Microsoft

Web Services for the Integrated Enterprise
OMG's 2nd Workshop On Web Services Modeling, Architectures, Infrastructures And Standards

April 22-25, 2003 - Philadelphia, PA USA

Program

Tuesday, April 22, 2003

0900 - 1230   *Tutorial 1: Implementing Model Driven Web Services Architectures using UML, XML, and WSDL*
Sridhar Iyengar, Distinguished Engineer, IBM

The software industry continues to grapple with the challenging problem of dealing with multiple industry standards and competing middleware architectures and information models/vocabularies without much regard for software architecture and design discipline. The OMG Model Driven Architecture (MDA) simplifies this problem by unifying these diverse technologies using information models/designs and mapping these models to one or more implementation technologies (middleware, databases, languages etc). MDA also raises the level of abstraction at which these applications and integration scenarios can be designed and implemented, a key requirement to manage software integration complexity. MDA defines a software architecture that complements existing middleware, modeling and tools and allows integration and interoperability to be addressed across the application life cycle and not just between individual objects or components. It exploits the strengths of Modeling, Metadata, Middleware and Mappings, the 4 M's, into a unifying framework with UML and XML taking on a foundational Role. MDA allows a developer to design a model of an application or component once and automatically map these designs to several technologies. A key tenet of MDA includes reverse engineering that allows developers not familiar with modeling to incrementally gain the benefits of modeling and software architecture.

0900 – 1230   *Tutorial 2: Producing Executable Web Services Using UML*
Cory Casanave, President, Data Access Technologies

Collaboration, integration and agility are the cornerstones of the modern enterprise. Being able to bring together customers, suppliers and diverse parts of the enterprise improves both efficiency and customer satisfaction. Technologies such as CORBA, Web Services, J2EE and .NET provide the technical basis for integration but do little to help us understand or provision these crucial collaborations. The OMG has recently adopted the Enterprise Collaboration Architecture (ECA) as part of the UML for EDOC set of specifications. ECA describes how to model enterprise collaborations with UML and use model driven development to implement collaborative business processes using a variety of middleware technologies. This tutorial will cover enterprise collaboration modeling concepts, process and examples, showing how to go from abstract concepts of collaboration to precise specifications leveraging reusable components for Web Services as well as other middleware. We will also see how to use ECA as a technology independent model supporting Web Services and distributed objects. The result of applying these techniques can result in the enterprise being more agile, more efficient and better able to collaborate inside and outside the corporate boundary.

1030 – 1045   Morning Refreshments

1230 – 1330   Lunch

1330 – 1530   *Session 1: Implementing Web Services Platforms:*
The Rubber Meets the Road
Chair: Rebecca Bergersen, Principal Engineer IONA

A Web Services platform incorporates many resources - registry services, directory services, bridges and even elements from CORBA and other platforms. The speakers will discuss the classical engineering problems which must be addressed in implementing such resources and review the lessons learned:
* William Cox discusses resource implementation in J2EE
* Adrian Trenaman discusses resource intercommunication through the use of an IIOP-SOAP bridge from CORBA
* Drs. Jen-Yao Chung and Liang-Jie Zhang discuss GRID computing as providing a coherent metaphor and framework for Web Services resources

J2EE and Enterprise Web Services
William Cox, Technical Director, Architecture & Standards, BEA Systems

This presentation will focus on the current state of the art in defining Enterprise Web Services and their implementation in the J2EE environment. It will include discussion of JAX-RPC, JSR109/Enterprise Web Services, Java Messaging System extensions for XML and Web Services, directories and registries (JAX-R, UDDI, ebXML RegRep), and interoperability.

