

# **BEDIFFERENT**

ACE 2012 INTERNATIONAL



# Integration Basics

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# Agenda



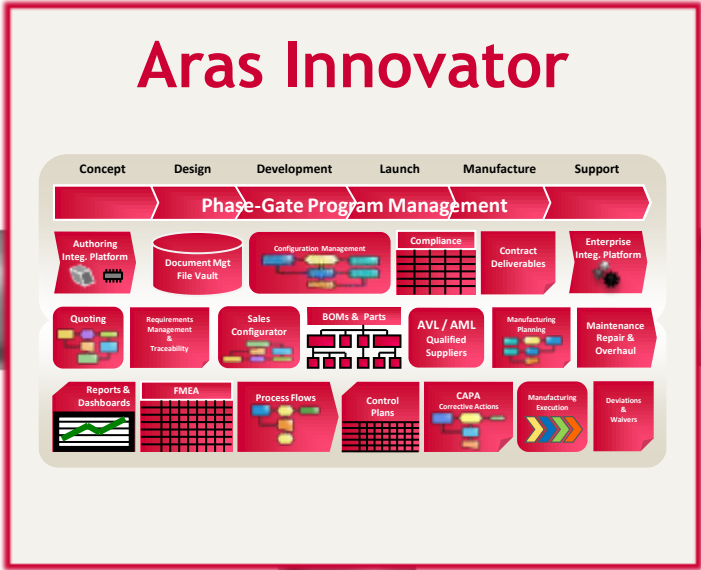
- ▶ **Integration Landscape**
- ▶ **Packaged Integration Offerings**
- ▶ **Aras Integration Platform Capabilities**
- ▶ **Aras Integration Technologies**
- ▶ **Example Integration Scenario**
- ▶ **Where to go for Help**

# Integration Landscape



## Authoring Systems

- MCAD: CATIA, PTC, Autodesk Inventor
- EDA: cadence, SolidWorks
- Electrical Software: Mentor Graphics, SIEMENS, Altium
- Firmware: PERFORCE SOFTWARE
- MS-Office: Microsoft Office
- Desktop Publishing: FM
- Graphic Design: Ai
- Simulation: ANSYS
- CAM: Mastercam, MSC Software
- CAPP: CIMx
- Digital Factory: SIEMENS
- Ideation: BRICHTIDEA
- Requirements Mgt.: Rational



## Enterprise Systems

- ERP
- CRM
- SAP
- ORACLE
- Microsoft Dynamics
- JDE EDWARDS
- INFOR
- Legacy ERP Systems
- salesforce.com

PLM / PDM

Sales Configurator

Collaboration

Costing

Compliance

**PLM Legacy / Point Solution**

# Packaged Integration Offerings



## ▶ Many packaged integrations are available for Aras:

- MCAD
- EDA
- Electrical
- Software
- Firmware
- ERP Systems
- Microsoft Office
- Other PLM / PDM Systems
- SharePoint & Other Collaboration Systems

