

# **e-Business Application Integration Workshop**

**January 29 to February 1, 2001  
Orlando, FL USA**

## ***Workshop Program***

### **MONDAY - January 29, 2001**

#### **0830 – 1730 - *CORBA Tutorial***

Dr. Jon Siegel, Object Management Group

This all-day tutorial covers OMG's Object Management Architecture including CORBA, the CORBA services and CORBA facilities, the Domain CORBA facilities, and an afternoon concentrating on the new specifications included in OMG's latest release, CORBA 3. Starting with a brief look at requirements and needs in distributed computing and how UML, the MOF, and XMI fit into the rest of the OMG specifications, the tutorial moves on to cover OMG Interface Definition Language and mappings to various programming languages, structure of the Object Request Broker, interoperability and the standard protocols GIOP and IIOP, and integration with Java and COM/DCOM. The next section of the tutorial covers the CORBA services and facilities, and the Domain CORBA facilities.

The afternoon covers the new specifications included in the CORBA 3 release, which fall into three categories: Improved integration with Java and the Internet; Quality of Service Control, and the CORBA Component Model or CCM. The discussion of CCM starts with a closer look at the Portable Object Adapter or POA, on which CCM is based.

#### **0830 – 1730 - *Object Modeling with OMG UML***

Steve Tockey, Construx Software

This tutorial shows how the Unified Modeling Language (UML) can be effectively applied to model object-oriented applications. It provides an overview of the language, and explores how UML can be used to express requirements and designs. Upon completion of the tutorial, attendees will understand the basic concepts and techniques for modeling object-oriented systems.

#### **0830 – 1730 - *Integrating Enterprise Information Resources using OMG CWM, XMI and MOF***

Sridhar Iyengar, Unisys Corporation

Dan Chang, IBM Corporation

Managing and integrating enterprise data spread across various file systems, database systems (relational, network, object) and the Internet (XML, HTML) is a daunting task. Technologies like CORBA, EJB and COM+ address object distribution, transaction interoperability and some degree of persistence support (OMG PSS, Entity Beans in EJB), but are not intended to solve the problem of extracting, transforming, loading and managing enterprise data. The field of data warehouse management needs enterprise class metadata and data management and has historically been fraught with proprietary and expensive solutions. The OMG OA&DTF has been working on addressing this problem since middle of 1998 when the OMG CWMI (Common Warehouse Metadata Interchange) RFP was issued. Over the last 18 months, the industry leaders in data and metadata management have been working on the Common Warehouse Metamodel (CWM) - an extension of UML that is fully compliant with the OMG metadata architecture defined by MOF and XMI. In June 2000, the OMG adopted the CWM specification ([www.omg.org/cwm](http://www.omg.org/cwm) for details) which heralds a new era in enterprise data warehouse architectures.

This tutorial gives a brief overview of the data warehousing problem and shows how CWM can be used to integrate enterprise wide databases and data warehouses. A brief overview of UML, XMI and MOF will be provided and then the CWM metamodel is described in detail. An end user scenario based on the OMG CWM demonstration showcase will be used to highlight how XMI and CWM can be used to manage data spread across various types of database systems and metadata systems. The CWM showcase highlights how several OMG members including IBM, Unisys, Oracle, Hyperion, Meta Integration and SAS designed CWM and implemented conformant systems leveraging OMG XMI and MOF.

1015 – 1045 - Morning Refreshments

1230 – 1330 - Lunch

1515 – 1545 - Afternoon Refreshments

## **TUESDAY - January 30, 2001**

0830 – 1230 - ***Introduction to EAI Tutorial***

Peter Fischer, Concept Five Technologies

0830 – 1230 - ***J2EE Tutorial: Enabling Technologies for EAI***

Rahul Sharma and Tony Ng, Sun Microsystems

The Java 2 Platform, Enterprise Edition (J2EE) is a platform that enables solutions for developing, deploying and managing n-tier server-centric enterprise applications.

