

Bechtel's Deployment of ISO 15926

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Bechtel Corporation

Vision: To be the world's premier engineering, construction and project management company for our **Customers, People, and Communities**



- Completed more than 20,000 projects in 140 countries
- 2006:
 - Revenue: US\$20.5B
 - New work booked: US\$24.7B
 - Projects: 380
 - Countries: 44
- 40,000 employees
- Privately held for 109 years

Meeting the Challenge

Jubail

World's largest civil engineering project



Atlantic LNG
One of the world's largest LNG facilities



Qinshan

China's largest commercial contract



Hong Kong Airport
One of the world's largest infrastructure projects undertaken, US\$20B

Tackling the world's most daunting engineering and construction challenges



Kuwait

Extinguished fires and restored oil production in less than half the predicted 5-year time span

Hoover Dam
1930s' largest U.S. civil engineering project



Central Artery
Largest infrastructure project in U.S. history

Jamnagar

World's largest petroleum plant



Mega Trends

- Project size, complexity & location
- Global work sharing
- Data-centric project execution
- Knowledge capture/management
- Global standards
- Construction automation
- Asset management
- HR constraints



Today's Jobsite



ISO 15926 Organizations

POSC Caesar

- Intelligent Data Set (IDS) Project

FIATECH

- Accelerate the Deployment of ISO 15926 (ADI) Project

- Both project have been active since late 2006
- The projects sought early collaboration
- Both project operate as a single team
- Teams conduct business with an aggressive schedule

Deployment of ISO 15926

Staging Service Project

Objective

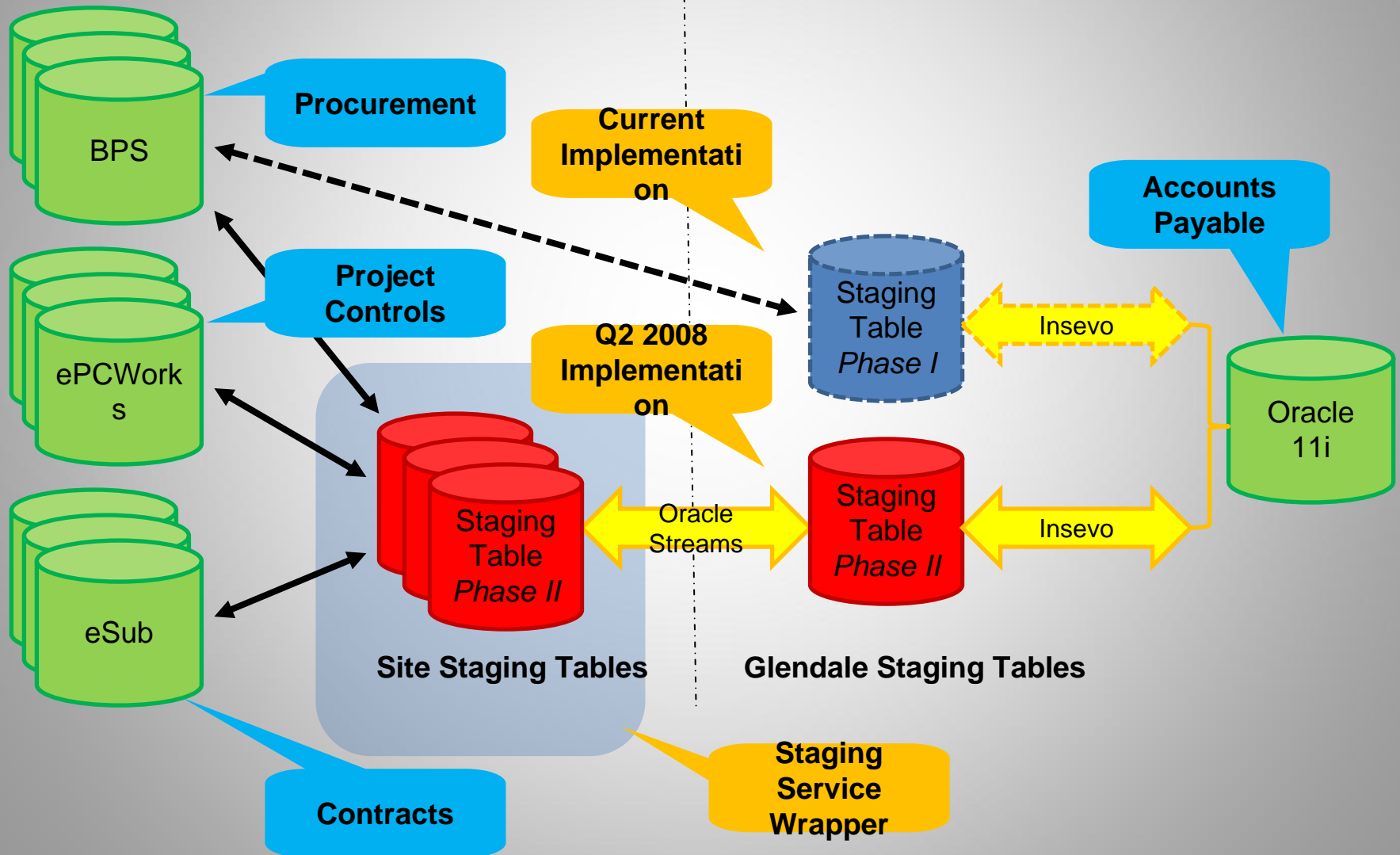
- Upgrade an existing integration hub database (Staging Table) for purchase order processing with:
 - Security – Fine grain access control
 - Flexibility – Introduce an encapsulation and abstraction layer that would isolate the underlying integration hub which would be based on a model driven approach

