aras community event

2010 International Conference

Federation Workshop

Peter Schroer

www.aras.com

Hosted by:

MOTOROLA

1295 E. Algonquin Road
Schaumburg, IL 60196

Welcome

Workshop Goals

- Understanding of why use Federation
- Enough Knowledge of the Aras Federation Approach to Plan a Project

Agenda

1. Build a working definition for Federation
   - Understand Federation vs. Integration
2. Discuss Federation Approach Alternatives
3. Aras Innovator Federation
4. Federation Modes
5. Discuss Pseudo-Code Examples
6. Federation Data Access Techniques
7. Additional Resources

Definition

- PLM is never standalone: ERP, corporate document management systems, manufacturing and quality software, etc.
- Replicating data between systems is a common approach, but synchronization of edits between systems is complicated and risky

- Federation
  - ✓ Creating a pointer within PLM to data objects stored in the other business systems

Federation vs. Integration

- We use Federation when we want to see (and manage) the objects in the other system, through the Aras user interface, and use those objects in Aras workflow and configurations
- Integration (e.g. CAD integration) is a technique for moving data from one system to another, usually triggered by user action of lifecycle transitions
- Integration is often batch oriented
- Federation is about real-time accessing and aggregating of data from multiple sources

Definition (continued)

- Federation creates a wrapper around data objects from remote systems, and then extends their definition with PLM functionality
- We aggregate data from many sources in this way in order to:
  - Present the aggregated data in a single window for the user, e.g. a Mash-Up
  - Execute business rules, BI dashboards, or Reports against the consolidated data set
  - Add advanced PLM capabilities such as BPM workflow or Secure web interface to legacy systems

Done well, the end-user is not aware of the sources of data

Scenarios

- Corporate doc management system
  - Documents checked in to the PLM system are transferred directly to a corporate document archiving solution
  - Searching and viewing documents is performed within the PLM interface, directly accessing remotely stored data.
- Cost and inventory on hand fields in ERP displayed on the PLM Part form
  - Material cost may be maintained in the ERP system, but is useful information to engineers using PLM
  - The PLM part form contains data from both PLM and a real-time ERP query

Federation Approaches

Client Based Federation

- The PLM client application initiates 2 queries, one to each system: the PLM server and the 3rd party server. The data is merged on the client
- Aras client is HTML / JS and developers can use AJAX to easily make calls from a Form to 3rd party servers
- Technique has limited usefulness beyond merged data onto a form for an aggregated view

Federation Approaches

Server Based Federation

- Data exchange with the other system is executed on the PLM server
- The PLM client is sent a single data set, and is not aware that core business objects have been modified with remote properties, or that the data objects are not native
- Advantage because integration of remote data objects is encapsulated on the server, eliminating client customizing
- Additional advantage that server-side business rules such as Permissions, LifeCycle, and Workflow logic can act on the 3rd party data objects

Aras Innovator Federation

- Aras Client expects AML to be returned on every transaction - this is key to the simplicity of Federation
- No customizations normally on the client
  - As long as AML is returned, the client is happy to work with any data it receives
  - Exception is file check-in handling (** discussed later)
- Use standard Server Events to add the Federation logic
  - OnAfterGet to merge federated properties
  - OnGet to return 100% federated items

Simple Exercise

- Create an ItemType named Test with 1 Property
- Add a Server Event OnGet for a Method that creates and returns an XML string

  <Item type='Test' id='1234'><name>Hello</name></Item>

- Select this item on the TOC
- Grid will populate with the 'fake' data

- NOTES:
  - Had to create an ID for each row

Federation Modes

1. Federate either a complete ItemType or a subset of Properties on a standard managed ItemType

2. Federation Models
   - View only of data from the other system
   - Use remote objects in configurations and workflows
   - Full access: OnGet, OnAdd, OnDelete

Pseudo Code for View

- Assume “MyFederation” OnGet event - VB Method
- Assume entire ItemType has been Federated
- Properties for the remote object, TOC Access, Form Views are defined in Aras Innovator
- 2 Modes:
  1. Simple Searching and Viewing
  2. Use Federated Item in Relationships or as Item Properties

  For example: Part to Document Relationship with a set of Federated Documents

Pseudo Code for View #1

- User query parameters from the Simple Search grid row are Properties on the Me object
- Check if this is a Get for one record or a set. **How?**
- Build the query for the remote system, passing the query parameters from the client
- Run the query code (** discussed next)
- Create an AML string from the query result
- Add a dummy ID for each row
- Return AML

QUIZ: Is there an ItemType table for this item?

Pseudo-Code for View #2

Federated Items will be used as Item Properties, or either the Source or Related in a Relationship

- ✓ ItemType is not flagged as Federated this time because we do want an Aras Innovator table

QUIZ - What properties must this table store?

Pseudo-Code for View #2

3 properties are required to maintain configurations

- ID
- Federated-ID
- Keyed-Name

Solution: in the OnGet method we add a function to register the data objects found via user queries, assigning a new Aras Innovator ID to each

I use a small stored procedure to execute this efficiently

Integration Techniques

- Web Services
  - Building an ASPX page as a wrapper
  - Using Visual Studio to make a Proxy
  - XMLHTTP object
- ODBC
- Commercial API from other system

QUIZ

How to register a DLL (either API or VS Proxy) so that you can use the DLL directly in methods ?

Other Design Considerations

- File check-in to a Federated source
  - After check-in move file from Aras vault to remote vault
  - Aras client does direct file upload

- Actions for Add, Update and Delete are possible
  - More important to consider permissions and access

More Resources

- Federation test package
  - Innovator - to – Innovator federation used for testing of the Server Events.
- Aras Wiki articles