

# SOA Standards – Why? Where? How?

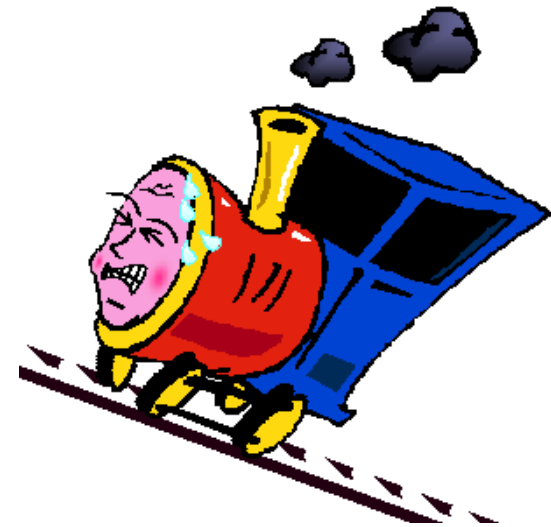
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## Standards are built to address two issues.

- Interoperability – “plug-and-play”
  - How can you write applications in different environments so that they can seamlessly communicate with each other?
- Portability – “write once, run anywhere”
  - How can you take application built to run in one environment and run them in another environment?

# Current Web services standards cannot deliver “Plug-and-Play Interoperability”.

- It's possible to implement run-the-business applications using various Web services technologies
  - This may require concessions to the limitations of the Web services technologies – e.g., hardware accelerators may be needed to enable high performance XML processing
- If you expect “plug-and-play” interoperability, then the current Web services standards will be a disappointment
  - There are gaps, ambiguities and options in current implementations of the Web services standards
  - The WS-I Basic Profiles offer too many options to permit “plug-and-play” interoperability



## Consider this Standards Maturity Model

**Level 5 – “Functionally adequate” version is ubiquitous.**

**Level 4 – Many apps use “functionally adequate” version.**

**Level 3 – “Functionally adequate” version of standard is approved.**

**Level 2 – An initial version of the standard is proposed.**

**Level 1 – Many recognize the problem.**

**Level 0 – Few realize that there’s a problem.**

## What characteristics must we associate with a standard in order to consider it “mature”?

- Is it functionally complete?
- Has the standard reached “stability”?
- Is the expression of the standard non-ambiguous?
  - Has a Reference Implementation be built?
  - Is there a certification process?
- What marketplace, legal or administrative forces will drive adoption?

## Standards Adoption is Driven By Coercion

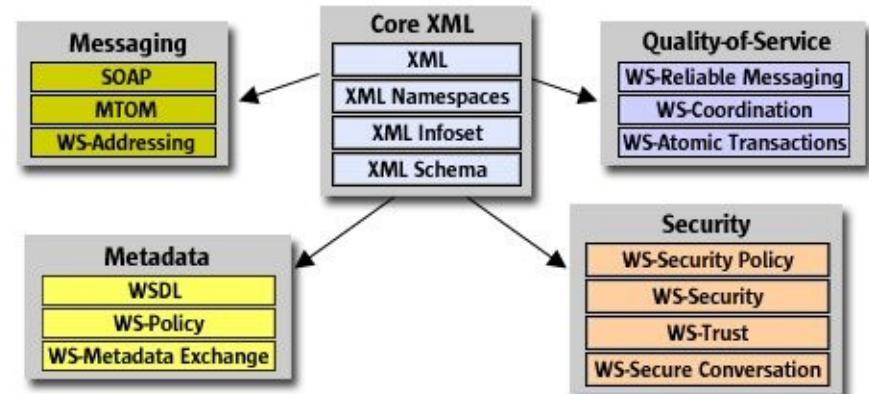
- Vendors rarely adopt standards (and give up their proprietary functionality) out of an altruistic interest in “doing the right thing”.
- Coercion determines speed and degree of standards adoption.
  - Legislated or administrative coercion
    - When the tax authority issues a standard format for electronic submission of tax forms, individuals and corporations aren’t given the opportunity to negotiate alternative formats and protocols.
  - Channel master coercion
    - If Wall-Mart, Carrefour, Boeing or Airbus determine that documents will be exchanged in a certain format, vendors who want to participate in that enterprise’s supplier network adheres to that standard.
  - Economic coercion
    - When Dell exercised its direct-to-customer sales model and tight integration with its supply chain, IBM, HP and Compaq responded by developing the RosettaNet standards.