# CAD Connector Suite



## MCAD Connectors

### ▶ Dassault Systèmes

- CATIA V5 / V4
- SolidWorks

### ▶ Siemens PLM Software

- NX
- Solid Edge

### ▶ PTC

- Pro/ENGINEER
- CoCreate

### ▶ Autodesk

- Inventor
- AutoCAD

## EDA Connectors

### ▶ Mentor Graphics

- DxDesigner / DxDataBook
- PADS PCB

### ▶ Cadence

- Allegro
- OrCAD

### ▶ Altium

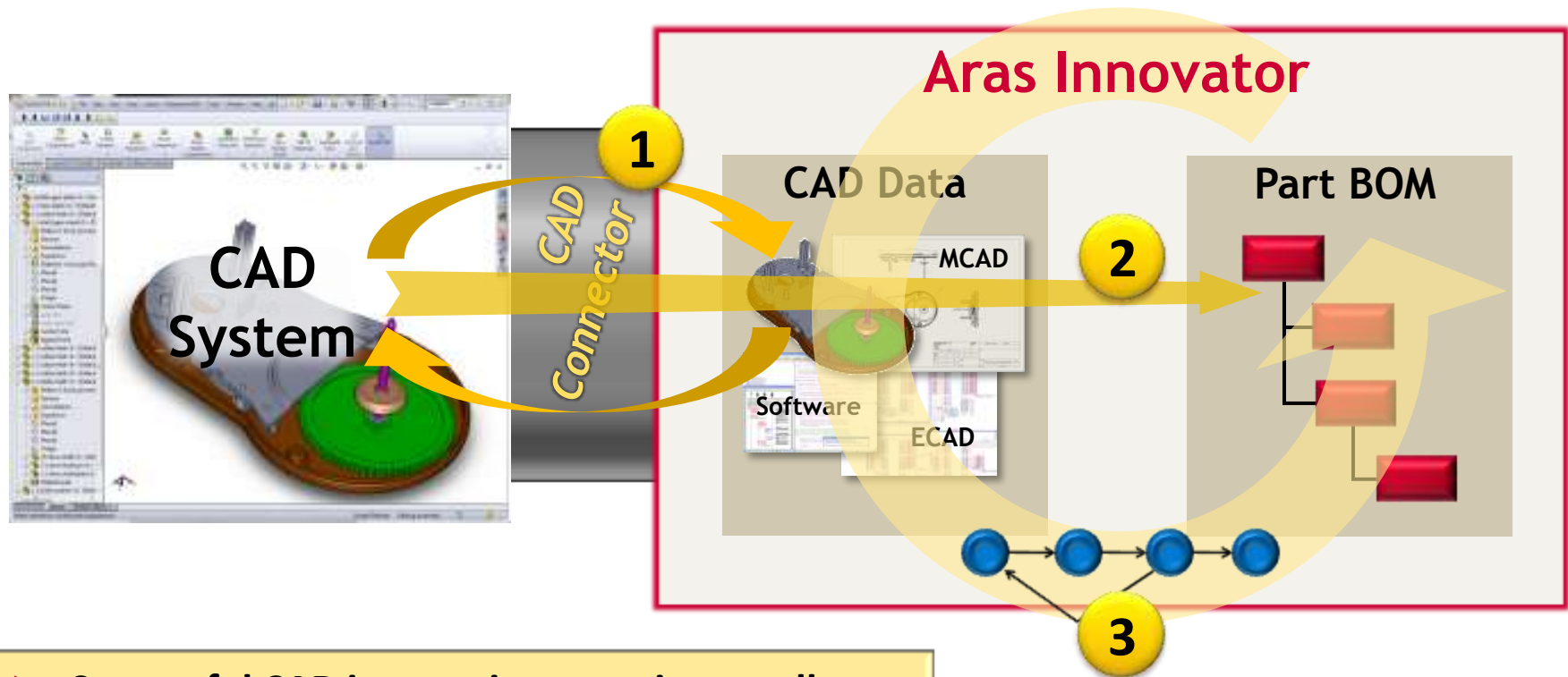
- Designer
- Protel Capture

### ▶ Zuken

- CADSTAR
- CR5000/3000

*prepackaged CAD connectors are 3<sup>rd</sup> party add-ons; additional connectors also available*

