

*Solutions for Performance Driven Companies*  
*Microsoft Enterprise Open Solutions*

*ERP Integration Strategies*  
*Approaches for Integrating ERP and PLM*

Aras Community Network  
International Event: Spring 2008

May 07, 2008



## ❖ Peter Schroer, Aras

## ❖ Charly Wachtel, xPLM

- ✓ xPLM has headquarters in Dresden, Germany
- ✓ xPLM are specialists in PLM Integrations to ERP, CAD and MS-Office
- ✓ Charly has worked with multiple PLM & ERP systems
- ✓ Many years of experience at both large and small companies

## ❖ **xPLM Presentation of PLM – ERP Integrations**

- ✓ **Goals and Benefits of Integrating**
- ✓ **Typical Features and Functions**

## ❖ **Discussion of Implementation Strategies**

- ✓ **How to Approach an Integration Project**
- ✓ **Best Practices and Methodologies for Rollout**
- ✓ **Choosing the Best Plan for Your Company**

- ❖ **Do you have a PLM implemented already**
- ❖ **Do you have a PLM-ERP Integration**
  - ✓ **In Production?**
  - ✓ **Planned?**

- ❖ **Bi-directional? Or just push from PLM to ERP?**
- ❖ **Manual or Automated Triggers**
- ❖ **How to do Data Integrity Checking**
- ❖ **What to do about Security and Authentication**
- ❖ **What Data should be Shared / Integrated**
  - ✓ **Documents**
  - ✓ **Items**
  - ✓ **BOMs**
  - ✓ **Change Records**
  - ✓ **Approved Suppliers**
  - ✓ **Mfg Routings**

***Aras Community Spring 2008 Event***  
***ERP & PLM Integration Strategies***

***May 7, 2008***

*Charly Wachtel, xPLM Solution GmbH*

# Mission and Target Markets

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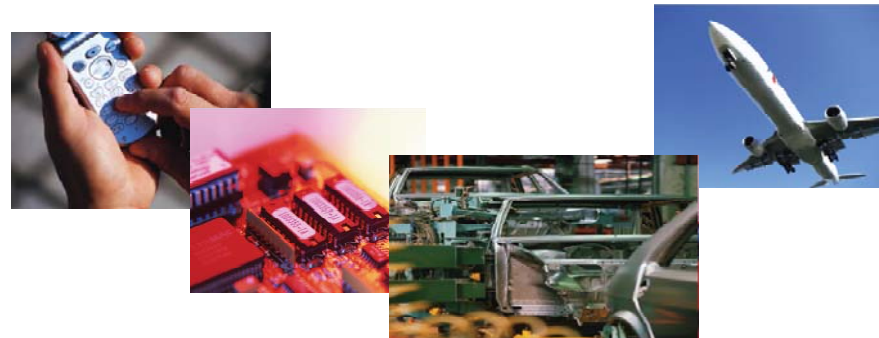
## Mission

- Independent supplier of PLM add-on technology and services
- We provide integration solutions for CAD, PLM, ERP and VR/DMU

## Target Markets

*xPLM Solution focuses on industries with complex engineering processes and companies which require deep integrations between authoring systems and production planning solutions (e.g. CAD, PLM, ERP, . . .).*

- Automotive
- Industrial Manufacturing
- High Tech & Electronic
- Aerospace & Defense