# The Progress of Web Services Through the SMM Will Undergo a Remarkable Change

- **Project Tango** – Sun & Microsoft collaborate on a set of Web Services standards
- Microsoft’s implementation is in **Windows Communications Foundation** (formerly “Indigo”)
- The Java implementation is being developed in **Project Metro**, an open source community
  - Participants in Project Metro include: BEA, JBoss, IBM, Salesforce.com and many others (TmaxSoft, Worldspan, MailVision Ltd., MyUniPortal, Northrop Grumman Corporation, Cordys, SLIB, Expeditors International, Cast Iron Systems, Covergence, National Science Foundation . . .)

Going forward:

- Everyone will need to provide “certified” interoperability with WCF
- Everyone will need to provide “certified” interoperability with WSIT
- Plugfests will be the “certification mechanism” to ensure compatibility



# What's the difference between “Interoperability” and “Integration”?

- Interoperability – getting letters and numbers from Point A to Point B
  - A fax machine can send an exact representation of a purchase order from Toronto to Moscow.
  - But, will the order be understood in Moscow?
- Integration – getting two programs to work together as if they were built to work together.
  - This requires Interoperability, plus additional capabilities.

# What prevents painless interoperability between service consumers and service providers?

## Data Format Differences

### Application 1

First-Name  
 Last-Name  
 Customer-Num  
 Address-Line1  
 Address-Line2  
 Address-City  
 Address-State  
 Postal-Code

### Application 2

Customer-Number  
 First-Name  
 Middle-Initial  
 Last-Name  
 Address1  
 Address2  
 Address3  
 Unit-Number  
 City-Township  
 State-Province  
 Address-Postal-Code