Opportunity

- Use ISO 15926 to solve the flexibility requirement

Staging Service Plan 2007-2008

Project Commercial System Bechtel Business Services



Staging Service Project

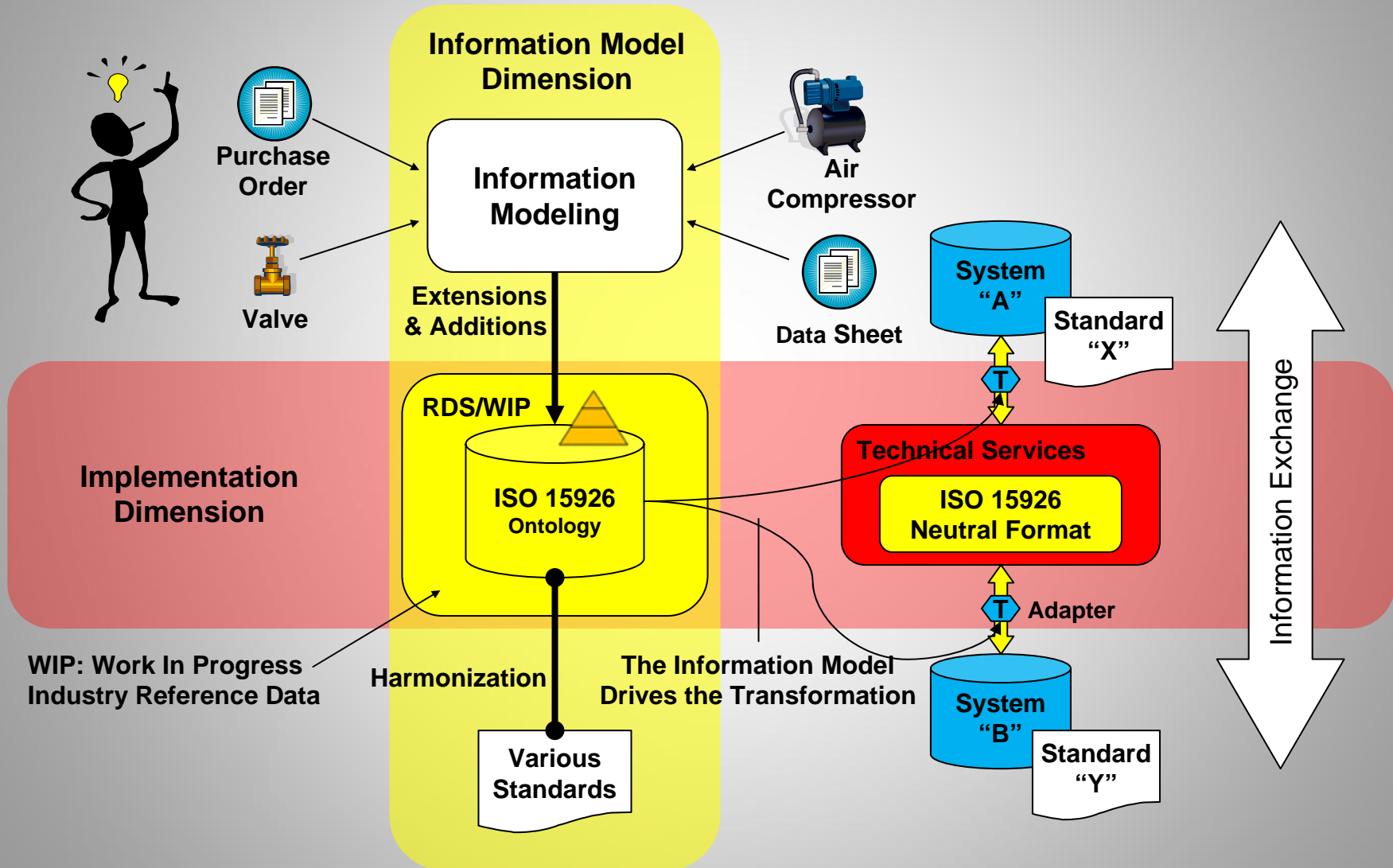
Goals

- Use the “opportunity” to prototype the first ISO 15926, Part 7 implementation
- Focus on the benefits of ISO 15926 ontology and modeling methodologies
- Consider use of RDF/OWL as specified by ISO 15926, Part 7
- Exclude ISO 15926, Part 7 “Façade” from scope