Exposing Web Services to CORBA Clients
Adrian Trenaman, Senior Consultant, and Mark Fynes, IONA

This presentation will describe the design and implementation of an IIOP-SOAP bridge that enables CORBA clients to invoke on Web Services using IIOP. While it is common to find Web Service toolkits that expose CORBA servers as Web Services, there is a lack of tools for exposing Web Services to CORBA clients. Using this IIOP-SOAP bridge, a systems integrator could expose a non-CORBA service using WSDL, which could then be exposed to CORBA clients using IDL. Issues such as security, asynchronous invocation, protocol mapping and object publication will be discussed.

Business Grid: Grid Computing Infrastructure for e-Business Solutions
Jen-Yao Chung, Senior Manager & Liang-Jie Zhang, Lead Architect, IBM

Open Grid Services Architecture (OGSA) is a distributed interaction and computing architecture that is based around the Grid Service, assuring interoperability on heterogeneous systems. This presentation will start with Grid computing and the Open Grid Services Architecture. Then it will introduce an OGSA-based Grid solution architecture, Grid Solution Sphere, which includes both logical Grids and physical Grids as well as a service outsourcing-based Business Grid framework. It will then give as an example a local Grid platform that encapsulates Web Services in the implementation of a Grid service. In the demonstration part, the detailed procedures for creating and invoking a Grid service using the Globus OGSA toolkit will be illustrated.

1530 – 1545   Afternoon Refreshments

1545 – 1745   *Session 2: Web Services Security:*
              Where the Hard Questions are Asked
              Chair: Rebecca Bergersen, Principal Engineer, IONA

Authentication, authorization and confidentiality are inherently difficult problems and the trust technologies that attempt to solve them are complex. The Web Services security standards do not, for the most part, invent new techniques. Rather, they address how to apply known techniques in the loosely coupled world of the web. The presentations review these emerging standards and discuss lessons learned in their usage.

Web Services Security with SOAP Security Proxies
Gerald Brose, Security Architect, Xtradyne Technologies

With Web Services relying on SOAP over HTTP, typical perimeter security mechanisms are no longer effective. This presentation outlines the major security challenges in Web Services environments and summarizes the emerging standards by the W3C and OASIS that address these problems (SAML, XACML, WS-Security). We present SOAP security proxies as a flexible approach to leverage the concepts put forward in these standards. SOAP security proxies are application-level security appliances that can be easily integrated into existing Web Services infrastructures and do not require changing existing applications.

Identity, Security, and XML Web Services
Jørgen Thelin, Chief Scientist, Cape Clear Software Inc.

The use of security credentials and concepts of single-sign-on and "identity" play a big part in Web Services as developers start writing enterprise-grade line-of-business applications. An overview is provided of the emerging XML security credential standards such as SAML, along with various "identity" standards such as Passport and Liberty. We examine how "identity aware" Web Service implementations need to be, and the value a Web Services platform can add in reducing complexity in this area, with lessons drawn from experiences using J2EE technology for real-world security scenarios.

Solutions for Web Services Security – Lessons Learned in a Department of Defense Program
Kevin T. Smith, Principal Software Architect, McDonald Bradley, Inc.

This technical session will provide an overview of a solution that includes an early adoption of SAML, XML Encryption, and XML Signature for SOAP-based Web Services. This past year, the Virtual Knowledge Base (VKB), a Department of Defense program that provides internal Web Service-based organizational knowledge from a federation of data sources, was challenged to find ways to provide confidentiality, integrity, non-repudiation, and "deep authentication" in a distributed Web Services environment. This session will discuss the challenges, solutions, and lessons learned in this project.

Wednesday, April 23, 2003

0830 – 0845   *Workshop Welcome and Opening Remarks*
                      Program Committee Co-Chairs:
                      Fred Waskiewicz, Director of Standards, Object Management Group
                      Peter Herzum, CTO, Herzum Software

0845 – 1130   *Session 3: Web Services Architectures*
                      Chair: Jishnu Mukerji, Senior Systems Architect, Hewlett-Packard

The excitement around Web Services opens up an opportunity for re-evaluating architectural choices for distributed computing. It is obvious that different architectural styles are appropriate for different types of distributed computing, which in turn address different design centers and optimization points. In this session we hear about architectural choices made to deploy successful Web Services and the issues that needed to be addressed in arriving at those choices. Naturally emphasis is on Service Oriented Architectures since most Web Services broadly fall in that category, but relationship to other architectures will be explored. Interworking architectures and patterns spanning Web Services and CORBA are also discussed.