This tutorial will provide a technical overview of J2EE 1.3, focusing on J2EE features that enable enterprise application integration (EAI). The tutorial will describe a few EAI scenarios and how J2EE technologies can be applied to provide solutions.

The J2EE APIs that will be covered in detail include Java Message Service (JMS), Enterprise JavaBeans architecture, J2EE Connector architecture and Java API for XML Processing (JAXP). The tutorial will also discuss emerging technologies such as Java API for XML Messaging (JAXM).

0830 – 1230 - ***CORBA Messaging Tutorial***

Bill Binko, Technical Resource Connection, Inc.

For years, Message Oriented Middleware (MOM) products have provided reliability and Qualities of Service that RPC-based distributed systems such as CORBA have been unable to match. Guaranteed delivery, connectionless communication, and greater administrative control are features MOM proponents have touted as being requirements to many enterprise solutions. CORBA backers, on the other hand, point at the intrusive nature of MOM, and the location transparency, type safety, and ease of integration of CORBA systems. With CORBA Messaging Specification, the OMG has bridged these two worlds to leverage the strengths of both.

This presentation provides an in-depth description of this new approach to distributed systems. This tutorial will draw on experiences working on the TRC team that implemented a messaging system for a large securities exchange. The presentation explains the challenges that faced the developers of the standard and how they overcame the inherent limitations of RPC-based communications to provide MOM-type Qualities of Service to the CORBA community. Descriptions of the new Asynchronous Method Invocation (AMI) and Time Independent Invocation (TII) are covered as well as usage and deployment strategies for all aspects of the Messaging Specification.

1015 – 1045 - Morning Refreshments

1200 - 1800 - ***Demonstration Area Open***

1230 – 1330 - Lunch

1330 – 1730 - ***UML for EAI Tutorial***

Ed Stokes, Concept Five Technologies

As the focus of system development increasingly shifts from development to integration, software engineers need to approach modeling in new ways. Where application development focuses on understanding the system as a whole and then allocating system behavior to a system's component parts, application integration often focuses on first understanding how the parts of the system interact before focusing on the system as a whole. Only after this "as is" picture of how the parts of the system interact is understood does the focus turn to the system as a whole.

This session will present an approach to modeling requirements and design for EAI applications in UML. It will focus on the process for capturing both the "as is" model of existing systems, and the requirements for integration systems that support users in new ways. The session will consider how the UML profiles for Business Engineering, EAI and Enterprise Distributed Object Computing fit into this process. The tutorial presumes a basic understanding of UML.

1330 - 1730 - ***BizTalk Tutorial***

Marius Rochon, Microsoft

The first generation of the web was revolutionary because it provided users with a location independent mechanism to view document content. This was followed by the second generation of the web that was all about providing dynamic content to the browser and the emergence of personalization. Microsoft's vision is that XML, SOAP, and the BizTalk Initiative form the building blocks for the third generation of the web, which is all about going beyond the browser, and providing loosely-coupled business and business logic interoperability over the Internet.

During the first two hours of this Microsoft presentation will be more technical, focusing on the fundamental enabling technologies SOAP and the BizTalk Framework 2.0 (BTF 2.0), while in the final hour we will demonstrate the business value of the product Microsoft BizTalk Server 2000.

1330 – 1730 - ***Loosely-Coupled EAI using CORBA, J2EE and XML Tutorial***

Dr. Tom Urquhart, PrismTech

This half-day tutorial explores the architectures and technologies that can be used to facilitate loosely-coupled EAI. Traditionally, most EAI solutions have been tightly-coupled in that they work by making direct synchronous calls to application API's or to common databases. While these approaches still have considerable value in certain applications, for example where tight transactional contexts must be maintained, it is increasingly necessary to also support the loosely-coupled approach, where integration between applications is enabled through asynchronous events, dynamic application resource location and binding, and data driven interactions and transformations. Most organizations are now facing the challenge of not just integrating their internal systems, but also external entities such as customers, partners, and B2B exchanges / ASP's. The loosely-coupled integration model provides the flexibility, robustness and maintainability required to ensure the success of these architectures.