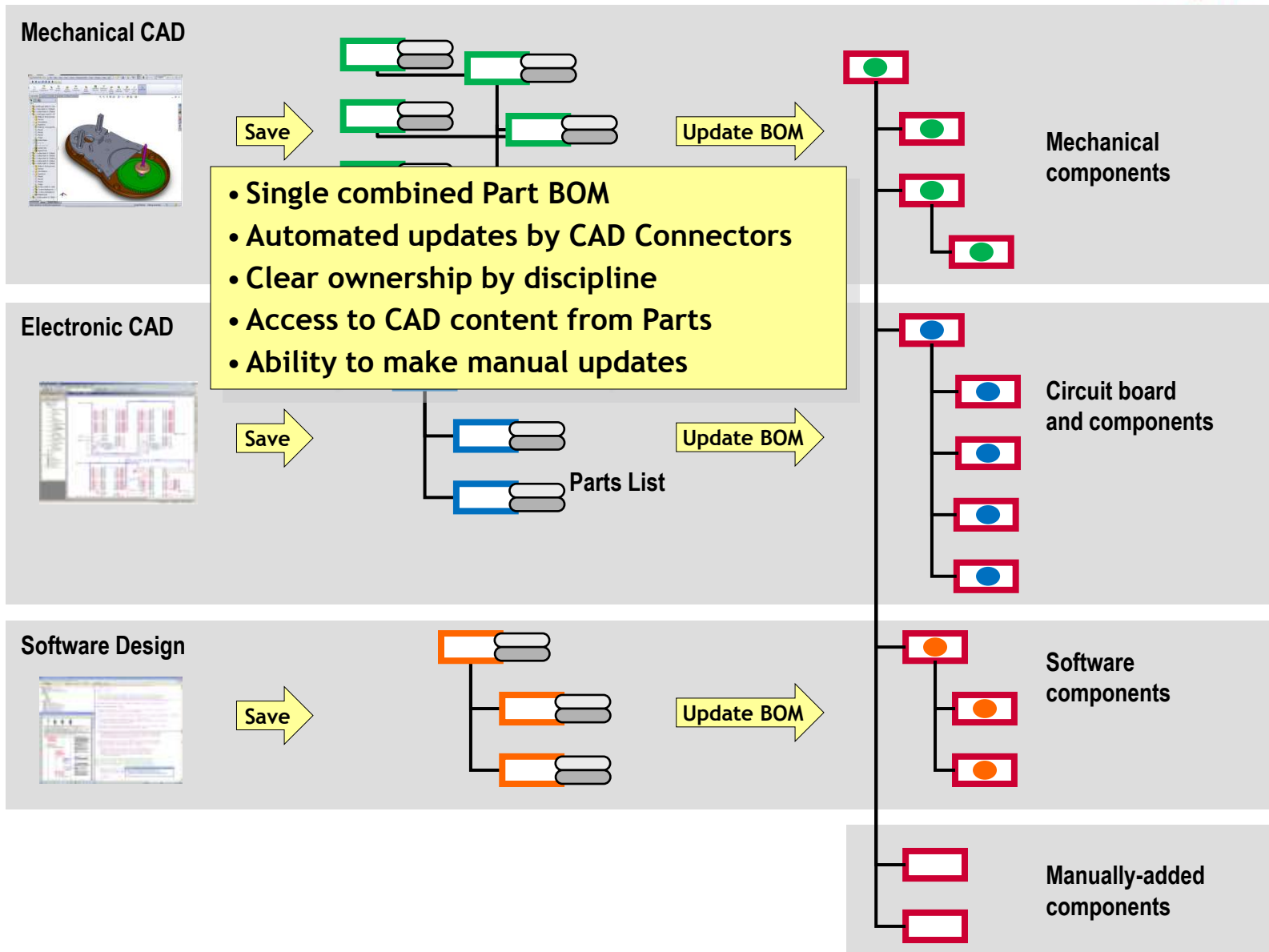
# Example: CAD Integration



- ▶ Successful CAD integrations require a well-defined integration platform
- ▶ Aras is actively enhancing these core features and working with partners to promote best practices

- 1 CAD data managed in Aras
- 2 Automated Part BOM updates from CAD
- 3 Enterprise change management with CAD data visibility

# Example: Process Best Practices





# Aras Integration Platform Capabilities



- ▶ **Aras provides additional capabilities to address the needs of common integrations**
  - Based on input from customers and partners
- ▶ **Event model**
  - The Aras Event model provides great flexibility for controlling integration behaviors, for example:
    - On promotion to Released state → send Part to ERP
    - OnAfterVersion → go update viewable in other system
- ▶ **Data structures**
  - Standard **CAD Document** data model
- ▶ **Special APIs**
  - *CheckoutManager* for bulk file download
- ▶ **Process best practices**
  - CAD change process

▶ **We will be reviewing the following technologies:**

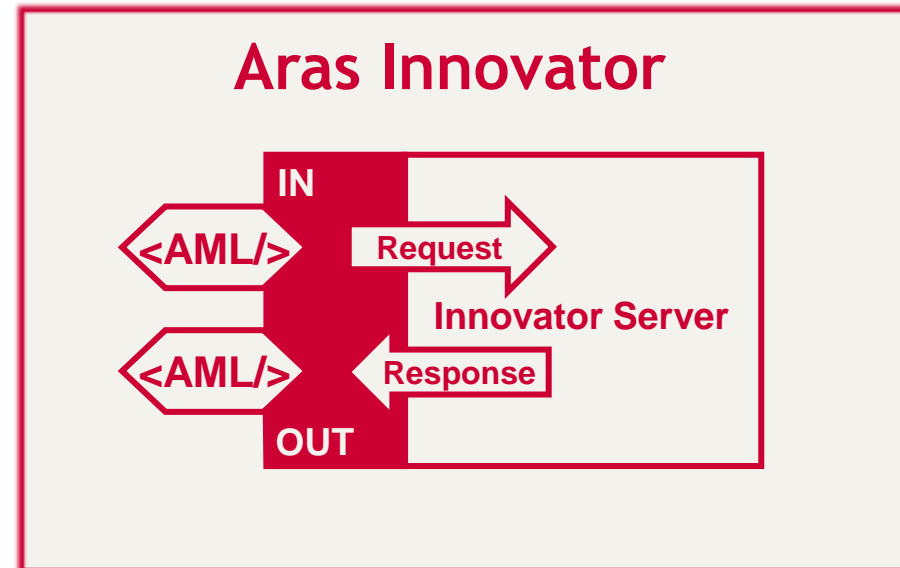
1. Flat File Integration
2. AML-lite Integration
3. WSDL Integration
4. EAI/ESB Integration
5. IOM API Integration
6. Federation Integration