A Comparison of Service-oriented, Resource-oriented, and Object-oriented Architecture Styles
Jørgen Thelin, Chief Scientist, Cape Clear Software Inc.

The three common software architecture styles frequently used in distributed systems and XML Web Services are compared and contrasted. In particular, the key differences between traditional SOAP and REST styles are explored. Guidelines are presented on which style is most applicable for certain application scenarios, and when a combination of styles is necessary.

Service Oriented Mainframe Integration with CORBA, J2EE and Web Services
Arne Koschel, Technical Product Manager, and Mark Fynes, IONA

New large scale distributed enterprise applications will demand "peer to peer" secure interoperability amongst J2EE Application Servers and backend systems, especially existing mainframe systems with their huge IMS/CICS-based COBOL/PL-I applications. Such systems are may integrated by means of CORBA, JCA, JMS etc. This talk will present how all these technical elements can interoperate in an open standard based environment. It will cover: service oriented mainframe integration by means of CORBA, J2EE, Web Services; Web Services to CORBA and EJB interoperability; security interoperability scenarios; 2-PC transactions across EJB, CORBA and mainframe CICS/IMS transactions; and example architectures and scenarios from real-world large scale customer applications.

Architectural Requirements for a Service Oriented Architecture Based on Web Services
Mukund Balasubramania, CTO, Infravio

Web Services play a critical role in establishing a Service Oriented Architecture (SOA); however, the two concepts are not equivalent. This session will explore the technology that defines a Web Service vs. the requirements of a Service Oriented Architecture. In addition, the attendees will see examples of how each is being employed in companies today. The presentation will address issues such as data normalization, namespace management, change management and deprecation, dependency control within composite applications, distributed execution, configuration management, runtime performance monitoring, and system management.

1015 – 1030   Morning Refreshments

Strategies for Use of Web Services and Reuse of CORBA Business Applications
Dave Knox, Senior Architect, IONA

This presentation details patterns that can be used to analyze complexity, design, plan, and implement Web Services as access points and focuses on exposing existing CORBA investments without compromise. The presentation begins with the business and economic issues that compel reuse and are constantly confronted by IT organizations. It proceeds to explain the hierarchy of patterns, and then details four Integration Patterns. The presentation concludes by leveraging the patterns and a reference architecture to illustrate example solutions in the Finance and Telecommunications verticals.

1130 – 1230 - *Sponsor Presentation -* <u>Service Oriented Architectures</u>
Michael Platt, Solutions Architect, Microsoft Corporation.

1200 – 1800 *Demonstration Area Open*

1230 – 1330 Lunch

1330 – 1430 <u>Microsoft "Jupiter" & the Unisys MDA process</u>
Humphrey Chen (Microsoft)
Peter Tripp (Unisys)

Microsoft and Unisys will present an overview of the upcoming "Jupiter" (codename) E-Business Platform and its leverageable Adapter Framework. Customers/partners will hear about Microsoft & Unisys' strategic approach to orchestrating web services and business processes in heterogeneous enterprise environments. A special opportunity will also be provided to co-develop and test at the "Team Jupiter Customer Lab".

*Note: This presentation will not be distributed or made publicly available.

1430 - 1445 Afternoon Refreshments

1445 – 1615 *Session 4: Web Services Standards*
Chair: Fred Waskiewicz, Director of Standards, OMG

Standards are key to solving technical problems like interoperability, transactional support, deploying, discovery and linking mechanisms among federated Web Services and their clients. This session provides insight into these and other issues facing industry and how organizations like WS-I and OASIS are addressing them.