# Partnerships

**xPLM**  
Solution



*J2xPLM Platform v1:  
Powered by SAP  
NetWeaver Certified*



**Siemens PLM  
Software**



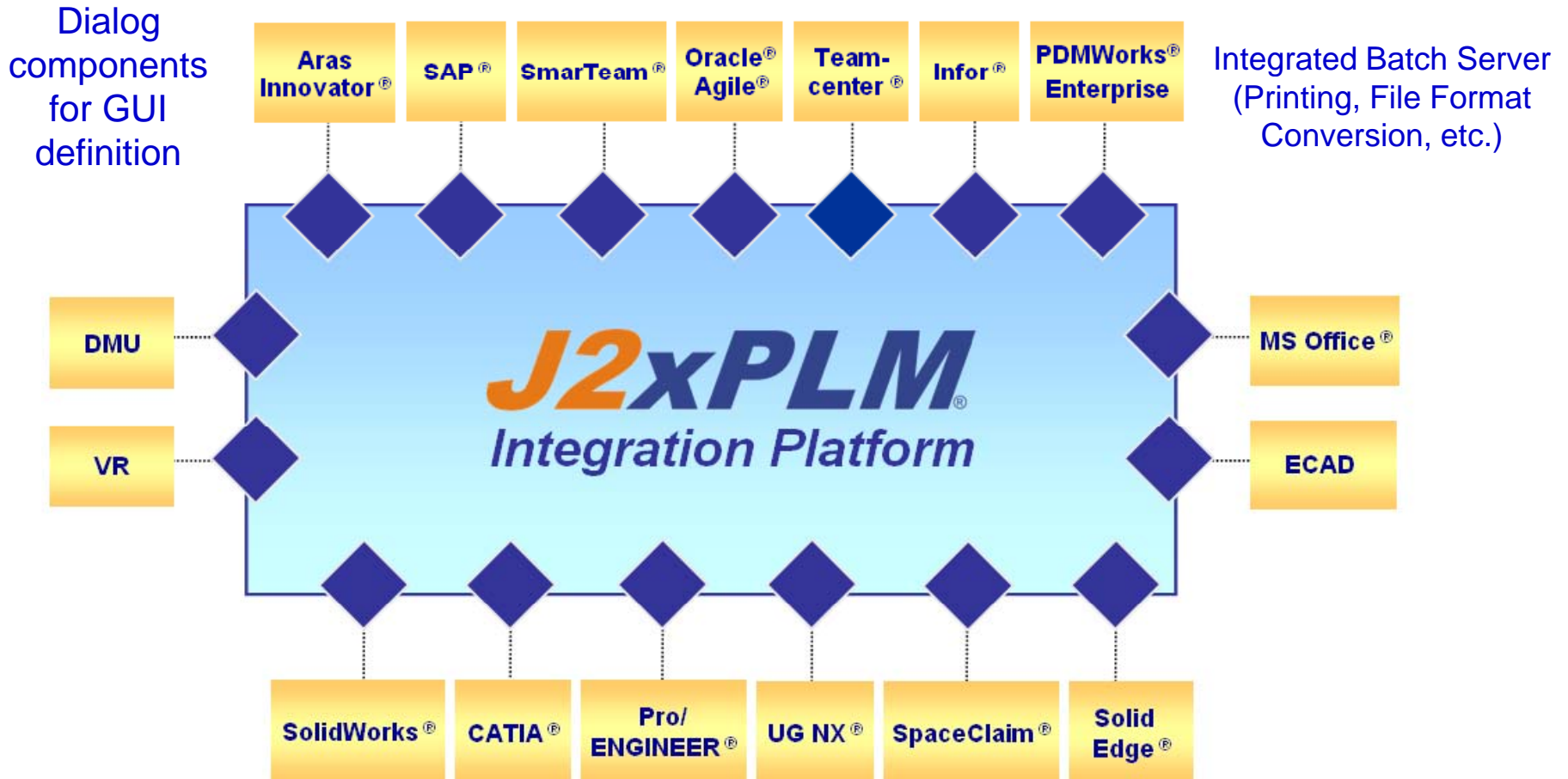
*Our US Presence*

*Siemens PLM Software  
Implementation Partner*

## *J2xPLM* **Integration Platform**

**Generic Architecture for Integration of  
CAD-, PLM-, ERP- , DMU and Office Applications**

# J2xPLM Integration Platform



Script engine for definition of Integration specific processes and workflows. Usage of multiple scripting languages (VB, Python, JavaScript, others).