- Incorporate lessons learned as feedback into the ISO 15926, Part 7 Technical Specification development
- Balance potential benefit against risk of being “first”
- Leverage external technical experts from POSC Caesar and FIATECH

Staging Service Status

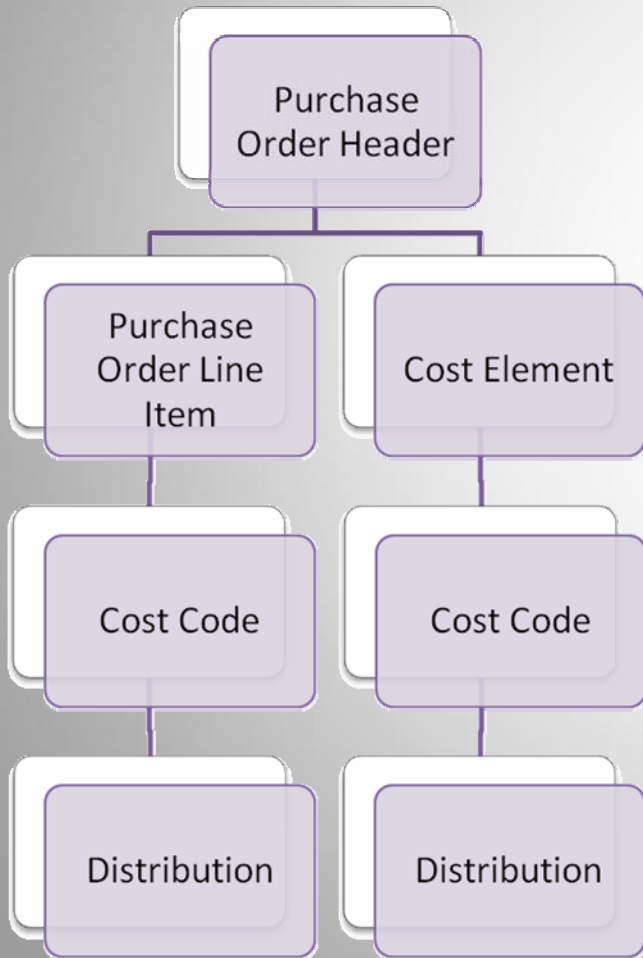
- Initial build completed – November 2007
- Enhanced to support BizTalk – December/January
- User acceptance testing – February 2008
- Pilot deployment – April 22nd