▶ **These are roughly in order of capability and effort to implement**



# It's Always AML...

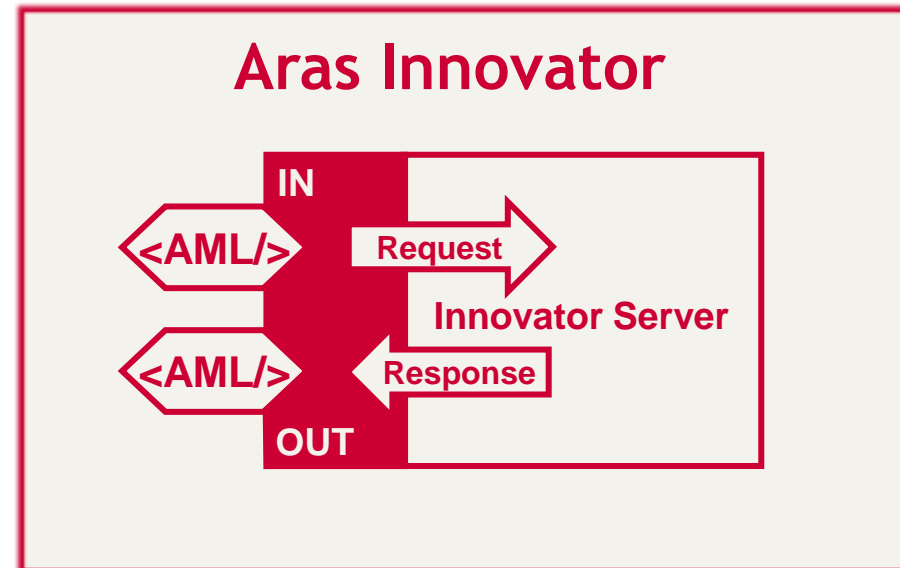
- ▶ Every integration method is fundamentally AML input and output behind the scenes



# It's Always AML...



- ▶ Every integration method is fundamentally AML input and output behind the scenes



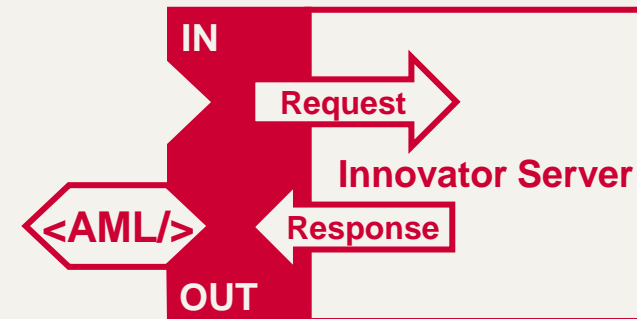
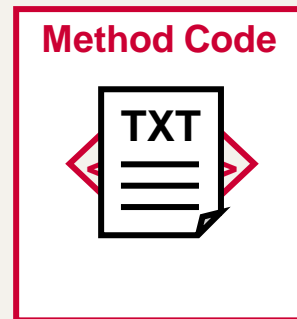
# Flat File Integration

- ▶ Use method code in Innovator to convert flat file to AML, or vice versa
- ▶ Can be client or server side

Other System



Aras Innovator



Flat File

AML-lite

WSDL

EAI/ESB

IOM API

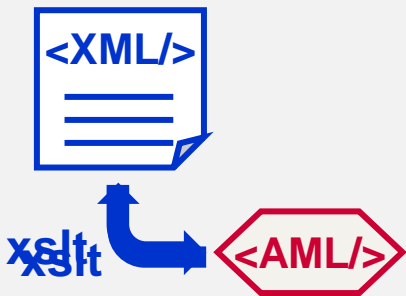
Federation

# AML-lite Integration

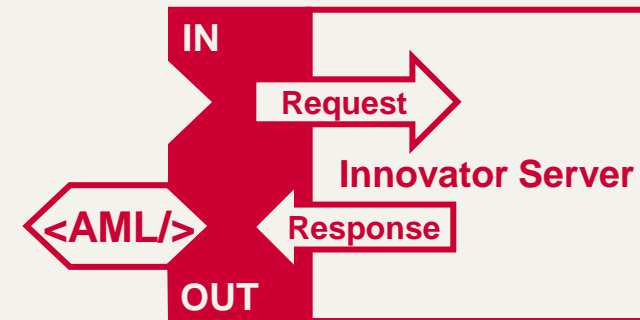


- ▶ If the system can produce or consume XML, then transform it to AML using xslt, and communicate directly with the Innovator server

