



OMG's Second Workshop on UML™ for Enterprise Applications: *Model Driven Solutions for the Enterprise*

Workshop Program

Monday - December 3, 2001

TRACK 1 - {Intro/Intermediate Tutorials}

0900 – 1230 *Introduction to UML: Structural & Use Case Modeling* - Cris Kobryn, Telelogic
In a relatively short time the Unified Modeling Language has emerged as the industry standard for graphically specifying software systems. Unfortunately, since the language is large and complex users sometimes find it difficult to learn and apply. This pragmatic tutorial focuses on the 20% of the UML that can be used to specify 80% of common software problems. The first part of this tutorial will cover two kinds of complementary models: use case models and structural models. Use case models specify system behavior as it appears to outside users by partitioning functionality into transactions ('use cases') that are meaningful to users ('actors'). Structural models define the static structure of objects, including their classifiers, relationships, attributes and operations. The tutorial concludes by showing how UML can be customized for platforms and application domains by using profiles. The latest version of the UML specification, UML 1.4, will be used for all examples.

1330 – 1700 *Behavioral Modeling* - Conrad Bock, Kabira Technologies

The second part of this tutorial shows how behavioral models complement structural models by specifying the dynamic behavior of objects, including their collaborations, state histories, and activity models. The tutorial concludes by showing how large UML models can be maintained using model management constructs such as packages, models and subsystems. The latest version of the UML specification, UML 1.4, will be used for all examples.

TRACK 2 - {Intermediate/Advanced}

0900 – 1230 *Metadata Integration with MOF & XMI*

Sridhar Iyengar, Unisys & Steve Brodsky, IBM

While the industry continues to use XML as a core technology for E-Business application integration, less attention has been paid to software development and deployment methodologies for e-business. The OMG XMI – XML Metadata Interchange (XMI) fills this gap by unifying three core technologies: the Unified Modeling Language (UML), the Meta Object Facility (MOF) and XML. XMI allows developers to model and design a e-business applications using UML and to automatically generate XML DTDs (and soon XML schemas). Efforts are also underway to standardize automatic generation of the EJB, COM and CORBA. This tutorial will provide an overview of UML, XML and XMI. It will discuss specific information models and methods used to design distributed heterogeneous applications that are independent of object middleware technology. This approach defers to implementation time the design choices that optimize an application for implementation technologies, such as Java, COM and CORBA. The examples shown will start with UML and end Java, XML, CORBA IDL and COM. They will illustrate a full application lifecycle approach and an integration architecture that uses tools and middleware from various vendors, including Unisys, Microsoft, Oracle, Rational, BEA and SUN.

1330 – 1700 *UML Components* - John Daniels, Syntropy Limited, UK

Although the Unified Modeling Language includes "Component" as a first-class concept, it has proven impossible to model the full richness of component systems using it. This tutorial will explain what features component modelers need when targeting technologies such as EJB, and describe some simple extensions to UML, achievable using the extension mechanisms built into the UML standard, that meet these requirements. The tutorial will

conclude with recommendations for modeling components with UML diagrams based on extensive practical experience.

Tuesday, December 4, 2001

0845 – 0900 - *Opening Remarks*

Fred Waskiewicz, Object Management Group (Program Chair)

0900 – 1030 - *UML Methodology I*

Chair: Robert France, Colorado State University

This session is intended to stimulate and broaden the perspective of how UML can be used in building enterprise applications. The first paper suggests a way of incorporating refinement into UML. The second presents work in progress on using UML to model enterprise class problems and executing those models to assist in the management of processes and integration activities. The third dares to make the case that extreme programming and UML can co-exist.

“Enterprise Modeling and Refinement in UML”

Branislav Lazarevic & Sinisa Neskovic, Faculty of Organizational Sciences, University of Belgrade

This presentation suggests a way to incorporate refinement in UML by modifying and extending semantics of the realization. The System-Theoretic Modeling Lifecycle has been proposed defining realization as representation of collection of operations (functions) with an occurrence of chosen model type. This means that operations should become “first class entities” in UML. Different operations can be realized with different model types: (1) a program, (2) a use case, (3) a business process. Since use case specifies sequence of operations and activity may also be treated as an operation, continuation of refinement process is obvious.

“Executable Enterprise Modeling with UML”

Michael Allen Latta & Yngvar Tronstad, Ceira Technologies Inc.

This paper presents work being done in using UML to model enterprise class problems, and execute the model to orchestrate processes and integration activities. The modeling focuses on the dynamic aspects of the enterprise using Activity Graphs and State Machines augmented with the Action Semantics, has information modeling support, and integration adapters based on JMS (Java Messaging Service) and JCA (Java Connector Architecture). This paper presents an environment that executes UML Activity Graphs and State Machines with OCL+ (Action Semantics using OCL notation) to execute enterprise processes. It also presents the issues in executing UML, OCL, and using these to accomplish Enterprise Application Integration as well as the direction this work will take in incorporating Simulation and system monitoring to increase the modeling effectiveness.

