Case Study: Leveraging Industry Standards for Enterprise Information Management, supporting Semantic Integration on Smart Grid projects at Long Island Power Authority (LIPA)

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Overview

• Real-life Case Study of how LIPA are implementing Semantic Integration in their Smart Grid Program.

• Our Story:
  – LIPA Smart Grid Business Drivers (Why?)
  – Target Architecture and Enablers (What?)
  – Semantic Integration Approach (How?)
LIPA Business Drivers Related to IT

• “Near Plug and Play”, Flexibility, Agility & Portability
  – Avoid vendor- and technology lock-in’s
  – Multiple Service Providers
  – “Best of Breed” Applications
  – Single Data Source & Multiple Users
  – Stable Enterprise Data Model & Flexibility of Business Intelligence Options
  – Open to new technology, solutions, applications
    • the key to leveraging investment in Smart Grid infrastructure and many new players

• Lower Life Cycle Cost
  – Less expensive “repetitive” integration of SPs and critical systems
  – Interoperability for lower cost of both Implementation and Maintenance
  – Shorter, Predictable Time to Deliver
  – Availability or competitive services by avoiding “proprietary” solutions
LIPA Integration & Standards History

• LIPA started pilot projects in utilizing industry standards for interoperability of systems in 2000

• LIPA Recognized the need for an innovative model-driven approach in 2007

• LIPA’s New Model-Driven Approach:
  – Enables semantic integration through the use of a common semantic model
  – Supports “automated” maintenance, testing, and updates of enterprise data model across company systems
Projects Track Record

• The LIPA Model-Driven Semantic Integration approach has consistently performed under budget and on time under extremely complex and trying conditions.

• Trend of reduced cost and improved delivery speed is based on:
  – Use of tools for “automated/integrated” development, testing, implementation, and maintenance of the model
  – Model-re-use in new and replacement projects
  – Reuse of data and interfaces across company systems and SOA
Projects Track Record

• Projects completed & in-flight include:
  – Energy Trading
  – Customer Outage Communication (Web Outage Map)
  – Customer Outage Communication (Text Messaging)
  – Meter Data Management (in progress)
  – Outage Management (OMS – in progress)
  – Customer Consumption Data integration
Key Elements of LIPA Semantic Integration

• Centrally Managed Semantic (Data) Model
  – Heterogeneous interfaces mediated through common model
  – Based on industry standards (IEC CIM)

• Centrally Managed Semantic Mapping and Business Rules
  – Integrate & Reuse Business Rules, transformations, mappings
  – Automate gap analysis, documentation

• Centrally Managed Development and Run-Time Deployment
  – Generate ready-to-go SOA services
  – Continuous testing
  – Deploy into any runtime environment
  – Automate impact analysis on change
Semantic Integration Value Proposition

• Make all run-time interoperability decisions at semantic layer
  – Configuration rather than coding
    • Automate implementation
  – Simplified testing
    • Test mappings, transformation and business rules using design-time tool (DXSI)
  – Effective maintenance and updates!!!
LIPA ESM and Integration Concept

Enterprise Semantic Model & Exchange Model (Mapping)

Open Standards

Application Information

Process Integration

BPM/Workflow

Business Intelligence

Enterprise Integration Platforms

Applications Metadata

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http://www.distributech.com
LIPA EDM Workflow: “Lossless” Metadata

The Information Architecture team customizes the common data model with local requirements.

Components for production are generated by the integration team, re-tested and passed to the operations team for deployment.

Operations Team deploys Components in the production environment.

- Stateless for scalability
- Runs in any Java container
- Connects to any bus

Continuous Testing

**Common Data Model**

**Centralized Data Model**

**Enterprise Semantic Model**

**Local requirements**

**Information Architecture**

**Integration Team**

**Testing**

**Centralized Mapping, Design**

**DXSI**

**ESB**

**Schema**

**Continuous Testing**

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Key Take-Away Points

• Innovative Integration approach with benefits of
  – Plug and Play for systems and BI applications
  – Benefits of automation for integration, testing, maintenance, updates
  – Lower Life Cycle Cost and more effective system deployments

• Model-driven approach that leverages Industry Standards (CIM) and interoperability

• Scalable (Structured, planned, model-driven approach)

• Semantic understanding is guaranteed (explicit, not implicit);
  – availability of strongly typed syntactical interfaces is not a requirement for success any more

• Easier updating and tracking of standards development
Thank You

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