## Other System



## Aras Innovator



Flat File

**AML-lite**

WSDL

EAI/ESB

IOM API

Federation

# WSDL Integration

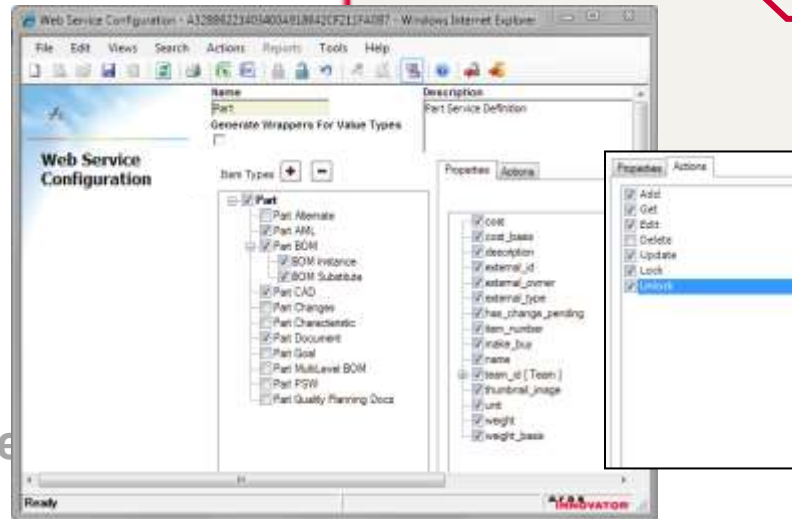
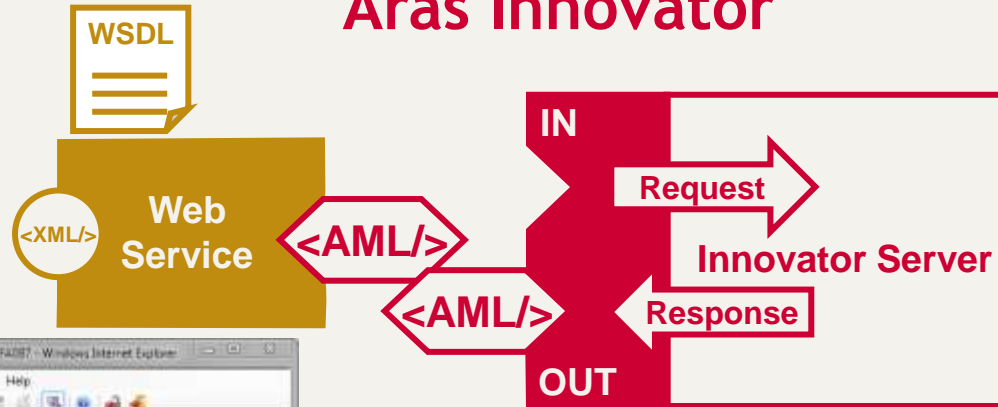


- ▶ You can create web services for Aras items and expose through WSDL
- ▶ Specific item properties and actions must be defined, and remain static

## Other System

Integration Code 

## Aras Innovator



Flat File

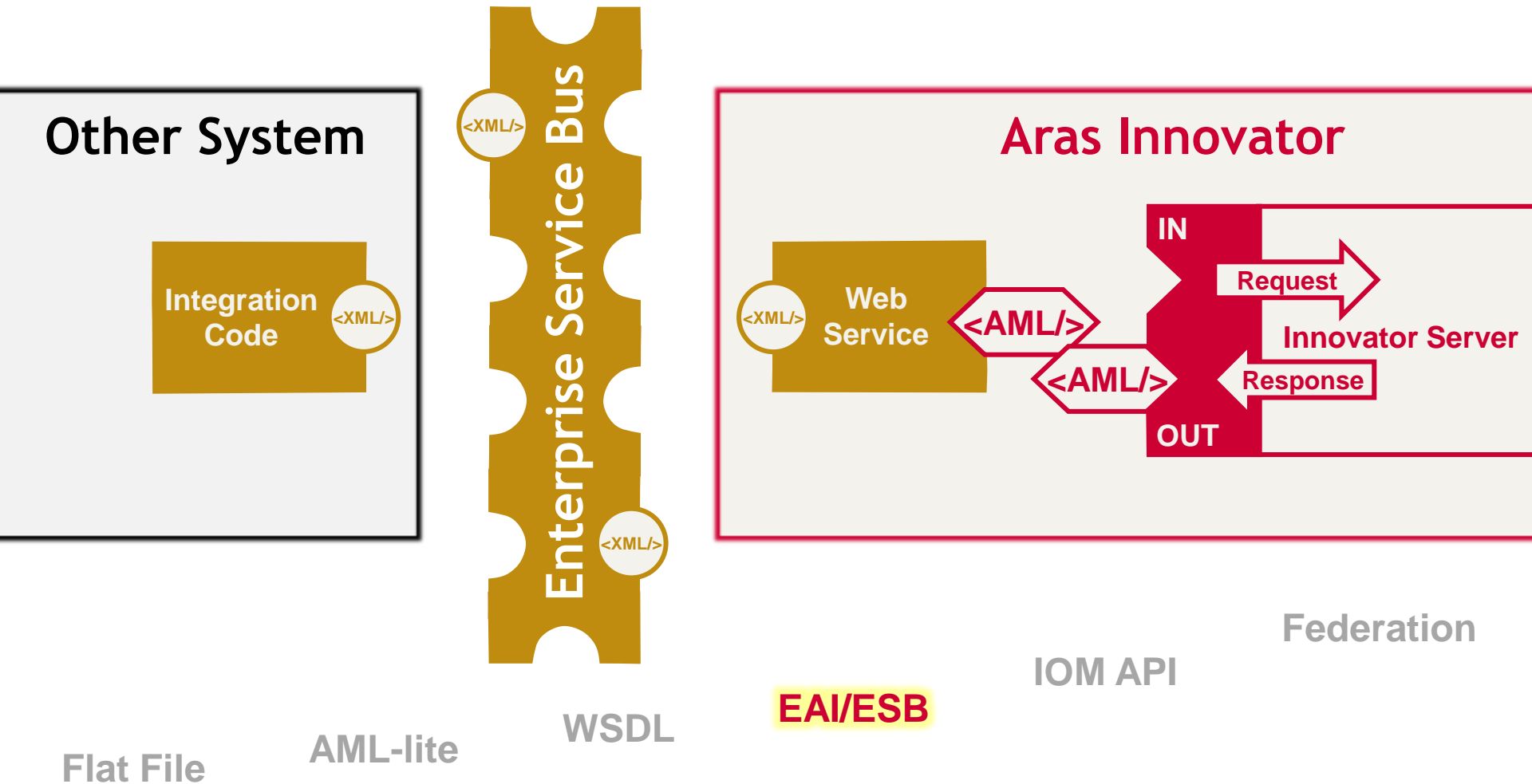
AML-lite

API

Federation

# EAI/ESB Integration

- ▶ You can create web services for Aras items and expose through WSDL
- ▶ Specific item properties and actions must be defined, and remain static

