Rational Software

IBM, Standards, and e-business On Demand

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Keeping Pace with Information Technology,
National Standards System Conference,
Calgary

November 16, 2004

My Background

- I have developed software products at IBM since 1982
  - VisualAge for Java
  - WebSphere Studio
  - Rational Application Developer
- I currently lead an Open Source project at Eclipse
  - Web Standard Tools subproject of the Web Tools Platform project
- I also have some standards experience
  - I currently represent IBM on the W3C Web Services Description Working Group for WSDL 2.0
  - I was the IBM expert on the JCP JSR-45 - Debugging Non-Java Languages (e.g. JSP)
  - I was the IBM representative on ISO/IEC JCT1/SC7 - Software Engineering Standards

Today's IT Environment

- The Internet has provided ubiquitous interconnectivity of virtually all computing systems
- High competitive advantage is achieved by integrating information systems – cost savings, responsiveness
- IT infrastructure is heterogeneous – no single hardware, operating system, or programming language dominates
- The focus of standards is protocols and formats that enable interoperability
- Globalization demands the establishment of borderless standards
- Is there a role for national standards here?

IBM’s Position on Open Standards

"Our software business is completely committed to open industry standards including the stuff that we're driving in open infrastructure middleware with Web services and WebSphere.“

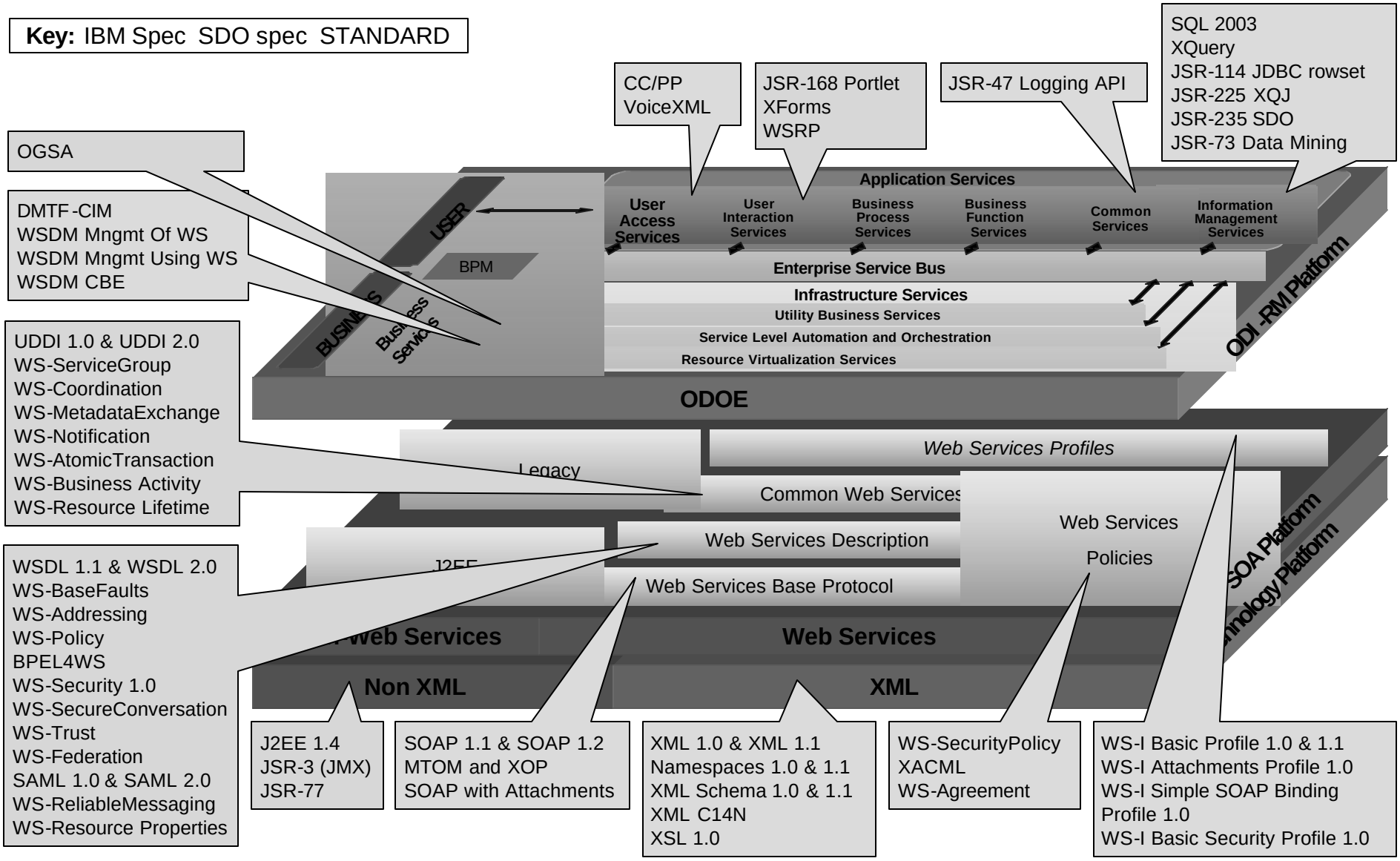
Sam Palmisano, IBM CEO
November 2002

Open Standards

- Open Standards are one of the cornerstones of IBM's On Demand initiative
- IBM cooperates with other key industry players to create specifications
- IBM contributes specifications to the major standards bodies, such as W3C, OASIS, WS-I, and JCP, and leads and participates in working groups to establish them as standards
- IBM develops references implementations of standards in Open Source projects such as Apache Xerces (XML), Xalan (XSLT), Axis (JAX-RPC) and Eclipse Web Service Validation Tools (WS-I)
- IBM supports Open Standards in products families such as WebSphere and Rational

Integration and Web Services

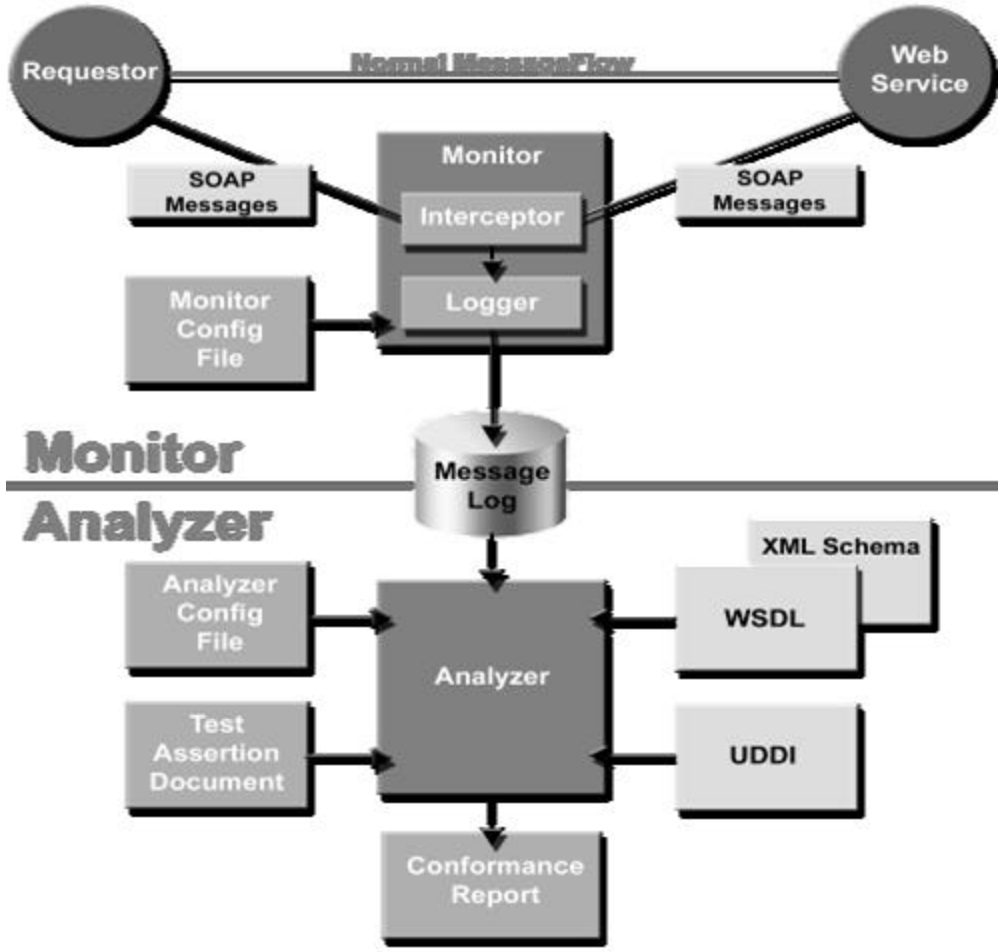
- Integration is also a cornerstone of IBM's On Demand initiative
- Web services are the technology of choice for integrating dissimilar systems
- Interoperability of heterogeneous systems is the main justification for Web services
- Web Service standards focus on protocols and formats (e.g. SOAP, WSDL)
- Web Service standards are independent of hardware, operating systems, and programming languages
- Vendors define technology implementations of Web services, e.g. J2EE and .NET
- J2EE APIs enable *portability* of Java Web services among compliant application servers