Model Driven Interoperability

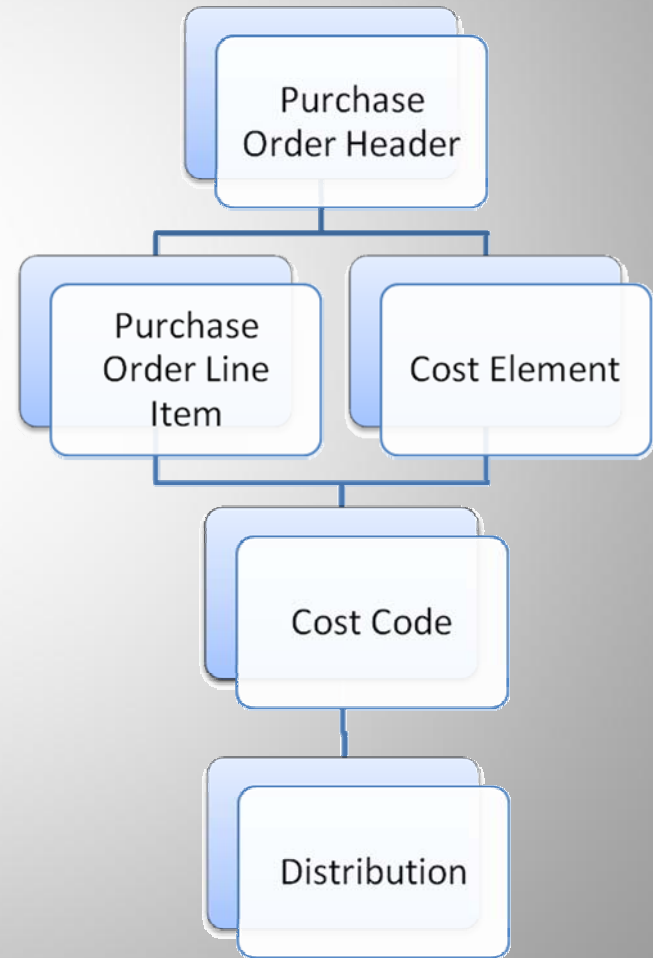


Model Comparison

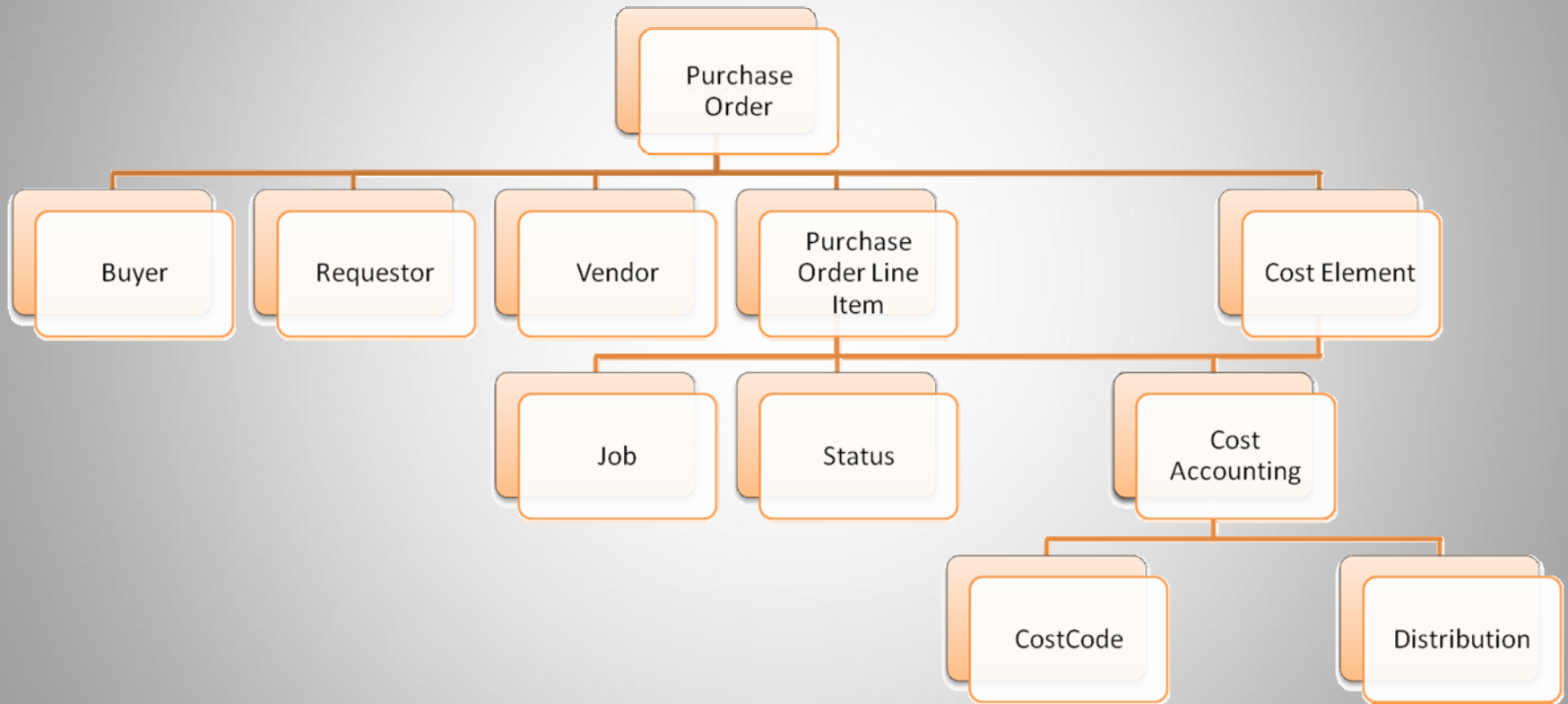
Consumer



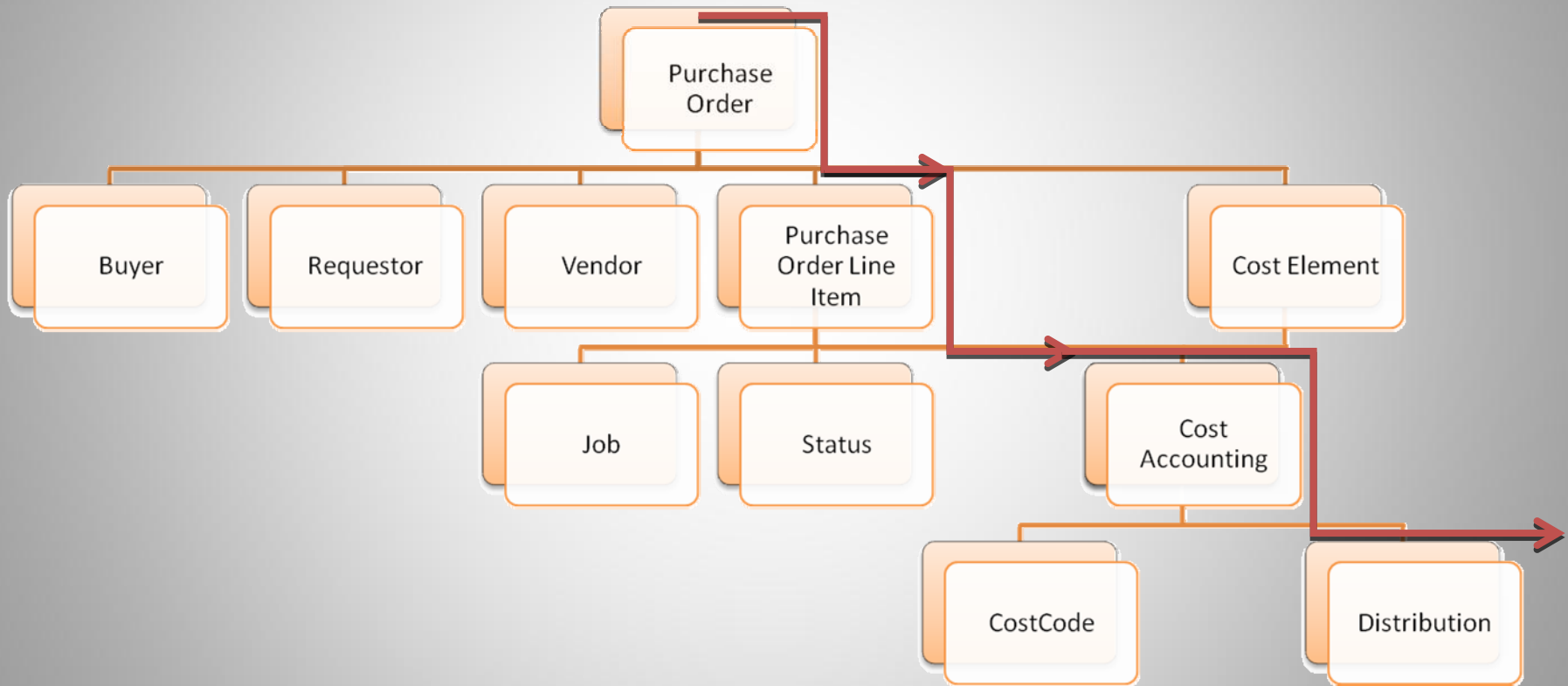
Staging Table



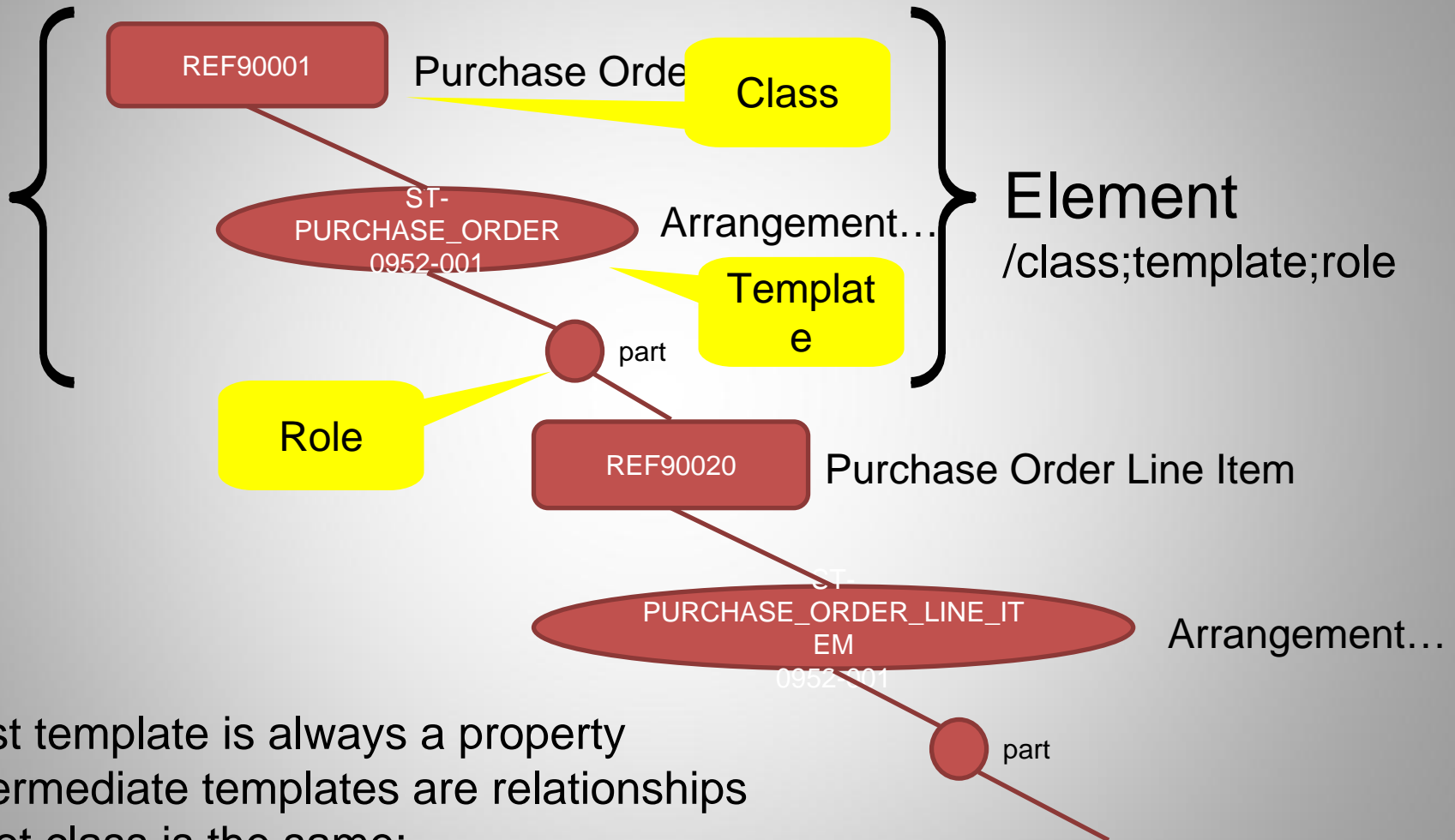
ISO 15926, Part 7 OIM