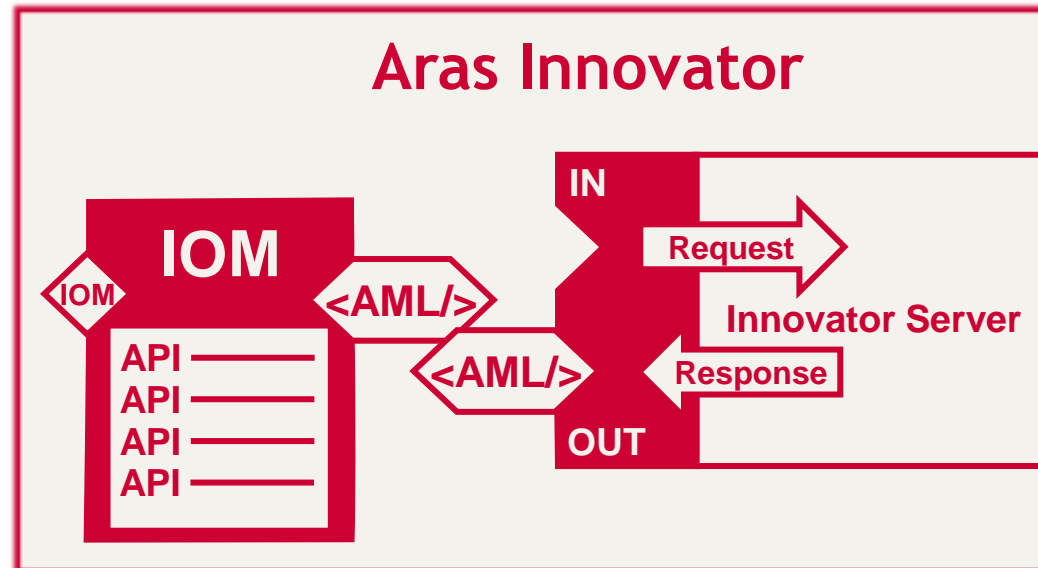
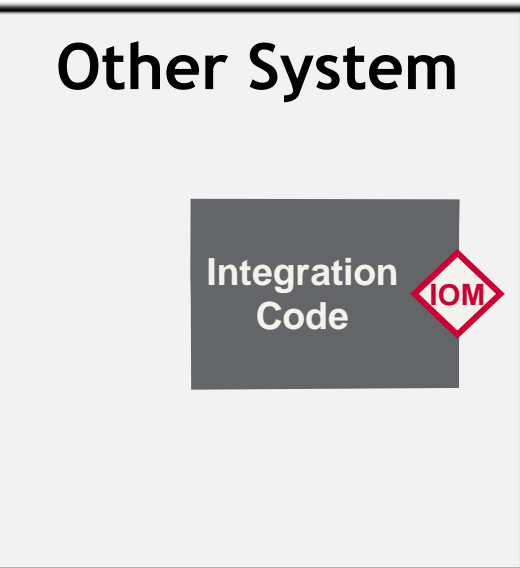




# IOM API Integration



- ▶ IOM is the Aras Innovator API
- ▶ It has full access to all item types, plus special platform calls like CheckoutManager, plus convenience functions