In J2EE, the main specification of note in the context of this tutorial is the Java Messaging Service. We show how by combining this with the CORBA Notification Service, an end-to-end event model can be obtained for an integrated system containing EJB's (residing in application servers) and other applications (residing in the CORBA environment).

Finally, we examine the role of XML, especially in the context of XML payloads in Notification or JMS events. XML provides an excellent, portable data format that is also easily amenable to dynamic transformation routines (e.g. using XSLT) to ensure that all applications in an integrated system receive data in the format they require.

## WEDNESDAY - January 31, 2001

### 0845 – 0900 - *Opening Remarks*

Andrew Watson, Object Management Group

### 0900 – 1230 - *Process/Architecture*

Chair: John Knapman, IBM UK Ltd.

When building integrated systems that embody a significant part of an enterprise's business processes, sound architectural underpinning is essential to help with the management of complexity in the presence of rapidly changing technologies, business channels and competition.

In the first part of the session, we will hear about architectures that address the needs of central banking (an object bus based on events) and of person-based systems (exploiting such components as those adopted in CORBAMED for Life Sciences). After that, some research on high-level types will be presented; this is intended to facilitate the exchange of information across an enterprise.

In the second part, we will hear about needs and innovations from the standpoint of three proprietary architectures. All of these are intended to enable enterprises to proceed more directly and easily from business-process models to software development, integration and deployment. The last one focuses particularly on business to business (B2B).

### 0900 – 1030 - *Process/Architecture I*

#### **“Re-engineering EDI Systems for Time Series”**

Chris Nelson, European Central Bank

Early in 2000, the ECB decided to replace its core message-processing system so that it could support multiple syntaxes and file formats whilst processing large messages (many megabytes) in a short time. It also wanted a system that was "future proof", and the key to both these goals is object technology - the object model is likely to remain stable whilst the technology of the rest of the system changes. The new system was designed using the UML, is implemented in Java, and has an architecture similar to the Java event system based on object buses: each object is passed to relevant listeners as soon as it is available. The processes (time-series event listeners) are concerned only with the objects in the time-series object model, and these should remain stable for a long time. The ECB is developing a proof of concept for this architecture.

#### **“Leveraging Logical Integration Components with EAI Tools”**

Jon Farmer, Care Data Systems

Current EAI tools address physical transformations (among communications protocols and invocation protocols, distributed transactions, and distributed process integration) with careful attention to transaction integrity. However, in nearly all large-scale person-data-centric integration projects, there is the recurring problem of logical integration of person identifiers and concept codes, which none of the EAI tools or standards address. This presentation will illustrate several production projects in which logical integration components such as those adopted in CORBAMED are filling this "logical integration void" in the EAI space.

### **“Digital Object Repository Architecture”**

Christophe Blanchi and Jason Petrone, Corporation for National Research Initiatives (CNRI)

As part of its research in interoperable digital libraries, CNRI has developed a Digital Object Repository Architecture to enable distributed, secure and interoperable access to information. This architecture provides homogeneous access to heterogeneous information by characterizing the contents of digital objects using high-level types. A high-level type has associated intents based on the set of operations that can be performed on it. New types can be dynamically added to the infrastructure, which tracks them by associating a globally unique URN implemented with CNRI's Handle System. The architecture allows for the normalization and description of complex information and the abstraction of semantics, greatly facilitating the exchange of information across the infrastructure.

1000 – 1800 - *Demonstration Area*

1030 – 1100 - Morning Refreshments

1100 – 1230 - *Process/Architecture II*

### **“An Architecture-Driven Software Development Process”**

Heather J. Walden, META Inc.

To address the vicious cycle of trying to keep up with changing business requirements and new technology during software development, an architecture-driven process is needed. The architecture should provide a layer of abstraction between the applications and the services they provide. It should provide standards-based services (e.g., Persistence and Security) and should integrate seamlessly with new and legacy systems. Beyond that, a tool is needed for architects to enhance the architecture, driven by metadata that should be sourced from a MOF repository. The next step would be for the tool to generate regression test drivers, stub implementations, distributed interfaces, component interfaces, server mains and make files. We have put architecture in place at Fortune 500 clients and can show case studies from them.