### Application 3

Name  
 Cust\_no  
 Street\_address  
 City\_State  
 Zip\_Code

# What prevents painless interoperability between service consumers and service providers?

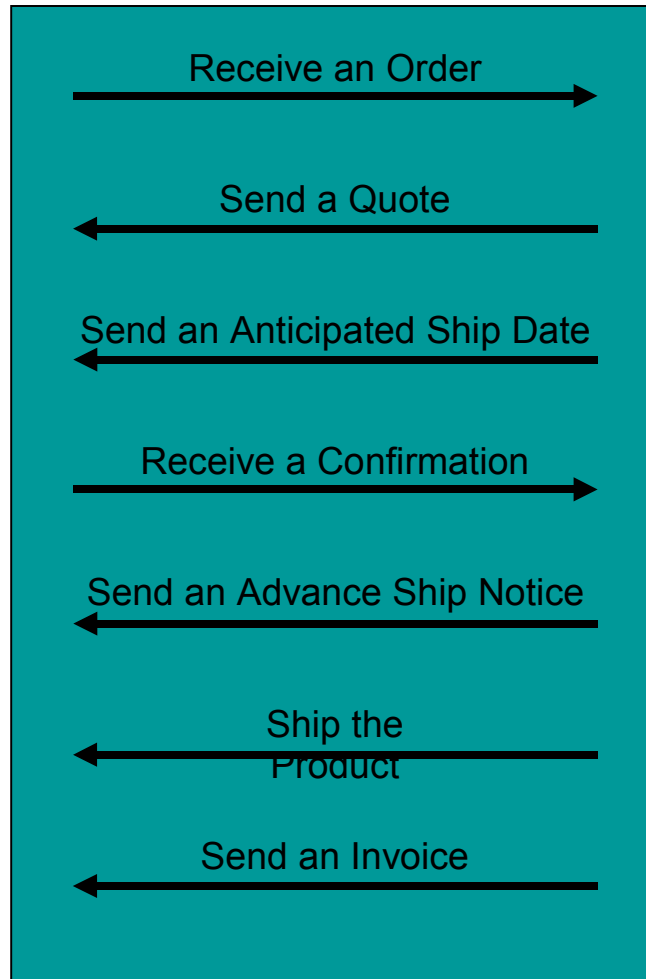
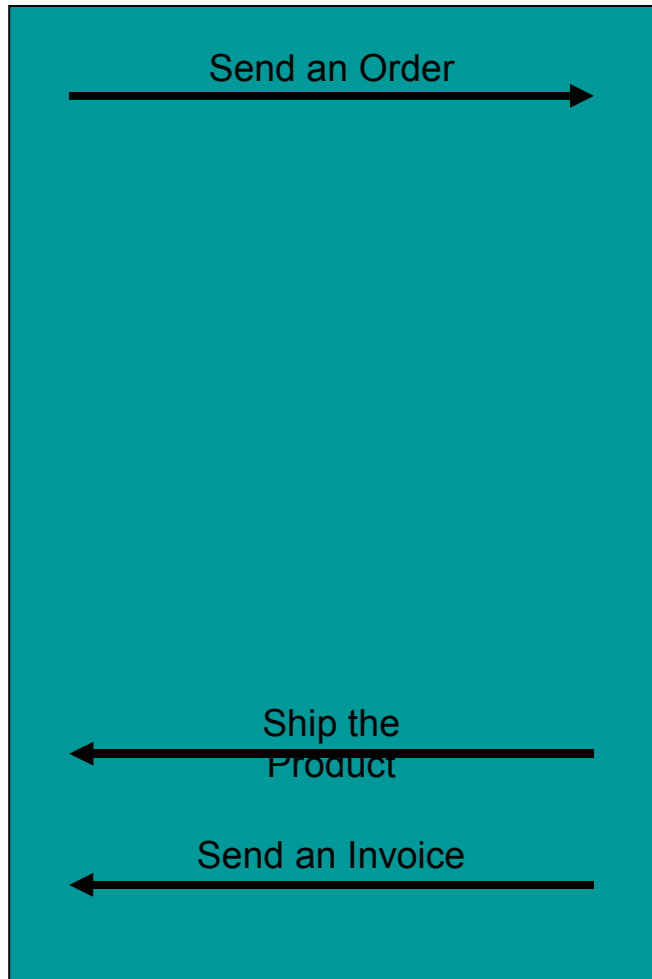
- Twelve kilometres above Manitoba, a new Air Canada 767 ran out of fuel. The 120-tonne plane became a glider, dropping at over 600 metres per minute.
- Amazingly, the powerless plane made a successful emergency landing at an abandoned airbase in Gimli, Manitoba.
- Why did this happen? This 767 was Air Canada's first computerized, all metric plane.
- Prior to the flight, the crew used the plane's computer to calculate the fuel they needed for the trip from Montreal to Edmonton.
- The crew entered the amount of fuel already on board as 20,400 pounds. The computer read that as 20,400 kilograms – enough for the flight.
- In reality, the plane had less than half the fuel it needed to reach Edmonton.

