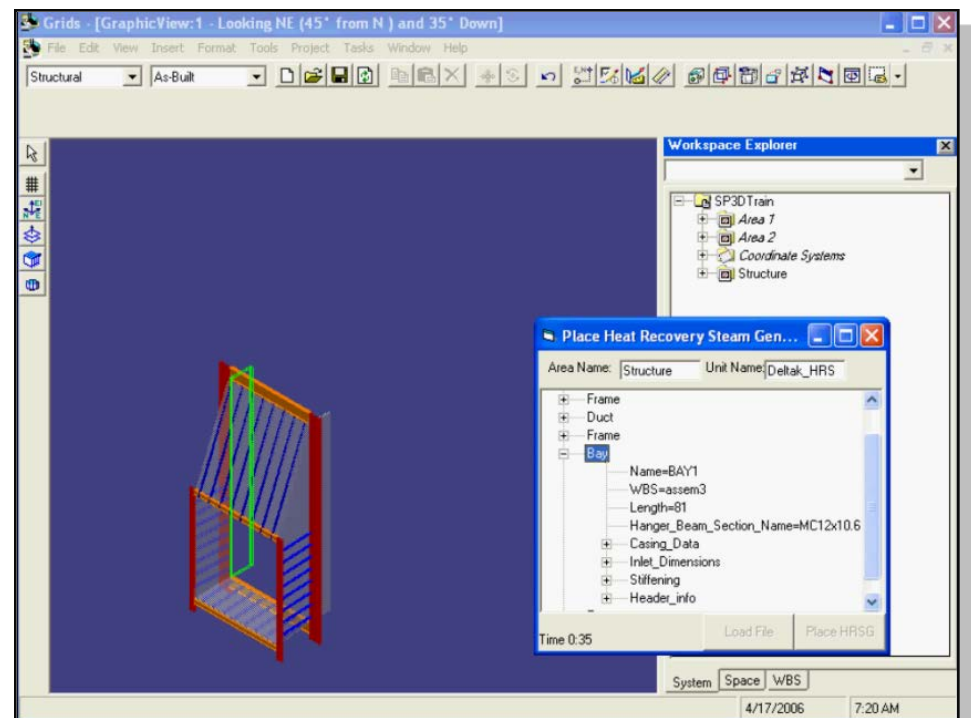


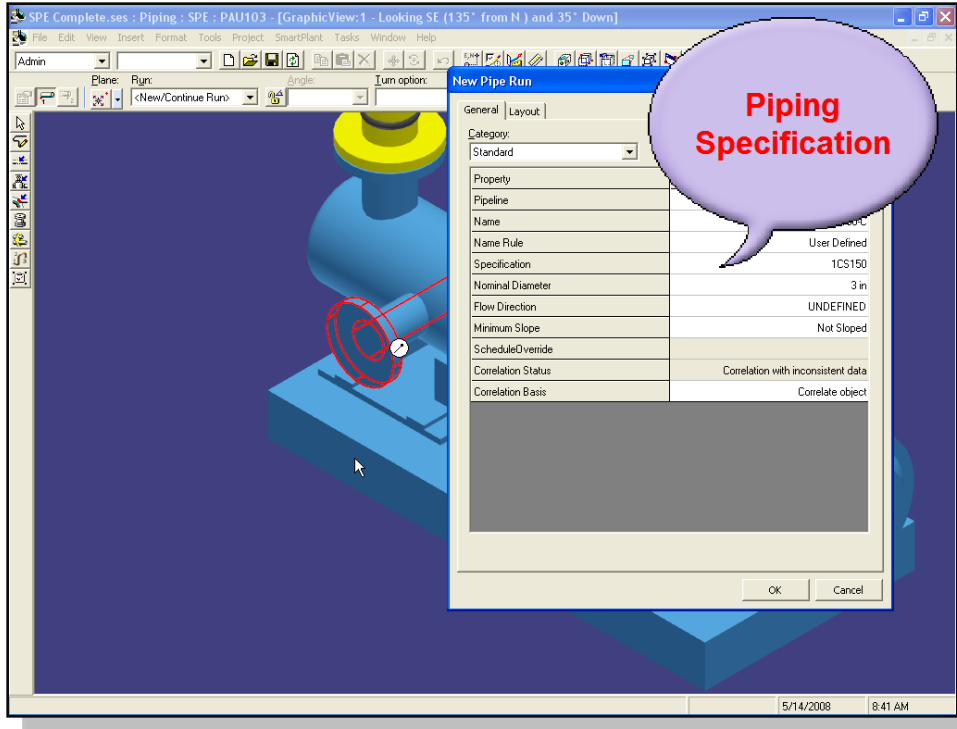
“... We didn’t undertake a 10yr, \$150M project just to have a slicker CAD GUI. We did it to accelerate the entire industry ...” – Gerhard Sallinger