Interoperability and Web Services
Christopher Ferris, Architect, IBM

In this presentation we will discuss the interoperability issues facing users, vendors and implementers of both new and established Web Services technologies. We will discuss the Web Services Interoperability Organization, outlining the approach that its members are actively pursuing to address the interoperability issues they face. We will review the WS-I Basic Profile 1.0 deliverables, putting them into perspective for the IT executive, Web Services developer, and technology vendor. Finally, we will consider the forecasted next steps for the WS-I organization including potential candidates for future profiles and its approach to addressing the issue of profile composition and versioning.

Web Services and Transactions
William Cox, Technical Director, Architecture & Standards and Sanjay Dalal, BEA Systems

Business Transaction Processing (BTP), an XML-based distributed termination protocol for "distributed" business transactions, is an OASIS Committee Specification (today). The combination of WS-Transaction and WS-Coordination efforts cover some of the same space, and are expected to be submitted to a standards organization in 2003. This presentation discusses the evolution from tightly-coupled to loosely-coupled services in distributed enterprise systems. In the same context, the two approaches are compared and contrasted using these two transaction protocols from an architectural perspective. It will be shown how these approaches affect application requirements, and how they can satisfy real world needs will be analyzed.

Requirements for Standards--Related Industry Standards
Karl F. Best, Vice President & Patrick J. Gannon, President & CEO, OASIS

Successful implementation of Web Services is dependent on universally accepted standards and more Web Services work is being done at OASIS than any other standards organization. The OASIS consortium is the source of a variety of WS specifications including UDDI, ebXML, SAML, WSRP, WSIA and WS Security. This Web Services Standards presentation will review the activity of the various OASIS technical committees and the process by which a specification become a standard at OASIS.

1615 – 1630   Afternoon Refreshments

1630 – 1730   *Panel: Web Services Standards*
                  Moderator: Fred Waskiewicz, Director of Standards, OMG

> Software standards will play a key role in defining architectures that will drive the design of federated systems capable of collaboration necessary to solve business problems at the enterprise level. Standards will also ensure interoperability between Web Services and among the tools that develop and implement these services. This panel of standards organization representatives and Web Services implementors and users will assess the state-of-the-art of Web Services standards in meeting these goals.

Panelists: Christopher Ferris, Architect, IBM
             William Cox, Technical Director, Architecture & Standards, BEA Systems
             Karl F. Best, Vice President, OASIS
             Additional Panelists: TBD
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Thursday, April 24, 2003

0830 – 1030   *Session 5: Case Studies*
Chair: William Cox, Technical Director, Architecture & Standards
BEA Systems

Case studies offer insight into using Web Services to solve real-world problems, not simple "stock quote" examples. This session provides experience reports on such diverse topics as a US DoD program dedicated to exposing knowledge through a federation of disparate data sources; a European project addressing a Model Driven Architecture approach to the specification and development of semantic interoperable services for Crisis Management and Environmental planning systems; and a broader view portraying typical user cases that need Document-centric Web Services solutions.

The Virtual Knowledge Base: Lessons Learned in Web Services Development
Rebecca K. Smith, SW Development Lead-VKB, TRW &
Michael C. Daconta, Chief Scientist-Advanced Programs Group, McDonald Bradley, Inc..

The Virtual Knowledge Base (VKB) is a Department of Defense program dedicated to exposing knowledge through a federation of disparate data sources. This program was an early adopter of Web Services. This presentation will focus on the lessons learned on two specific parts of the VKB effort: first, providing a Web Services adapter to an existing J2EE service layer and second, creating a system to register and discover documents and expertise.