# Supported Connectors



## PLM / ERP Connectors

mySAP PLM, Infor, Oracle Manufacturing, IFS, Teamcenter Engineering, Agile 9, Agile e5, Pro/INTRALINK, SmarTeam, I-deas TDM, PDMWorks Enterprise, MatrixOne, Aras Innovator

## MCAD Connector

CATIA V5 & V4, UG NX, Pro/Engineer, SolidWorks, Solid Edge, I-deas, Inventor

## ECAD/EDA (partner cooperation)

Firmware Design: Altera, Actel, Intel, Xilinx, LatticeLogic, Motorola, Texas Instruments, Renoir of Mentor Graphics

Cable Harness Logic Design: Logic Cable of Mentor Graphics, ELCAD, Eplan, Ruplan, Promis, ecscad, ProPlan, e3series, Autocad Eelectrical

EDA Logic Capture : Altium, Bartels, Cadence Design Systems, Mentor Graphics, OrCAD (Cadence), Pads (Mentor), Veribest, Zuken Redac

EDA-PCB Layout: Altium, Bartels, Cadence Design Systems, Integra, Mentor Graphics, Pads (Mentor Graphics), Zuken Redac

Software Design: Clearcase, PVCS, SCCS, RCS

## Other Connectors

MS Office, VR / DMU

# J2xPLM Integration Platform

## Out of the Box Functionality (Extract)

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### Deep Integration with PLM Objects

- Documents, Files, Materials and Bill of Materials
- Change and Release Management Integration
- Bidirectional exchange of properties

### CAD Configuration Management

- Management of all relevant CAD Files, objects (Part, Assembly, Drawing, etc.) references and configurations
- Versioning and copying without naming conflicts
- Team Collaboration without concurrent conflicts
- Save preview and “Concurrent Check” before final saving