- Allows quick placement of multiple objects
- No "higher level" intelligence
- Smart 3D solutions only:
 - Do not require proprietary macro languages
 - Added value by inherent relationships & rules



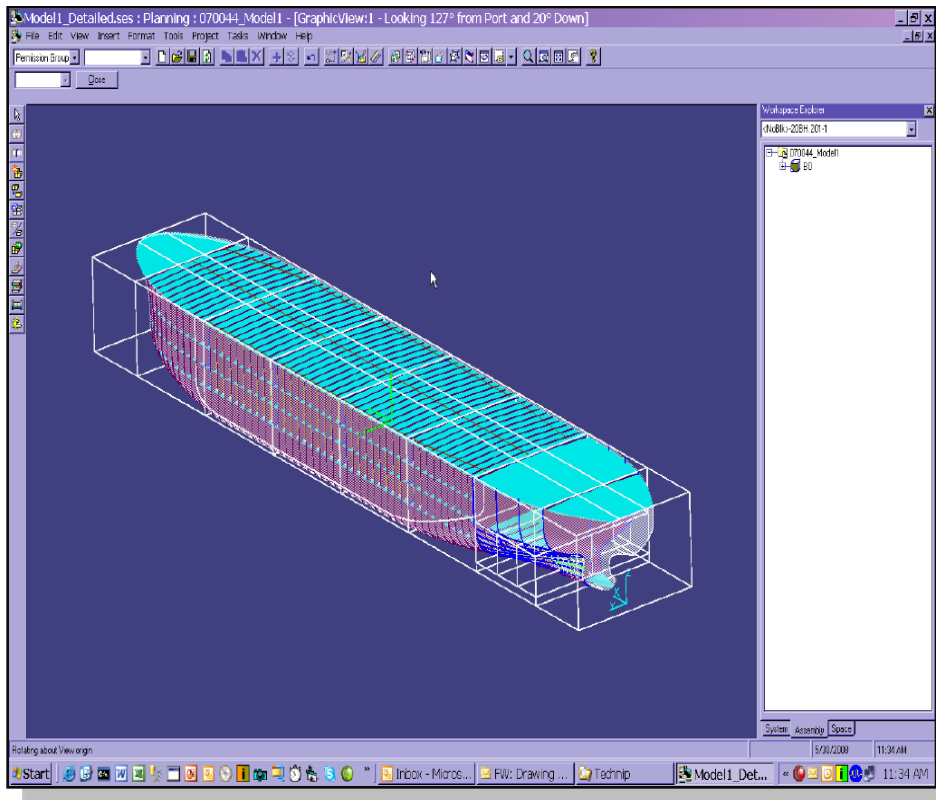
■ ***Practical Customer Examples ...***

- Placement of Control Station
- Creation of Heat Recovery Steam Generator based on initial design software calculations via an XML output
- Modularization of pipe racks including automatic field weld placement based on volumes
- Automated placement of pipe shoes on a pipe rack
- Placement of fuel channels based on a predefined pattern
- Importing Line List Data such as pressures & temperatures from an external system



- Rules defined in reference data
- Automated part selection, placement & orientation
- Automatic re-compute when changes occur
- Ensures design according to standards & best-practices
- Smart 3D solutions are based on this concept across all engineering disciplines ...