WS-I: Web Service Interoperability

- Early defacto standards such as SOAP 1.1 and WSDL 1.1 had ambiguities (e.g. SOAP RPC encoding, WSDL imports) that defeated interoperability
- Current dejure standards (e.g. XSD 1.0) are too rich (e.g. xsd:choice, xs:groups) and are incompletely implemented in practice
- There is a large number of Web service standards – which ones are key?
- WS-I establishes *Profiles* that enumerate, clarify, disambiguate, and restrict specifications to achieve interoperability
- WS-I also provides *Test Tools* that validate compliance with profiles (e.g. Eclipse WSVT)

Moving towards open source conformance testing of open standards!



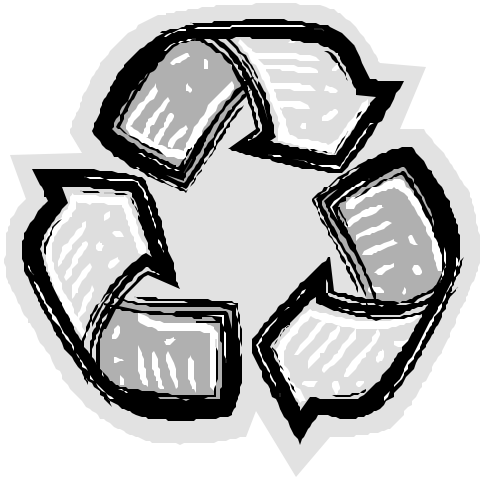
RESOURCES AND GUIDELINES FOR WEB SERVICES INTEROPERABILITY

WS-I

WEB SERVICES INTEROPERABILITY ORGANIZATION

WS-I is an open, industry organization chartered to promote Web services interoperability across platforms, operating systems, and programming languages. The organization works across the industry and standards organizations to respond to customer needs by providing guidance, best practices, and resources for developing Web services solutions.

Profiles



Sample Applications

Testing Tools

What Role Can NSS Play?

- Disclaimer: the following comments are my personal opinions and do not represent on official IBM position
- National standards are not desirable in global e-business
- However they are two roles that NSS can play:
  - Certifying IT Standards Compliance
  - Guiding Software Engineering Curriculum

Certifying IT Standards Compliance

- Java does have a certification process – test suites and testing
- SDO's such as W3C and WS-I avoid certification
  - Test suites and test tools are provided for self-certification
- Certification has value to software vendors
- NSS can play an important role to fill this gap
- "CSA Approved" is a globally recognized brand
- CSA should enter into the global certification market for W3C, OASIS, and WS-I standards
  - Direct certification of products
  - Accreditation of certification labs

Guiding Software Engineering Curriculum

- Software specifications are far less precise than electrical specifications
- Software specifications are often imprecise, incomplete, and ambiguous
  - Much effort at WS-I is devoted to clarifying specifications
  - Specification problems are very costly
- There are no commonly practiced formal specification techniques applied to standards
- However, applicable techniques exist, e.g. Z Notation
  - I am applying Z Notation at W3C in the WSDL 2.0 specification
- NSS should work with universities to develop “Specification Engineering” curriculum and professional accreditation