Open Applications Group

Semantics Refinement Methods and Tools

Serm Kulvatunyou – NIST
Yunsu Lee – NIST
Jaehun Lee – NIST

November 19, 2015
Agenda

- Working Group Members
- Motivation
- Objective and Scope
- Current Status and Next Step
- Conclusion from the Last meeting
- Demo of prototype
Working Group Members

- Serm Kulvatunyou, NIST – Chair
- Mike Rowell, Oracle – Co-Chair
- Steffen Fohn, ADP
- Jim Wilson, OAGi & AgGateWay
- Jeff Rice, Boeing
- Kevin Himka, Boeing
- Roger Hills, Boeing
- Jerry Gersgman, Boeing
- Yunsu Lee, NIST
- Jaehun Lee, NIST
- Taehun Kim, NIST
- David Connelly, OAGi
- Scott Nieman, Land O’ Lakes
- Ian Hedges, E2Open
- Satish Ramanathan, Oracle
- Hyunbo Cho, Thira & POSTECH
- Kurt Kanaskie, Merck
- Kim Bartkus, HR-XML
Motivations
A BOD can contain between 58 and 300k+ data fields!!!
Need: Multiple Syntaxes Support

Model Driven Approach

- Syntax Independent OAG Standard
  - Production Rule for XML Schema
    - OAG XML Schema Standard
      - Enterprise Integration Platform
        - Cloud and Mobile Platform
          - OAG JSON Schema Standard
  - Production Rule for JSON Schema
  - Production Rule for OWL/RDF Schema
    - Business Intelligent Platform
      - OAG RDF Schema Standard
Problem: Manual Development

“The OAGi Chief Architect will review all deliverables during the project to ensure maximum re-use and consistency of business content and technical architecture.”
Need: Life-cycle Management Functionality

- Requirement Import
- Semantic Analysis Engine
- Guided, Model-based
- Formal Change Tracking

Gather Requirement ➔ Analyze ➔ Change ➔ Verify ➔ Version

- Gather Requirement
- Analyze
- Change
- Verify
- Version
Motivation Summary

- Better meta-data management for integration
- Simpler visualization (business user)
- Simpler implementation schemas (developer)
- More precise implementation schema
  - More precise than existing Flatten & Filter Utility is giving
- Profile BOD for various syntaxes optimized for each specific environment
  - E.g., JSON for mobile environment
  - Different flavors of JSON – WADL, ODATA, etc.
  - Atom for CRM
- Future proof for future syntaxes
- [Better traceability and life-cycle management of OAG standard]
Objective and Scope

- **Objective**
  - To enable Model Driven Architecture in OAGIS utilizing CCTS method

- **Scope**
  - Design an RDBMS-, CCTS-based model for holding OAGIS content
  - Design the method to import OAGIS into the RDBMS model
  - Design the method to generate BIEs from the OAGIS-based CCs
  - Design the method to customize BIEs
  - Design the NDRs and method to generate standalone XML schemas from BIEs
  - Design the NDRs and method to generate standalone JSON schemas from CCs
  - Implement a POC software

- **Future scope**
  - Round trip export of OAGIS developer schemas
  - OWL/RDF model
  - OAGIS semantic content life-cycle management
Scenario 12 – Basic Purchase Order Process

Customer Party
Supplier Party

Process Purchase Order
Acknowledge Purchase Order

Domain Expert

Context
Requirement
Syntax Selection

OAGIS Model in RDBMS

OAG Semantic Refinement

Semantically Precise Message Definition (Restrict & Extend)

OAG Syntax Specific Generation

Customer PO BOD in XML Schema (for Web Services)
Supplier PO BOD in XML Schema (for Web Services)
Customer Blanket PO BOD in XML Schema (for Web Services)

OAGIS BOD EDI
OAGIS BOD JSON (for Cloud & Mobile)
OAGIS BOD Atom (for Real-time Feeds)
Current Status

- Completed V1 of User Requirement Analysis document (11/2014)
- Completed the system architecture design of the prototype, open source tool (11/2014)
- Completed the CCTS-based RDB model to hold the OAGIS and Profile BOD content, code list management implemented (05/2015)
- Completed documentation and implementation to import of the OAGIS 10.1 (05/2015)
- Completed the standalone XML schema design (05/2015)
- Completed data structure validation (not including doc) and fixes on the import (11/2015)
- Completed documentation and prototyping of the core BIE management functionalities (11/2015, to be demoed today)
Current Status (Continue)

- **Ongoing**
  - Validate BDT and Code List import
  - Design and implement the BIE extension
  - Design and implement CC management functionalities supporting the BIE extension
    - CC editing functionality
    - CC life-cycle management
  - JSON Schema generation
  - Document profile schema specification

- **Plan**
  - Alpha version available for initial testing by Jan or Feb 2016

- **Issues**
  - Several OAGIS “undocumented features” uncovered – resolved
  - MySQL too slow on Windows and Linux – trying Oracle XE
  - Yunsu is leaving, replacement arriving in Feb
Conclusion from 05/2015 Meeting

• Database itself maybe useful
• New Semantic Roadmap WG
• REST-based API
Demo
Overview of CCS Modeling Methodology

Core Component + Business Context = Business Information Entity

- Context Category Values
  - Industry Context Category
    - Electronics Manufacturing
  - Business Process Context Category
    - Sales
    - Manufacturing
    - Production Type
      - Make-to-Stock
      - Assemble-To-Order
Example

Core Component + Business Context = Business Information Entity

Bill of Materials + Sales, Assemble-to-Order, Electronic Mfg = Super BOM
  - Items, Specs, & Rules

Bill of Materials + Fulfillment, Assemble-to-Order, Electronic Mfg = Instance BOM
  - Items & Specs

Bill of Materials + Manufacturing, Assemble-to-Order, Electronic Mfg = Manufacturing BOM
  - Items & Serial No.

Bill of Materials + Sales, Retail = Bundle
  - Items
THE END