Flat File

AML-lite

WSDL

EAI/ESB

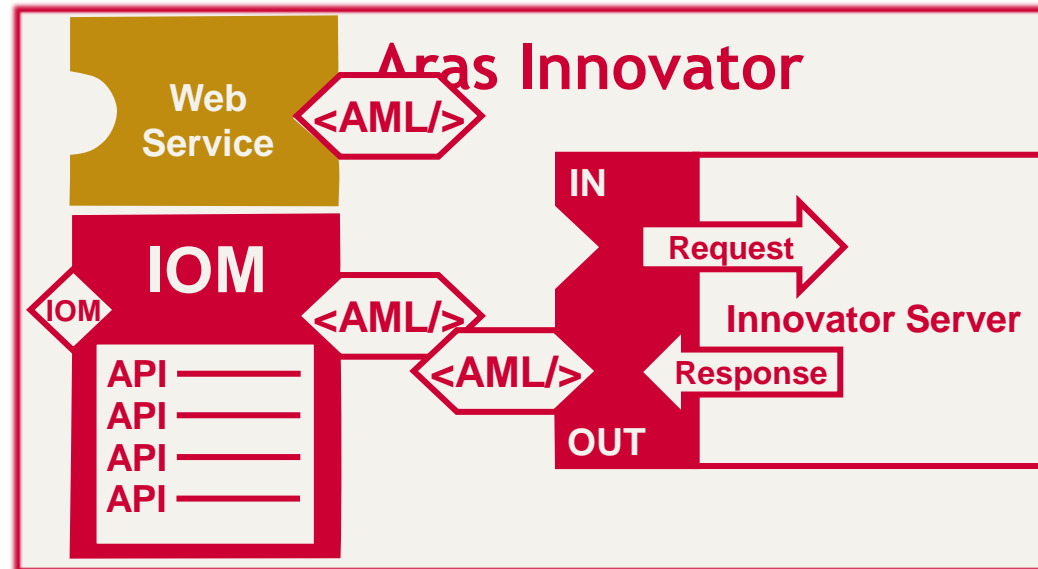
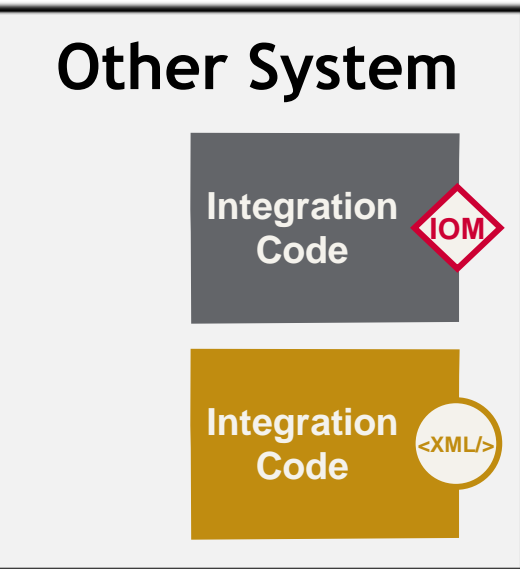
**IOM API**

Federation

# Federation Integration



- ▶ You can use multiple interface types (WSDL, IOM)
- ▶ It has full access to all item types, plus special platform calls like CheckoutManager, plus convenience functions
- ▶ Allows for real-time data exchange



Flat File

AML-lite

WSDL

EAI/ESB

IOM API

**Federation**

# Federation



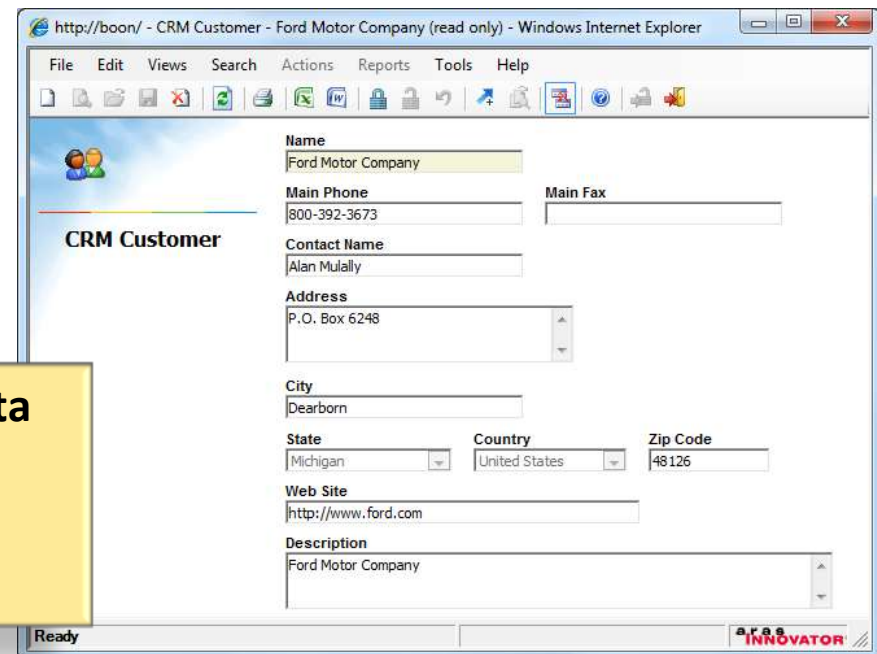
## ▶ Federated properties

- Display important values from other systems inside Innovator



## ▶ Federated ItemTypes

- Entire item is stored in another system, but acts just like a native Innovator



- ▶ Search, display and update external data
- ▶ Single, consistent user interface
- ▶ Expose data stored in legacy systems

