JT-based 3D Sales Configurator

The P‘X5™ Application at Siemens for the Siplace™ Product Line

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• Siemens
  – Business Area:
    Siemens Automation & Drives
    • 60,800 employees
    • 9,844 Million € sales in 2005
  – Business Unit:
    Electronics Assembly Systems

• Siplace Product Line
  – SMT placement machines
  – Modular machine platform
  – Highly flexible
  – Scalable production capacity
Challenge

• Complex product portfolio
• Customer-specific product configuration
• Time-consuming sales engineering
• Global international sales
• Inefficient, error-prone quotation process

Solution:

⇒ Sales Calculation and Configuration Software Tool for Siplace Products
Requirements

- Support for customer-oriented consulting
- User-friendly and intuitive tool for sales
- Product configuration & layout planning in 3D
- Geometrical, logical & commercial validation
- Knowledge-driven automation
- Consistent generation of documents
- Integration into existing IT: NX, SAP, Siebel, …

Result of Evaluation Project:

→ P’X5 Software Suite from Perspectix
The P‘X5 Solution

PX5 Software Suite
- Content Engine
- Presentation Engine
- Sales Engine
- Configuration Engine
- Connectivity Engine

PX5 Product Knowledge Base
- Project Intelligence
  - Product Structuring
  - Configuration Logic
- Sales Systematics
  - Product Master Data
  - Product Classification
- Price Calculation Schema
- Project Guidelines
- Catalog Grouping
- Multilingual Text Elements
- Composition & Layout Rules
- Document Templates
- 3D Modules & Assemblies
- Images, Drawings, ...

Designers
- CAD
- PDM

Manager
- Project Manager
- Sales Manager
- Product Manager

Development
Marketing
Sales
Engineering
Manufacturing
Service
P‘X5 Software Suite

- P‘X5 is integrated with UGS Technology
- Perspectix is UGS Foundation Partner
Machine & Plant Configuration

- Module configuration of Siplace machine
- Line configuration of Siplace plant
Layout Planning

- Import of DXF/DWG floor plan
- Layouting of zones and building elements
- Collision tests
- Automatic Dimensioning
Calculation & Validation

- Generation of Sales BOM
- Generation of Constructive BOM
- Price, Cost & Margin Calculation
- Conflict Checks
Visualization

- 2D and 3D Views
- Animation
- Links to technical documentation
Document Generation

- PDF output with embedded 3D for down-stream process
- JT output for engineering process (CAD / PDM import)
## Knowledge-driven Automation in P‘X5

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutoSolving</td>
<td>Automatic solution finding with formal and geometrical constraint solving</td>
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<tr>
<td>AutoPlacing</td>
<td>Automatic positioning and connecting of product modules</td>
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<tr>
<td>AutoRouting</td>
<td>Automatic path search for cabling and piping</td>
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<tr>
<td>AutoAssembling</td>
<td>Automatic generation of product structures and assembly aggregations</td>
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<tr>
<td>AutoMeasuring</td>
<td>Automatic dimensioning and labeling of configured components</td>
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<tr>
<td>AutoTransformation</td>
<td>Automatic generation and transformation of multiple BOM structures</td>
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<tr>
<td>AutoValidation</td>
<td>Automatic conflict checks and solution evaluations</td>
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<tr>
<td>AutoPricing</td>
<td>Automatic cost, price and margin calculations</td>
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<tr>
<td>AutoDocumentation</td>
<td>Automatic generation of documents for offers, assembling, layout plans, …</td>
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<tr>
<td>AutoTranslation</td>
<td>Automatic generation of multi-language output</td>
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<tr>
<td>AutoAnimation</td>
<td>Automatic generation of movement and explosion paths</td>
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<tr>
<td>AutoUpdate</td>
<td>Automatic synchronization of master data and transactional project data</td>
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P‘X5 Authoring Workbench

- Editor for Product Information used in Sales Configurator
  - Master Data Harmonization
  - Product Classification
  - Expressions & Rules Editor
- Run-time Test Environment
- P‘X5 CAD Plugin for NX
- based on Eclipse IDE
P‘X5 CAD Plug-in for NX

- Define Snap Points (Connection Points) on Part
- Classify Module Interfaces
- Capture Design Intent of Modular Building System
- Export from NX to the P‘X5 Authoring Workbench
Preparation of lightweight JT

• Goals
  – Performance
  – Data reduction
  – Prevent reverse engineering

• Tasks in NX
  – Create reference set
  – BOM filtering
  – Feature filtering
  – Export as JT
P‘X5 Authoring Workbench

• Enhance Visualization Data
  – Edit Level-of-Detail (LOD)
  – Reduce Scene Graph
  – Define Colors
  – Add Transparency
  – Add Textures
    • Texture Mapping
    • Environment Mapping
P‘X5 Authoring Workbench

- Product Data Integration & Harmonization
- Product Classification
- Rules and Expressions
- Run-time Debugging & Automatic Testing
Perspectix offers

- Visual Product Selling (VPS) which is a proven integration strategy
- P’X5 configuration technology which is predestinated for sales, basic engineering and after-sales services
- XML-based product knowledge base & integration-middleware
- flexible methods for variant & modular product portfolios
- expertise on PLM concepts and PLM-integrated sales engineering solutions
Perspectix

- **Perspectix** optimizes technical sales, basic engineering, and after-sales service of complex, multiple-variant products in four sectors:
  - mechanical engineering
  - plant construction
  - electrical engineering
  - workplace and storage systems

- With the **P‘X5™ Software Suite** Perspectix supports manufacturers in the implementation of rationalizing and differentiating concepts for PLM-integrated sales engineering.

**P‘X5™**
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