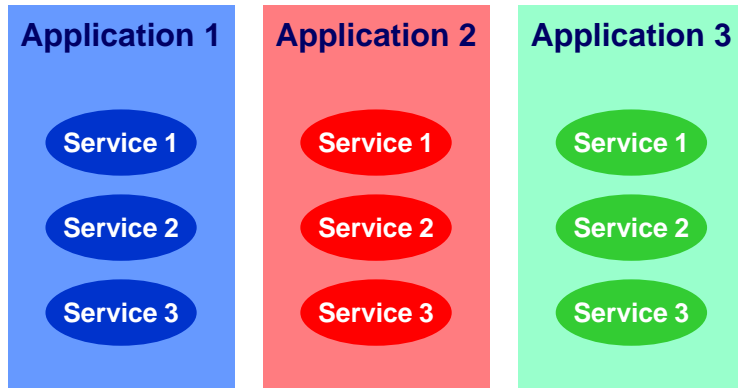
# J2xPLM Integration Platform

## Business Process Integration (1)



### Business Process Integration

Applications, Composed Services, Business Logic, UI



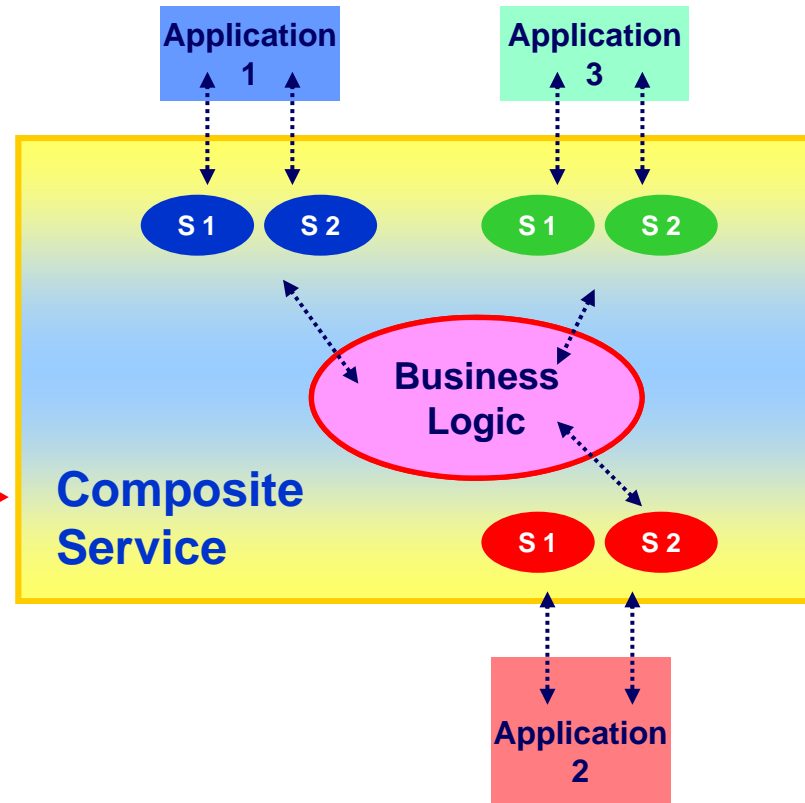
#### Technical Services

Business Components

User Interaction

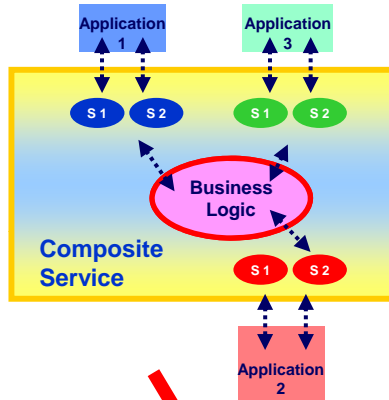
Supported Services

Web Service, Client/Server, XML File (SOAP), etc.

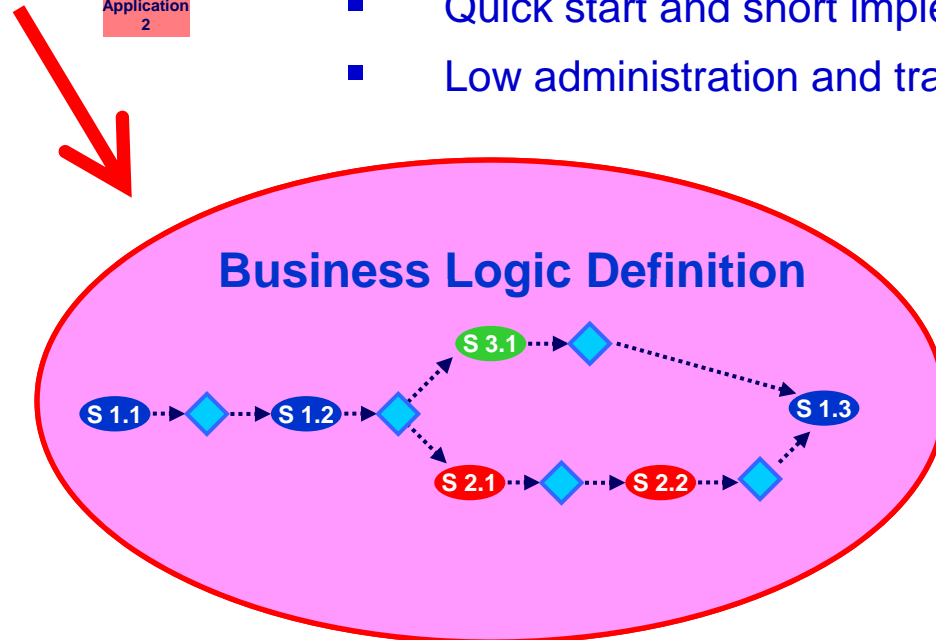


# J2xPLM Integration Platform

## Efficient Customization Opportunities



- Easy to use tools to customize workflows and processes
- J2xPLM can integrate multiple ERP and PLM sites
- User interface and functionality can be modified for specific users
- Solution can be enhanced for specific customers by integrating any existing or newly developed BAPI Function
- Only one tool and one vendor even if multiple CAD or PLM systems need to be integrated.
- Quick start and short implementation time.
- Low administration and training efforts.