## Data Semantics Differences



## The Gimli Glider

# What prevents painless interoperability between service consumers and service providers?



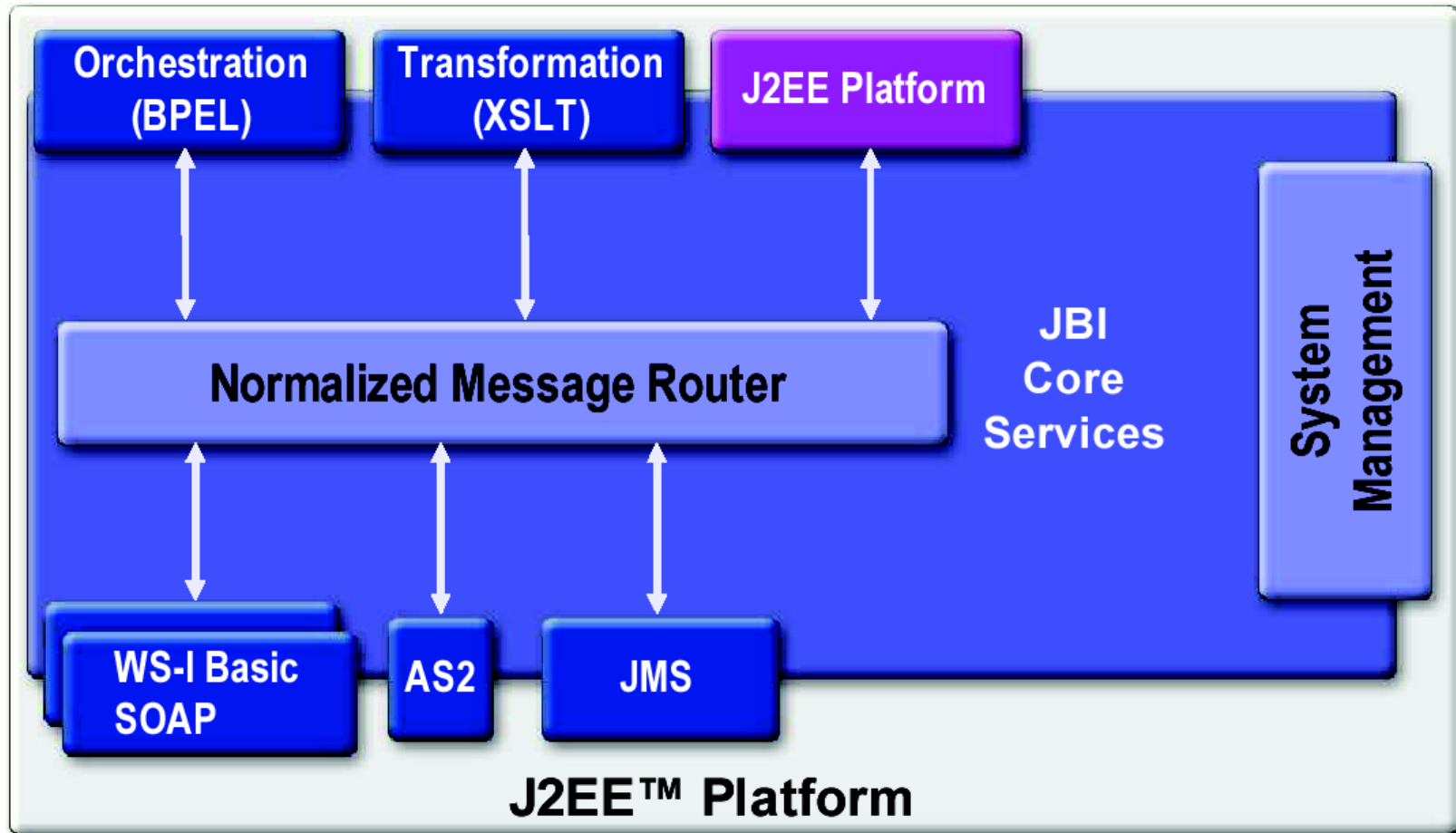
## Process Semantics Differences



# What progress are we making on delivering “Plug-and-Play Integration”?

- Standards that address data format, data semantics and process semantics are domain specific . . . and rare.
  - Consider RosettaNet
    - Adopted within just a few years by computer manufacturers to links the various participants in the computer supply chain – component manufacturers, computer manufacturers, distributors, resellers, VARs and retailers
    - Covers data formats, data semantics and process semantics
    - Covers interoperability – RosettaNet Implementation Framework
    - Adopted due to *economic coercion* – Compaq, IBM and HP were losing money and losing market share to Dell

# Portability Between JBI-based ESBs



Java Business Integration (JSR 208) provides a standard so components can plug into an ESB.

## Non-Sun JBI-Compliant ESBs

- Bostech – ChainBuilder ESB
- Apache – ServiceMix
- Iona – FUSE ESB (based on Apache ServiceMix)
- TIBCO – ActiveMatrix Service Grid
- ObjectWeb – Petals

## Non-Sun Developers of JBI-Compliant Components

- Adnet – Workflow Service Engine
- Bostech – TCP/IP Binding Component, Scheduler Service Engine
- Eviware – Soap UI Netbeans Plugin
- Gestalt-LLC – XMPP, SIP, UDDI & RSS Binding Components
- Imola – CICS, CORBA and EJB Binding Components, Semantic Web Service Engine
- Neociclo – Odette FTP, Odette-J Binding Components
- Vikram India – DCOM Binding Component
- Yasu – Business Rules Service Engine
- Art Gillespie – 3270 Binding Component
- Jon Strayer & Art Gillespie – Screen-scraping Binding Component
- Gary Zheng – LDAP Binding Component
- Oscar Montoya – SWIFT Binding Component
- Stelian Markov – eMail Binding Component

# Thank You

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