### **“Tools for Designing and Implementing BPI”**

Yuji Mizote, Hitachi, Ltd. Business Solution Systems Division  
Atsushi Murase Hitachi, Ltd. Systems Development Laboratory

The Business Process based application Integration (BPI) architecture consists of three layers: the business process layer, the adapter layer, and the application layer. The business process layer controls the flow of a business process, which is a collection of works, activates a work when its specified activation condition is fulfilled, and then invokes an application via the adapter layer. The adapter layer hides application-specific APIs, protocols and data formats from the business process layer. The application layer corresponds to applications to be integrated. We are implementing BPI development tools by utilizing the following OMG technologies: XMI/MOF for representation and manipulation of BPI definitions, and CORBA/IIOP for communication between the workflow engine and adapters in a distributed environment.

### **“Advanced Integration Architectures”**

Christopher Bussler, Oracle Corporation

The goal of an advanced integration architecture must be to provide a homogeneous environment of business events independent of the heterogeneity of the B2B protocols and application systems involved. The benefit of the homogeneous environment is that the business processes constituting the integration can deal with a homogenous set of business events without the need to interpret different representations for each integrated system. Furthermore, business processes do not have to deal with the variety of application system interfaces or the trading partner's application system interfaces. B2B protocols, transformation engines, interface unification, and shared data-store are four essential abstractions that allow the achievement of the set goal.

1230 – 1330 - Lunch

1330 – 1500 - ***Technology Choices***

Chair: David Smyth, Oak Grove Systems

**“Leveraging the Strengths of Disparate Component Systems”**

Mike Foody, Actional Corporation

This presentation will provide attendees with an in-depth look at the future of the integration market. Mr. Foody will outline critical issues that must be addressed by enterprise level interoperability solutions. Through real-world examples given throughout the presentation, attendees will learn about next-generation integration solutions that are going to be crucial to effectively web-enable existing legacy investments.

**“Choosing and Implementing an Integration Solution”**

Raghupathi.N.Cavale, Jagannath Moorthy & SVSubhramanya Infosys Technologies Ltd.

This presentation traces the diverse requirements of integrating various systems and outlines the challenge of making choices. The presentation then traces the complexity of combining various technology options like packaged middleware solutions plus reusable components plus bespoke development and looks at the risks involved in terms of handling different technologies and resource types. The presentation looks at the best possible options of mitigating the risks especially in case of demanding, short-cycle projects.

**“Event Management Enhancements to Standard CORBA Processes”**

Loren Redmond, Net-Linx Publishing Systems

This presentation looks at how the traditional CORBA client-server communications are synchronous, implying that the client and target tightly coupled from a flow-of-execution point of view. A client that is interested in displaying the rapidly changing state of production elements, such as pages and their content, would be better served to get the initial state, make a request when changes are posted and then use that notification to update its local display.

1500 – 1530 - Afternoon Refreshments

1530 – 1730 - ***Implementers' Roundtable***

Chair: Paul Harmon, Cutter Consortium

The implementers panel will include individuals who worked with other companies on the development of e-Business applications that involve significant integration problems. Each panelist will be asked to offer some insights into the overall approach they normally recommend, the problems they typically encounter, and the limits to what can be predictably done with today's technology. After presenting positions, the chair will suggest some questions for general discussion, and additional questions will be accepted from the audience. The goal of this discussion is to elucidate some of the practical problems implementers face when they try to guide clients through large projects.

Panelists: Michael Guttman - Chief Technical Officer, IONA

Tom Laffey - Vice President, Engineering, Talarian Corporation

Dr. Tom Urquhart - Chief Technology Officer, PrismTech

1800 – 2000 - ***Workshop Reception*** hosted by **The Software Solutions Division of Hitachi Computer Products (America), Inc.**

## THURSDAY - February 1, 2001

### 0830 – 0900 - *Sponsor Presentation – “Securing the Distributed Enterprise”*

Hans Riemer, Software Solutions Division of  
Hitachi Computer Products (America), Inc.