- Batch service supports viewable file generation, file conversion and data exchange operations
- PLM Centric user dialogs and workflows deliver high user acceptance!

# J2xPLM Integration Platform Advantages (continued)

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Integrations can be deployed in direct mode using Client/Server or an indirect mode using a Web Application Server!

CAD Centric user dialogs deliver higher user acceptance!

Save preview and concurrent checks allow user interaction prior to final saves. Important features such as versioning and copying of structures are performed within the CAD system.

Increased configurability delivers customer specific integration without the high Cost of customized development – yielding Lower Cost of Ownership

# J2xPLM Integration Platform CAD Integrations



The screenshot displays the SolidWorks 2006 CAD environment integrated with SAP. The main window shows a 3D model of a stapler assembly. A 'Save Preview' dialog box is open, showing a table of document details. The table includes columns for file name, document ID, document type, status, change number, and processor. A context menu is visible over the table, offering options like 'Copy to new Document', 'Copy to new Revision', and 'Create Change Number'.

file	Document	Doc...	Doc...	Doc...	Status	Change Number	Processor
ujoint_1000005333_DRW_000_01.SL...	1000005333	DRW	000	01	IA	50000000094	wachtel
bracket_1000005324_DRW_000_01.S...	1000005324	DRW	000	01	IA	50000000094	mueller
yoke_female_1000005325_DRW_000...	1000005325	DRW	000	01	IA	50000000094	mueller
yoke_male_1000005326_DRW_000_0...	1000005326	DRW	000	01	IA	50000000094	wachtel
slider_1000005327_DRW_000_01.SL...	1000005327					50000000094	wachtel
joint_pin2_1000005328_DRW_000_...	1000005328					50000000094	mueller
joint_pin1_1000005329_DRW_000_...	1000005329					50000000094	mueller
rank-shaft_1000005330_DRW_000_0...	1000005330					50000000094	mueller
rank-arm_1000005331_DRW_000_01...	1000005331					50000000094	mueller
rank-knob_1000005332_DRW_000_...	1000005332					50000000094	mueller

# What is the basic motivation for a PLM – ERP Integration?

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**A good integration between PLM solutions and ERP is a prerequisite to**

- Support effective and efficient engineering processes
- Access to the right design data and related manufacturing and supply chain data
- Improve Data and Process Quality
- Drive increased innovation