- ***Examples of Rules created using 3D API***
 - Complex Naming Rules
 - KKS Numbering system
 - Interference Checking
 - Customized rules can eliminate large number of false clashes
 - Example; pipe 50mm or smaller passing through grating is a false clash
 - Wall Thickness Calculations
 - Cable Tray Fill Calculations

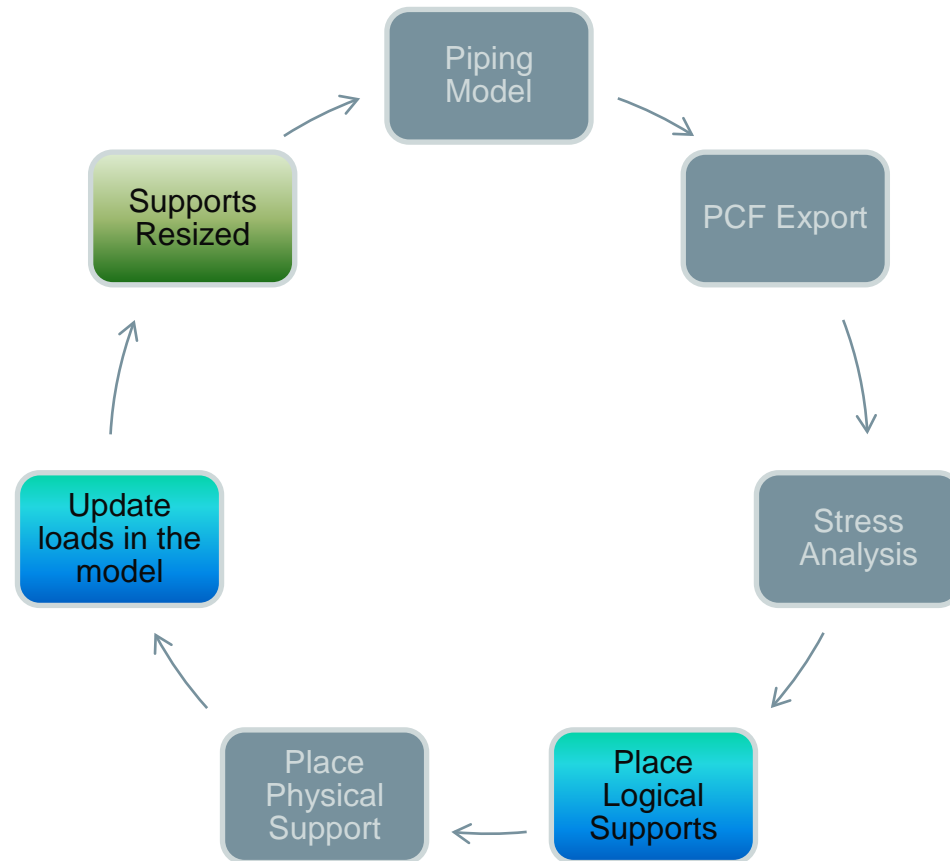


- Drawings are "graphical reports"
- Fully annotated & ready to use
- Automatic detection of which drawings are affected by model changes

SmartPlant 3D Examples ...