In traditional businesses, roles were simple and distinct. "Us / them." "Supplier / customer." Computing security was simpler too. The computer was kept in a locked room.

Today, in order to survive, businesses must let their customers, suppliers, business partners, and even their competitors into that locked room. The number of roles and types of people accessing corporate information resources has increased dramatically. Users are dispersed geographically, and utilizing all kinds of new devices from palmtops to cell phones.

Enabling the right people to have access to the right information at the right time is now a requirement for corporate survival. This presentation discusses some of the challenges of this requirement, as well as the technologies and best practices available to address them.

### 0900 – 1430 - *Case Studies*

Chair: Bill Ruh, The Advisory Board

There is an old saying that goes "experience is the best teacher". Case studies bring the experience of trailblazers in e-business application integration to the workshop. Participants will be able to learn about the reality of application integration from these speakers.

This session contains experiences from a broad range of industries including manufacturing, government, publishing, and life sciences. The problems being addressed cover a nice cross section of e-business applications including supply chain management, customer care, ERP, human resources and manufacturing automation. While each industry has unique problems the lessons learned from the experiences carry over to other industries.

Each case study addresses the topics of architecture and design bringing their own unique perspective. In addition, the topics of modeling as well as standardization are sprinkled throughout the session.

#### **“A Tale of Two Factories”**

Jim Jennis, Fuentes Systems Concepts, Inc.

This case study traces a very successful EAI project implemented in a large manufacturing plant initially owned by 3M Corporation. The project, though highly complex, shows how the intelligent choice of tools, technologies and strategies to implement an EAI solution can greatly ease the pain and reduce the costs of application integration and migration.

#### **“Using EAI in the Defense Integrated Military HR System”**

COL Lawrence Sweeney, U.S. Air Force, DIMHRS Project Manager, SPAWAR ITC

This presentation will describe COL Sweeney experience thus far in the architecture, design, development, deployment and evolution of DIMHRS, discussing how e-business technologies are being used to approach the challenges of a fully integrated military personnel and pay system for all components of the Military Services. Specifically, we describe our adoption and use of UML for analysis and design, the development of a comprehensive architecture for human resources based on the Reference Model for Open Distributed Processing (RM-ODP), the planned use of CORBA within the strict requirements of the Defense Information Infrastructure Common Operating Environment (DIICOE), the use of XML to standardize HR vocabularies, and our active participation within standards organizations including the OMG and the HR-XML Consortium to help bring vendors and customers closer together through a common standard.

1015 – 1030 - Morning Refreshments

1030 – 1200 - *Case Studies II*

**“A Framework for Integrating the Publishing Workplace”**

Glen Alleman, Niwot Ridge Consulting

This paper describes the architecture and design strategies for building a publishing system framework using CORBA, Java, and distributed object technologies. The interaction between large grained components (subsystems) and the work processes that define these interactions is an important consideration in the design of the system. The creation of a newspaper or other published information media is similar in many ways to the manufacturing domain.

**“Integration Modeling Techniques for ERP”**

Laura Brown, System Innovations

A composite story, from experiences applying ERP software in the employment services sector, shows how to apply integration modeling techniques to ERP objectives. When the software vendor provides the implementation model, what's needed most are the requirements for configuring and integrating the system. Integration models were applied to the companies in this case study to provide the glue between the business area views and the technical team. The resulting models were used to orient the team supplied by the package vendor, to carve out the implementation project and to guide the internal developers carrying out the project.