**No longer can designers and engineers work separate and apart from the rest of the enterprise**

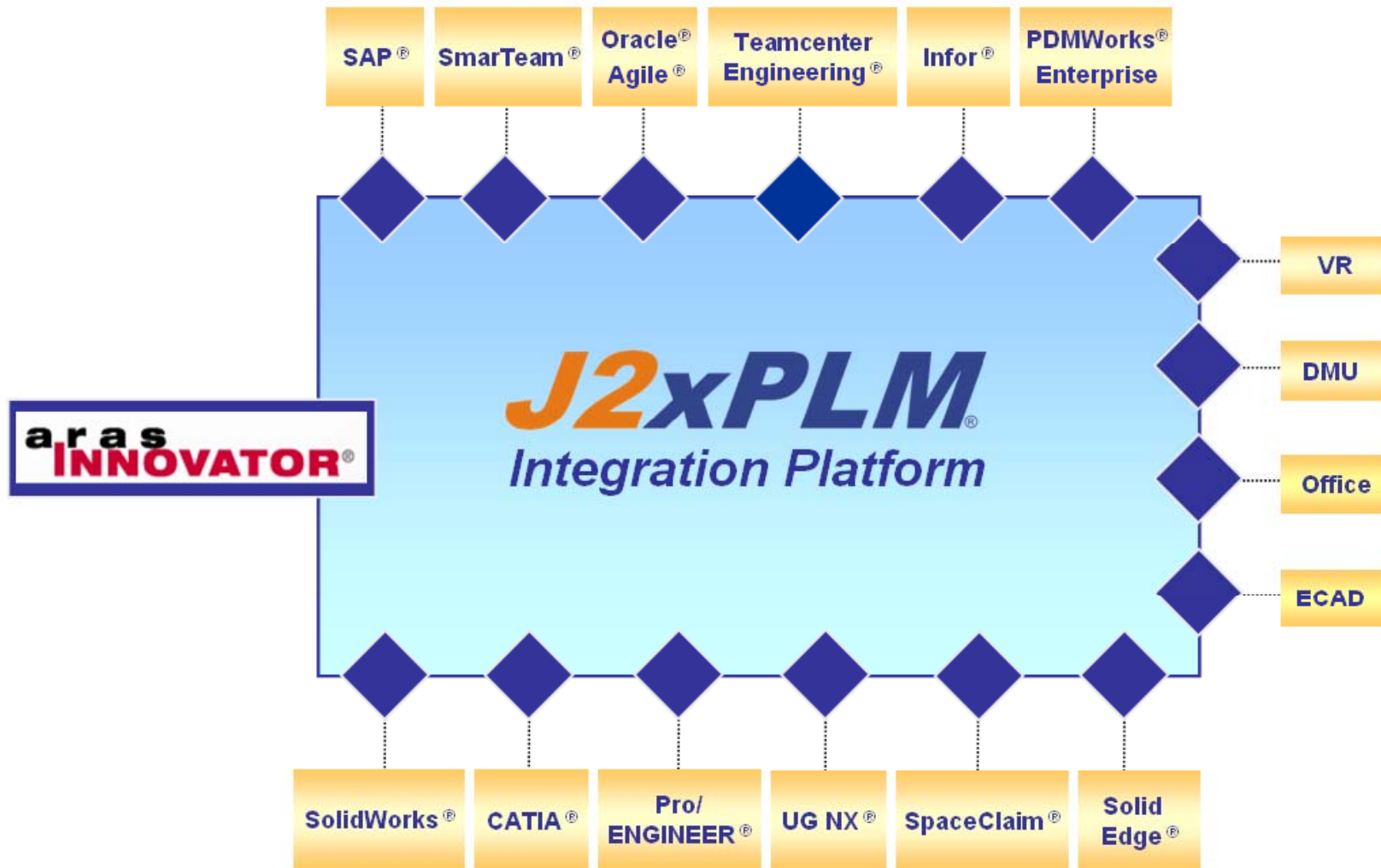
# How does a good PLM – ERP Integration look like?



## Good integrations between PLM solutions and ERP should

- Integrate data and structures of both PLM and ERP
- Offer PLM users an effective and intuitive integration with their ERP system and should be easy to use
- Provide the ability for bi-directional exchange of documents, files, BOMs, parts (material masters), classification, item status and more
- Could perform all integration activities via user interaction or automatically triggered by any process event
- Use standards and state-of-the-art APIs of the ERP systems wherever possible
- Have an extensible architecture which allows to provide additional connectors
- Provide connectivity with multiple data sources
- Provide an alternative to more expensive off-the-shelf EAI tools
- Have robust customization capabilities yielding lower support and maintenance costs.

# Aras Innovator Integrations with the J2xPLM Integration Platform



# Aras Innovator ERP Integration User Interface (Example)

The screenshot displays the Aras Innovator web application interface. At the top, the 'aras INNOVATOR' logo is visible. Below it is a menu bar with 'File', 'Edit', 'View', 'Search', 'Actions', 'Reports', 'Tools', and 'Help'. A toolbar with various icons follows. The main content area is titled 'Document - xPLM00002 - Windows Internet Explorer'. It features a secondary menu bar and toolbar. The document details are organized into several sections:

- Document Information:** Document Number (xPLM00002), Revision (A), State (Preliminary), Assigned Creator (Chris Xplm), Designated User (Chris Xplm), Effective Date (03/05/2008 10:52:55 AM).
- Metadata:** Name (Dual Speaker (Mountable)), Type (CAD Model), Authoring Tool (SolidWorks), Version (2007).
- History:** Created By: Chris Xplm, Created On: 03/05/2008; Modified By: Chris Xplm, Modified On: 03/05/2008; Locked By: Chris Xplm, Generation: 1; Release Date: (empty).
- Description:** Assembly of dual speaker.
- Buttons:** 'Load To CAD' and 'Return To CAD'.
- SAP Integration:** A table at the bottom maps document properties to SAP fields.

SAP Docnumber	SAP Doc Ver.	SAP Documenttype	SAP Documentpart	SAP Material
000100979	00	ASM		

SAP Document Properties within Innovator Form

# What are the features of the Aras Innovator – ERP Integration?

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## User Interface Integration in Aras Innovator

- Toolbar, System Menu, Context Menu, Forms

## Workflow Integration (Triggered by any Aras Innovator event)

- Status Transition, Checkin/out, and Other Customer Defined Events

## Integration Functionality – Documents Update

- Bidirectional Exchange of Metadata and Classification
- Document Structures
- Document Status Network (Release Levels)
- File Checkin/out (Including Conversion to Neutral File Format)
- Integration of MS-Office and PDF documents

## Integration Functionality – BOM/ Material/Items Update

- Bidirectional Exchange of Metadata and Classification
- Support for Aras Innovator Configurations
- Linking to Documents
- Production and Order BOM Support

## Customization Capabilities

- COM Automation Support (VBA Script, Java Script, C#), XML Engine

# Aras Innovator ERP Integration Use Case (Example)

The screenshot displays the Aras Innovator application window. A dialog box titled "Updating Documents..." is open, showing a list of files being uploaded to SAP ERP. The list includes various CAD files like SLDprt and SLDasm, all with a status of "successful". Below the list is a progress bar and a "Cancel" button.

In the background, the SAP ERP interface is visible, showing a "Product Structure" window. The window title is "Product Structure: Validity date 06.07.2007". It displays a hierarchical tree structure of materials and documents. The root node is "DRW 10000009549 000 00", which is a "Bill of Material". Underneath, there are "Items" listed with their respective materials and documents.

Product Structure	Short Text
DRW 10000009549 000 00	NeuKompressor.SLDASM
Bill of Material	
DRW 10000009549 000 00	NeuKompressor.SLDASM
Items	
0010 D DRW 10000009549 000 00	zylinderkopf.SLDprt
0020 D DRW 10000009549 000 00	deckel.SLDprt
0030 D DRW 10000009549 000 00	Kurbeltrieb.SLDasm
0040 D DRW 10000009549 000 00	ISO 4018 - M8 x 30-NN.SLDprt
0050 D DRW 10000009549 000 00	ISO 4018 - M8 x 25-NN.SLDprt
0060 D DRW 10000009549 000 00	Gehaeuse.SLDprt
0070 D DRW 10000009549 000 00	DIN 625 - 6306 - 10,DE,NC,10_68.s
Document	

Aras Innovator parts, Bills of Materials and related documents can easily be uploaded to SAP ERP.

Within your SAP ERP system, uploaded items are automatically created such as material masters, BOMs and associated (linked) documents.

**Questions and answers!**  
**Thank You Very Much For Your Time!**

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**xPLM**  
**Solution**

CAD, PLM, ERP, DMU Integrations  
PLM Management Consulting Services  
PLM Implementation Consulting Services  
PLM Implementations  
Client Specific Support for PLM  
PLM Training Courses

- ❖ **Phase Rollout or Big-Bang?**
- ❖ **Which data elements should be done first?**
- ❖ **What to do about Data Ownership Issues (department politics)**
- ❖ **Real-time versus Batch-oriented Approach**
- ❖ **Integration Project Planning**