Composable GIS AND E-Commerce Services in Crisis Management Systems - Using The Combine MDA Approach
Arne J. Berre, Chief Scientist, SINTEF Telecom and Informatics

The European project ACE-GIS (Adaptable and Composable GIS and E-Commerce services) addresses a Model Driven Architecture approach to the specification and development of semantic interoperable services for Crisis Management and Environmental planning systems. The methodology and tool-support for service-oriented architecture specification is provided by the COMBINE project (Component-Based Interoperable Enterprise system development), with enhancement for model-based composition, using UML activity diagrams and mappings to BPEL4WS/BPML. The underlying standard services are based on the OGC Open Web Services for GIS components, and on a Web Service infrastructure extended with ebXML Registry/Repository support.

Web Services - What are Users Really Expecting? What are Real Challenges?
Makoto Oya, Hokkaido University

Recently, the presenter has had many chances to make presentations in Japan about MDA and Web Services. Through this experience, it was learned that what users are really expecting from "Web Services" is not just "RPC-centric" Web Services but more application oriented "Document-centric" Web Services. This presentation will show some typical use cases that require a Document-centric Web Services solution. It will outline the real challenges that must be confronted. In addition, issues relating to MDA will be discussed which show that MDA is an important key to realizing the type of Web Services that users really expect.

1000 – 1830   *Demonstration Area Open*

1030 – 1100   Morning Refreshments

1100 – 1230   *Session 6: Tool Support for Web Services Development*
            Chair: Akira Tanaka, Section Manager, Hitachi Ltd.

> This session explores the requirements for and usage of commercially available tools to develop, deploy and use scaleable Web Service applications at the enterprise level.

Orchestrating Web Services from a UML Development Platform
Michel Brassard, CTO, Codagen Technologies Corporation

Web Services enable a code reuse pattern that makes them available to applications without requiring physical co-location. This session will focus on how UML can be applied to the development environment to solve common challenges, including: reusing business scenarios and Web Services across multiple business processes; enforcing a business process over a loosely coupled implementation; enabling business analysts to work collectively when modeling business processes; and implementing business processes that satisfy contracts between trading partners. Upon completion, attendees will learn, through real-world examples, how to maximize their UML investments without a working knowledge of the standard.

Tool Support for Developing Scalable J2EE Web Service Architectures
Guus Ramackers, Product Manager UML and Web Service Tools, Oracle

Developing scalable WS applications for the J2EE requires a careful approach to defining the right interfaces, as well as the right implementation behind those WS interfaces. Application frameworks provide an architectural basis and effective starting point for doing so, enabling both short running and long running transactions across inter-organizational boundaries. To make the development of WS applications productive, however, tool support must enable the developer to rapidly model WS requirements, apply implementation frameworks, and to generate and manage the resulting artifacts in a coherent manner. This presentation explores the requirements for tool support for WS applications, using Oracle JDeveloper 9.0.3 as an example of a highly integrated tool that supports incremental development of WS applications.

1230 – 1330   Lunch

1330 – 1530   *Session 7: <u>Ontology and Semantic Web</u>*
            Chair: Manfred Koethe, President & CTO, 88 Solutions

> Ontology seems to be a new "buzzword", but actually it goes back to Aristotle and the ancient Greeks. In the philosophical world, Ontology means a systematic account of existence. In the modern information processing world, namely knowledge-based systems, it means "specification of a conceptualization". In the context of Web Services, ontology-based technology and languages will play an increasing role to add machine-usable semantics to transferred data, a key requirement for tighter integration. The presentations in this session address this subject both from user and research/development view.

Web Services, the Web Ontology Language, and DAML-S: Semantic Grounding for Next-Generation Interoperability
Elisa F. Kendall, CEO, Sandpiper Software

Critical to the vision of the Semantic Web and to far-reaching deployment of service-enabled devices and applications is the ability to unambiguously describe the capabilities, resource needs, interfaces, and effects of these applications from a machine-interpretable perspective. Recent developments by the W3C in specifying a representation language for semantic markup, called the Web Ontology Language (OWL), and by the related DARPA Agent Markup Language program in defining a layered services description ontology (DAML-S) provide a starting point. This presentation will cover recent developments in the Web Ontology Language and related standards efforts, provide an overview of DAML-S, and present an approach to leveraging these technologies in next-generation Web Services.

