledge – .NET language like VB.NET or C#.

Length:

- 4.5 days

Pricing (USD):

- $2,750 per enrollment at Intergraph facilities
- $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)
SP3D Programming III  
(Stair, Ladder and Handrail Symbols)  
TSMP4005

This course is for Application Specialists involved in the configuration of reference data for SmartPlant 3D. This course concentrates on symbol definitions for stairs, ladders and handrails. Course involves extensive use of Visual Basic .NET development environment. Course is presented in lecture/lab format.

**Major Topics:**
- SmartPlant 3D Symbol Creation Concepts
- Geometry Creation Reference
- Creating Stair Symbols
- Creating Ladder Symbols
- Creating Handrail Symbols

**Prerequisites:**
- Understanding of SP3D Reference Data gained through TSMP3004
- Working knowledge of Visual Basic .NET Programming and Visual Studio 2008 SP1 development environment (with .NET Framework 3.5 SP1)

**Length:**
- 2 days

**Pricing (USD):**
- $1,100 per enrollment at Intergraph facilities
- $5,500 onsite (plus travel expenses per Intergraph Terms and Conditions)
Smart3D Hangers and Supports Part & Assembly Creation
TSMP4004

This course is intended for application specialists or software developers who wish to create & customize S3D Hangers & Supports at the programmatic level. Trainees will acquire the skills required to be proficient in creating Supports (Assembly Information Rules) along with the Parts (Symbols) & Rules (Part/Assembly Selection Rules) that drive them. Trainees must have past coding experience (preferably in Visual Basic). This course is presented as a combination of lecture sessions followed by hands-on activity periods.

Major Topics:

• Symbols (Parts) – 1.5 Day
  ▪ Symbol Data Overview
  ▪ Symbol Code
  ▪ Understanding Symbol Ports
  ▪ Drawing Shape Primitives
  ▪ Part Selection Rules
  ▪ SmartParts
• Supports (Assemblies) – 2.5 Days
  ▪ Assembly Data Overview
  ▪ Assembly Code
  ▪ Understanding Reference Ports
  ▪ Understanding Bounding Boxes
  ▪ Joints & Constraints
• Supplementary – 1 Day
  ▪ Hanger Service Classes
  ▪ Hanger Rule
  ▪ BOM Definition
  ▪ Labels
  ▪ Dimension Points
  ▪ Local Coordinate Systems

Prerequisites:

• TSMP1005: H&S User Training
• TSMP3008: H&S Customization
• Microsoft Excel
• Intermediate to Advanced programming skills (preferable in VB 6.0)
• Knowledge of SQL queries

Length:

• 4.5 days

Pricing (USD):

• $13,750 onsite (plus travel expenses per Intergraph Terms and Conditions)