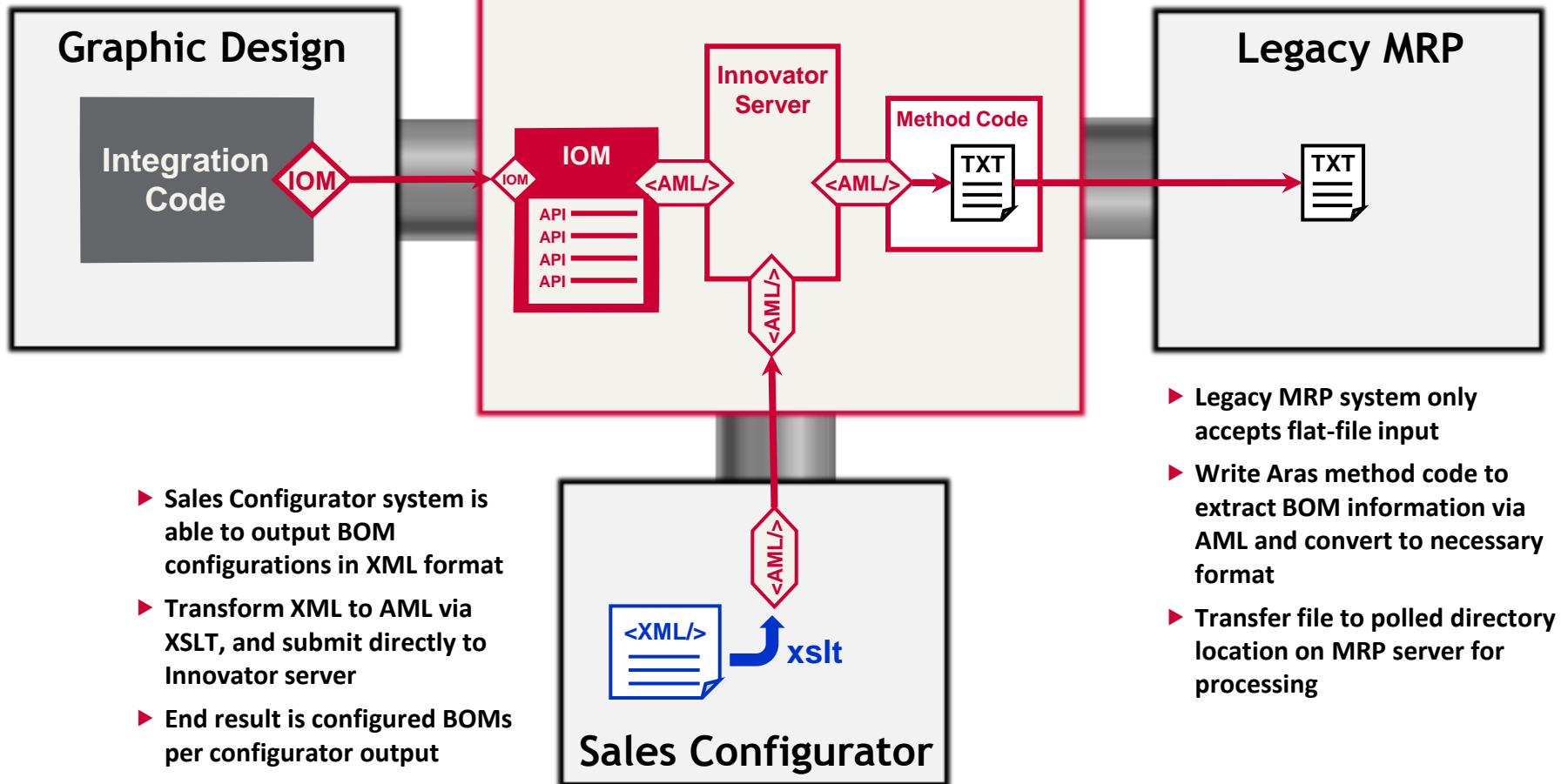
# Summary of Technologies



- ▶ **Use the Flat File approach only if the other system is limited to that**
- ▶ **Both the AML-lite and IOM API approaches allow for any Innovator operation to be accomplished**
- ▶ **The IOM API approach provides most if not all of the functionality of a standard web service. However, it does not provide a discoverable web service in the traditional sense – there is no WSDL.**
- ▶ **For a more traditional web services integration, use either the WSDL or EAI/ESB approaches**

# Example Integration Scenario

- ▶ Build API to API integration between graphic design system and IOM
- ▶ Create functions to create Document items, transfer files, and trigger PDF generation



- ▶ Sales Configurator system is able to output BOM configurations in XML format
- ▶ Transform XML to AML via XSLT, and submit directly to Innovator server
- ▶ End result is configured BOMs per configurator output

- ▶ Legacy MRP system only accepts flat-file input
- ▶ Write Aras method code to extract BOM information via AML and convert to necessary format
- ▶ Transfer file to polled directory location on MRP server for processing

# Where to go for help



## ▶ Aras Technology page

- <http://www.aras.com/technology/integration-federation.aspx>

## ▶ Aras Partner pages

- <http://www.aras.com/partners/>

## ▶ Aras Community Forums

- <http://www.aras.com/community/forums/>

## ▶ ‘Developing Solutions’ Training

- <http://www.aras.com/university/training-classes.aspx>

## ▶ Programmer’s Guide

## ▶ API Reference



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# Questions?

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