The Web Services Scandal: The Overlooked Issue of Data Semantics
Jeffrey Pollock, CTO, Modulant

The scandal about Web Services is the assumption that either every system using them will be speaking the exact same language and dialect, or a translation service will have to be coded to enable systems to communicate well. Web Services technology, despite its potential benefits, is limited in its ability to work with randomly formatted, non-standard data or data not based on XML. It's not yet a ubiquitous solution. This presentation will examine the nature of the data semantics problem and present practical solutions that IT managers may implement to solve this problem within the Web Services framework.

Semantic Network Services
Robert C. Pettengill, Principal Engineer, Search Technology & Thomas Bandholtz, Manager-CM/KM, SchlumbergerSema

This presentation provides a use case report on a R&D project implementing a Topic Map as a Web Service. The primary use is in a public portal of the Federal Agency of Environmental Protection in Germany, but the service is also provided for general usage in the scope of environmental information in the "Semantic Web". The system delivers multilingual taxonomy services, including auto-classification features, based on a Topic Map (ISO 13250). The Topic Map contains and integrates a thesaurus, a gazetteer, and a chronology (approximately 100.000 terms).

1530 – 1600   Afternoon Refreshments

1600 – 1730   *Panel: Building a Business Plan around Web Services*
                        Moderator: Fred Waskiewicz, Director of Standards, OMG

> Now that the initial excitement has subsided, product plans are in place, and development is under way, what can the user community - those trying to form their own business plans incorporating Web Services and federated architectures - reasonably expect? And when? This panel of Web Services vendors and integrators will help answer these crucial business questions.

Panelists: Cory Casanave, Data Access Technologies
                        Gregg Bjork, Systinet
                        Dave Knox, IONA
                        Additional Panelists: TBD

1800 – 2000   *WORKSHOP RECEPTION hosted by* **Microsoft**

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Friday, April 25, 2003

0830 – 1215 *Session 8: Enterprise Collaboration and Business Processes using Web Services*

Chair: Peter Herzum, CTO, Herzum Software

Web Services are rapidly enabling new ways to support enterprise collaboration and business processes, and this is becoming now an important field of adoption for Web Services and Service Oriented Architectures. This session discusses multiple perspectives of this problem, including the applicability of business process and "choreography" standards; Architectures and solutions specific to enterprise collaboration and business processes; Modeling and MDA aspects; and automated, dynamic ways of composing business processes. It also addresses a critical enterprise collaboration issue: the building of trust among participants, and concrete support to this issue through technology and architecture.

Composing Web Services using BPEL4WS
Francisco Curbera, Manager-CSG & Rania Khalaf, Software Engineer, IBM T.J. Watson Research Center

Composition is a key aspect of service-oriented computing, enabling the modeling of interactions between services and the subsequent reuse of these models. In this work, we present the Business Process Execution Language for Web Services (BPEL4WS) and show how it can be used to compose Web Services. We stress the highlights of the standard, which include structured activities, correlation, compensation, and fault handling.

Model Driven Dynamic Composition of Web Services Flow for Business Process Integration
Liang-Jie Zhang, Lead Architect & Jen-Yao Chung, Senior Manager, IBM

The challenge in composing business processes is to provide quick, easy, secure, and inexpensive integration with the existing business processes and Web Services used by partners. This talk will discuss technology that supports dynamic business process composition and binding of Web Services. It will demonstrate the Web Portal and Eclipse tool to automate the Web Services flow composition based on customer's requirements. Finally, it will discuss a seamless, integrated framework for composition of template-based business processes and event-driven business processes. The UML-based model driven approach is used to create the flow template with extra requirements annotations.