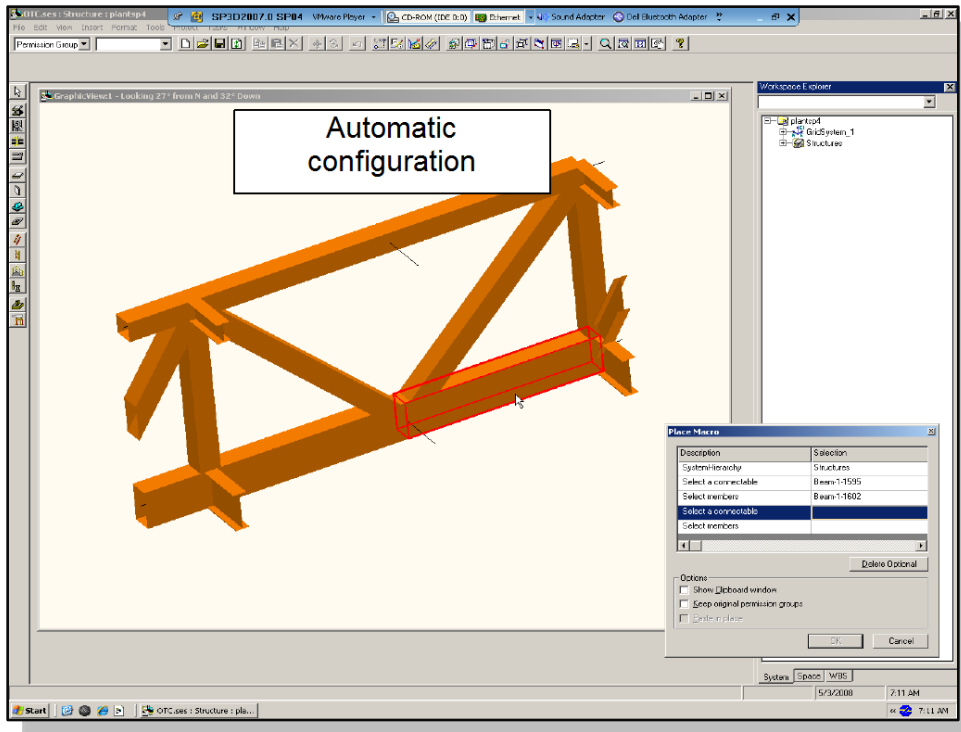
- *Document Equipments with Trim Piping*
- *Pipe Support Drawings*

- Example of how a customer implemented round trip workflow for pipe stress analysis
- Custom Command to place logical supports
- Custom Command to import loads
- Custom Library for pipe support design



■ ***Example of Advanced Automation Capability***

- Ad-hoc Rule Checking
- Rule checking works like interactive IFC, checking rule violations when user is not actively working
- Rules for checking location, offset, distance between objects can be added by external programs
- User can implement their own Rules using VB. Rules only contain logic which interprets the Rule Data to determine if rule is violated. User selects appropriate rule for a given modeling situation.



- Taking rules-based design to a new level
- Enabled by the underlying data model & software architecture
- Higher level rules with nested assemblies

- SmartPlant 3D offers complete framework for creating custom commands & standalone applications
- Provides same level of functionality available to Intergraph Developers
- Supporting functionality;
 - Common Services – Frees up programmer to focus on command & not worry about data integrity, change propagation & management, query & persist data
 - User Interface – Easy to use ribbon bar with '*Smart step*' support
 - Standard controls for Unit Of Measure conversion & display, access to user preferences, custom menus

- Skill set is different than past, strong programming background is required. However most customers seem to have VB or .NET expertise
- Start with Programming I and II classes (TSMP4001, TSMP4002)
Automation training & consulting is available on request
- Several Customers are using automation today
- Automation helps SmartPlant 3D on new projects

- .NET based API is being developed
 - Available now;
 - Simple custom commands & standalone programs
 - Query objects & modify data
 - Manipulation of Work Break Down objects
 - Naming Rules
 - Upcoming enhancements in V2008
 - Create Equipments, Piping Objects
 - Simplified Symbol Definitions for Equipment, Route Applications
 - Enhanced custom command support
 - Beyond V2008
 - Create Structure objects
- Formal Rollout starting V2008 release
 - Enhanced API Documentation delivered with Product
 - Scheduled Training Classes starting in August 2008

Integrating the Engineering Enterprise...