OIM-Path

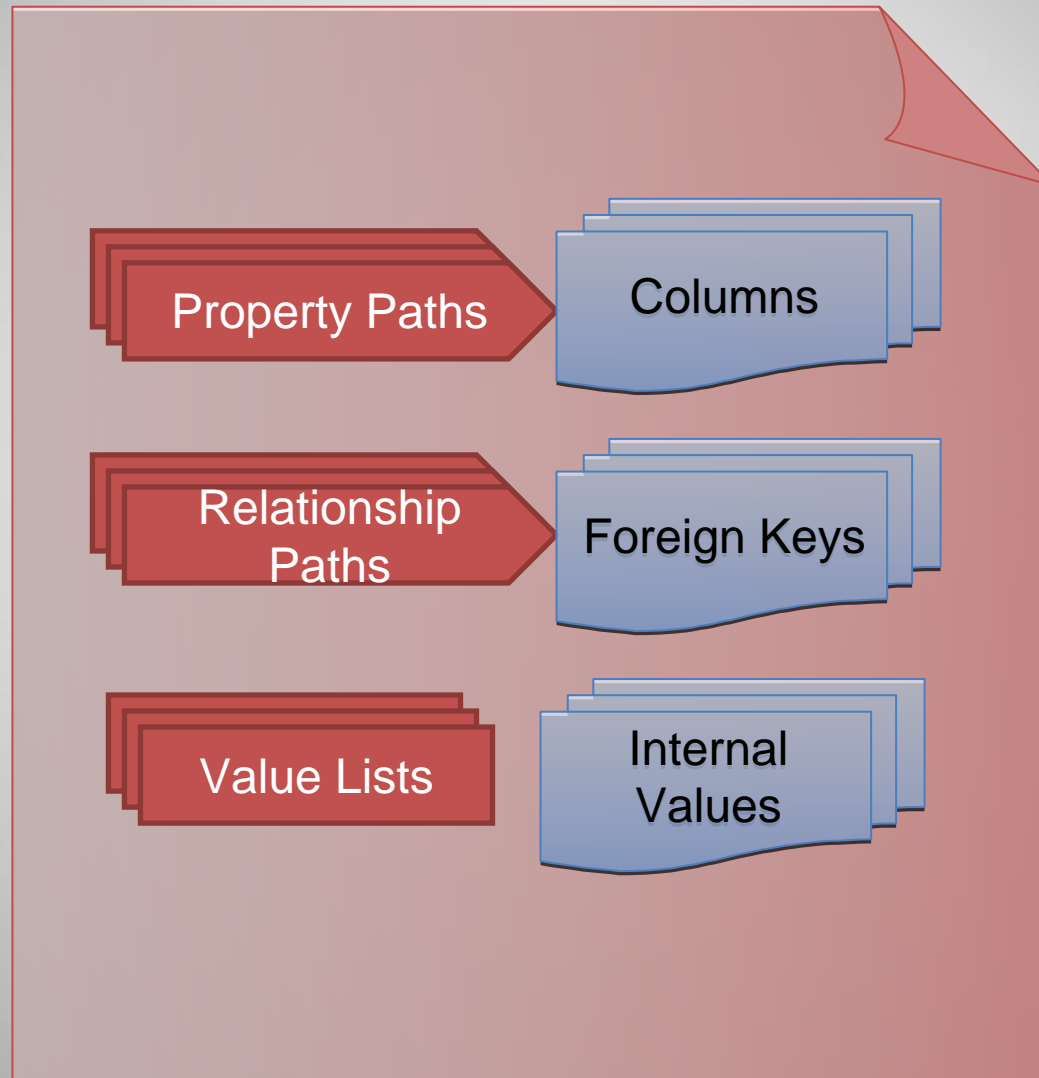


OIM-Path



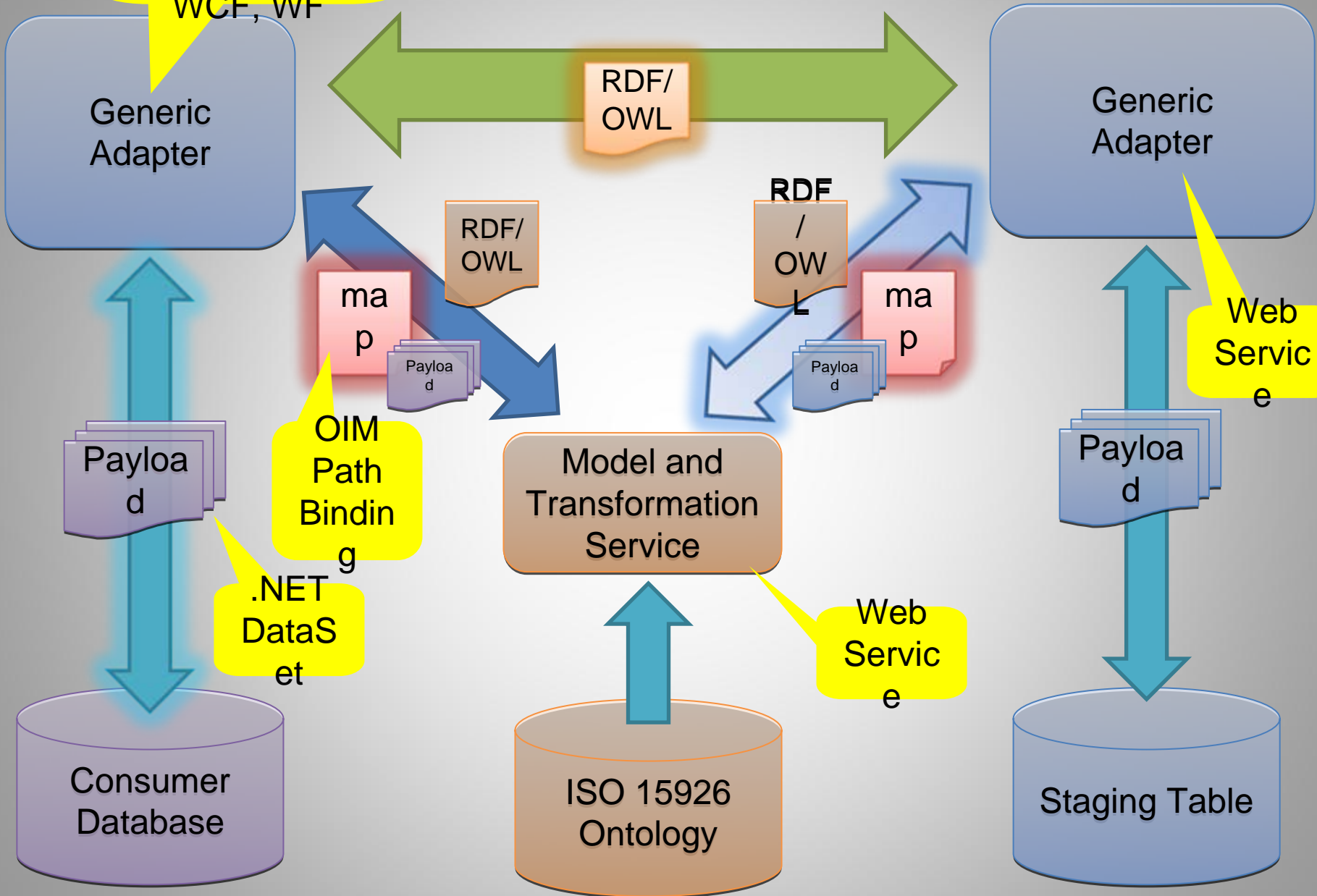
- Last template is always a property
- Intermediate templates are relationships
- Root class is the same:
 - within an operation
 - within group of related classes

Mapping



System Architecture

.NET Framework
WCF, WF



Generic Adapter

Generic Adapter

RDF/OWL

RDF/OWL

RDF/OWL

map

map

Payload

Payload

OIM Path Binding

Model and Transformation Service

Web Service

Web Service

Payload

Payload

.NET DataSet

Consumer Database

ISO 15926 Ontology

Staging Table

Lessons Learned

- Developer community not familiar with Semantic Web technologies or principles
- .NET Development platform support for Semantic Web is very weak
- ISO 15926, Part 7 was still (and still is) a work in progress
- Our implementation has met the flexibility requirement however the implementation is considered a prototype and will need to be modernize to bring into compliance with ISO 15926
- Our experience has provided a valuable contribution to both IDS-ADI projects and ISO 15926

Questions?