Usage of Business Process Choreography
Akira Tanaka, Section Manager, Hitachi Ltd.

More than enough business process choreography notations/languages have been published. They are mostly intended to provide standard means to structure business processes (e.g., step definition, execution sequence, decisions, parallel executions, loops) to create Business Process Choreography XML documents. It is beneficial to discuss what possibilities those Business Process Choreography XML documents might bring to us. This presentation will address several interesting usages, including their relationship with Web Services and positioning in UML Profile for EDOC-based models.

1000 – 1015 Morning Refreshments

Easy Development of Scalable Web Services Based On Model Driven Process Management
Manfred Koethe, President & CTO, 88solutions Corporation

Web Services will play an increasingly dominant role in business and enterprise integration. However, the integration of the, in most cases fairly complex, "back office" functionality is today almost exclusively based on expensive human development work. This presentation will show how a utilization of available standards in combination with advanced process modeling and management technology currently under standardization can lead to a highly automated and very flexible back-office infrastructure. The two key standards are the "UML Profile for Enterprise Distributed Object Computing" (EDOC) and the "Meta Object Facility", both OMG specifications.

An Enterprise Architecture for Web Services and XML
Cory Casanave, President, Data Access Technologies

Information technology management has, for years, recognized the strategic necessity to build systems faster, more modularly and with less dependence on the infrastructure. This talk presents how Web Services fits into this picture as part of the solution. To automate the collaborative enterprise, some age-old problems must be addressed: integration nightmare; infrastructure, version and vendor lock-in; and complex, divergent and manual development and deployment processes. The "solution set" lies in bringing together proven concepts into a coherent plan, including: services-based architecture (A.K.A. Web Services and messaging technologies); Model Driven Architecture (MDA); large grain business components; standards; and tooling.

Applying the UML to Enhance Quality of Web Services
Bhuvan Unhelkar. University of Western Sydney

This presentation explores the invaluable opportunities provided by use of disciplined modeling in creating excellent Web Services-based applications. Provision of Web Services in itself is a technological challenge that may be surmounted soon, if not already. However, the manner in which the services can be utilized by business will depend on the requirements of the business and its existing infrastructure. This presentation will explore in detail how the business requirements can be modeled comprehensively by use of the UML, and how, as a result of that modeling, the quality of Web Services is enhanced.

1215 – 1315   Lunch

1315 – 1445   *Panel: Enterprise Web Services--Where Are We Going?*
Moderator: William Cox. Technical Director-Architecture & Standards, BEA Systems

The first generation of Web Services specifications are coming into broader use; the second generation (e.g. SOAP 1.2, WSDL 1.2, Web Services Security, UDDI 3+) are nearing completion though not yet deployment. A group of Web Services specifications such as Web Services for Remote Portals/Portlets, WS-Reliability, SOAP-Conversations, BPEL4WS and WS-Transaction/WS-Coordination are being proposed through standardization processes. These all address issues common to business/government enterprises. Where is the Web Services community headed? And what should we focus on in the near future? This panel will address the future directions of Web Services and related specifications and implementations.

Panelists: TBA

1445 – 1500   *Closing Remarks*
Program Committee Co-Chairs:
Fred Waskiewicz, Director of Standards, Object Management Group
Peter Herzum, CTO, Herzum Software

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Peter Herzum, *Herzum Software*

Members: Rebecca Bergersen, *IONA Technologies*
Cory Casanave, *Data Access Technologies*
Bill Cox, *BEA Systems*
Hans-Peter Hoidn, *IBM*
Sridhar Iyengar, *IBM*
Kevin Loughry, *Object Management Group*
Sumeet Malhotra, *Unisys*
Bob Marcus, *Emerging Technology Strategies*
Jishnu Mukerji, *Hewlett-Packard*
Jon Siegel, *Object Management Group*
Richard Mark Soley, *Object Management Group*
Akira Tanaka, *Hitachi Ltd.*