**“Integrating the Supply Chain: A Pharmaceutical Case Study”**

Ron Zahavi, MedContrax, Inc

This presentation explores the technical (development and operations), process, organizational and political, as well as security issues that must be overcome to successfully deploy a B2B system across the Internet. The healthcare industry, in general, is behind other industries in e-commerce and related technologies. The lack of industry standards for data exchange has promoted the development and implementation of divergent contract administration systems within and between industry segments. Market surveys have shown that between 85-100% of contract systems in the pharmaceutical industry (manufacturers, wholesalers and Group Purchasing Organizations) are homegrown or specially customized. This has contributed to lack of interoperability and integration of the supply chain. The supply chain includes many components such as catalogs, contracting, order placement, order tracking, inventory replenishment, and more. Clear and standardized interfaces must be produced between and within each of the business function areas.

1200 – 1300 - Lunch

1300 – 1430 - *Case Studies III*

**“Better Customer Service & Support Through Monitoring & EAI”**

Scott Bluman, Witness Systems' Application Integration Group

This case study presentation will demonstrate that through EAI the whole is definitely greater than the sum of its parts in the customer service and support environment. EAI has allowed Witness' to use the strategic information in ALL the systems in the support environment to qualitatively target its patented monitoring systems to those interactions that are the most valuable to the service organization and their customers.



## **“Upgrading CFO Systems with EAI/ERP Requires an EA for Risk and Cost Avoidance!”**

Felix A.A. Rausch, Ptech Inc

The current state of most of the CFO's systems are not integrated, were designed for disparate purposes, are antiquated, many still batch process which require risky, costly extensive changes to make them eCommerce ready. Going straight to the solution and acquiring "EAI/ERP vendor solutions" spells high risk and potentially cost overruns most organizations can ill afford. Many organizations have started efforts to modernize their vital systems and have taken approaches that range from the drastic to the sublime. Many have not succeeded so far. Why, because: · They don't know that an Enterprise Architecture (EA) can become the basis for requirements that allows a roadmap to be constructed to the To-Be architecture, risk-free, without spending a Dime buying "Stuff". · Currently many different EAI tools must be cobbled together without visibility as to their effect on one another in the holistic environment of a complex (financial) enterprise, visibility and collaboration a Web-enabled EAI-EA would easily provide.

So one could ask why is an EAI Enterprise Architecture (EAI-EA) needed?

EAI-EA reduces Risks

1. By providing visibility of the overall interrelationships of different processes, information flow, and other activities 2. Of not finishing on time 3. Of incurring cost over-runs 4. Of not achieving contractual system performance. 5. Of not getting user acceptance and stakeholder buy-in 6. Because of predictability and confidence of knowing the pitfalls 7. Because it assists in implementing enterprise-wide integration standards 8. Because the requirements were factored and modeled in a knowledge repository, including business rules.

EAI-EA reduces Costs

1. Because the Roadmap is known. 2. Because the proper complexity reduction planning was done. 3. Because of predictability and confidence of knowing the pitfalls 4. Because the Supply Chain integration scenario is mapped out 5. Because it accelerates benefits for CRM, ERP, and Supply Chain Mgt 6. Because it assists in implementing enterprise - wide integration standards 7. Because a Rulebook of business rules was constructed for what systems are supposed to do.

1430 – 1500 - Afternoon Refreshments

### **1500 – 1700 - *Users' Roundtable***

Chair: Paul Harmon, Cutter Consortium

The Users' Panel will provide a counterpoint to the implementation roundtable. In this case we will ask three managers from companies that have developed significant e-Business applications to describe the expectations and assumptions they approached the task with, the problems they actually encountered, the fitness of the tools and technologies they used, what they would do different if they could start over, and advice they would offer other managers facing similar problems. Each panelist will be given a few minutes to describe the e-Business application he was involved with. After than, the chair and the audience will ask questions.

Panelists: Peter Fischer  
Director of Technical Services, Concept Five Technologies

Kim Warren  
Global Director e-Product Development, General Motors Corporation

David Smyth  
Chief Architect, Oak Grove Systems

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## PROGRAM COMMITTEE

Co-chairs:     Andrew Watson, Object Management Group  
                  Bill Ruh, The Advisory Board

Members:     Dieter Gawlick, Oracle Corporation  
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