1030 – 1100 - Morning Refreshments

1100 – 1230 - *UML Case Studies*

Chair: Jack Greenfield, Rational Software

This session offers case studies showing how UML is being used to support the enterprise throughout the software lifecycle. It includes lessons learned in modeling a large project to obtain the necessary granularity of modeling artifacts; in visually model non-OO software constructs; in capturing procedurally-based software; and in using UML to define metadata, enabling a "virtual database" spanning disparate data sources.

“Modeling Legacy Architecture with UML”

Chris Armstrong & Jeroen van Tyn, Armstrong Consulting.

Motorola’s OMC-R system configures and manages telecommunications networks for major wireless communications providers such as Nextel. Motorola had a critical need to visually model the OMC-R architecture. Challenges included: how to visually model non-OO software constructs with UML, how to extend UML to capture procedurally-based software, adapting the 4+1 view of architecture for non-OO applications, deriving and modeling system use cases for a legacy system, customizing Rational Rose to help automate modeling tasks. We will discuss architectural modeling conventions and guidelines, strategies for mapping C code and database stored procedures to UML, how to capture and document reusable architectural elements using the Reusable Asset Specification (RAS), and how to customize Rational Rose to reverse-engineer procedural C code.

“Using UML to Construct a Model Driven Solution for Unified Access to Disparate Data”

Randall Hauch, MetaMatrix, Inc.

Increasingly, applications require access to data that spans disparate data sources. Traditional approaches to solving this problem involve the development of custom interfaces or data warehousing. A more flexible and maintainable approach is to construct a data-driven solution in which metadata describing the data to be accessed is captured and utilized to construct a “virtual database” representing the data in a uniform manner. This presentation will outline the model driven architecture utilized by MetaMatrix and will discuss how the MetaMatrix Modeler™ uses UML and UML based metamodels as part of this architecture. The role UML and UML constructs play will be demonstrated to solve a typical disparate data access problem.

1200 – 1800 - ***DEMONSTRATION AREA OPEN***

1230 – 1330 - Lunch

1330 – 1500 - ***Users’ Panel***

Chair: TBA

This panel will explore how practitioners from various vertical markets are employing UML techniques and methods to produce model driven solutions for the enterprise. Panelists will present their successful - and not-so-successful - efforts to employ model-driven development concentrating on aspects of OMG's emerging MDA™: fraction of code generation; platform-independence of the base UML model; and extent of tool support. Practical issues related to how UML can specify model driven architectures for enterprise applications employing a variety of middleware standards will be presented.

PANELISTS: TBA

1500 – 1545 - Afternoon Refreshments

1545 – 1715 - ***MDA Methodology I***

Chair: Sridhar Iyengar, Unisys

This session provides design guidelines and techniques for building MDA-compliant enterprise applications and software tools. Topics addressed include ways to ensure that APIs and schemas derived from class models are of high quality and optimal; how meta-modeling and meta-programming techniques can be combined to implement a new generation of software maintenance tools; and the introduction of a repository - reflecting the family-of-modeling-languages approach - that provides support for the composition of enterprise model viewpoints.

“Building Compilable Class Models”

David S. Frankel, IONA Technologies

The industry is standardizing mappings that take class models as input and produce APIs and schemas as output. These mappings have certain common principles. Drawing on these principles, this presentation lays out a set of guidelines for building class models that can be compiled efficiently by the new breed of tools that conforms to these standards. Developers can use these guidelines to ensure that the APIs and schemas generated from their class models are of high quality and that the implementations of the generated APIs and schemas that tools produce are optimal.

“Combining the Power of Meta-programming and Meta-modeling in the OMG/MDA Framework”

Jean Bézivin & Nicolas Ploquin, Université de Nantes

The presentation will show how modern meta-modeling and meta-programming techniques may be combined to implement a new generation of software maintenance tools. The proposal deals with the future maintenance of software written in the C# programming language, supported by the DotNet platform and uses all support available in the MDA framework (UML, MOF, XMI). In addition to this, we take advantage of the introspection properties of C#. A similar approach could be used with other modern programming languages like Smalltalk or Java. More conventional approaches of reverse engineering legacy systems (e.g. Cobol programs) will also be discussed.

“Emergent Enterprise Models”

Peter Denno, National Institute of Standards and Technology

An emergent enterprise model is one that comes into being through the accretion and interrelation of the various models generated in the course of the development of the enterprise’s infrastructure, and through its evolution. For these project-oriented models to serve the more encompassing goals of enterprise modeling, viewpoint communication must be established, and enterprise model viewpoints, reflecting perspectives that the modeler finds

valuable, must be composed. This presentation will describe early work towards a repository for an emergent enterprise model. The repository design reflects the family-of-modeling-languages approach, where core modeling semantics (as logical predicates) are associated with a meta-meta-model (e.g. similar to MOF, MML) and both are specialized at the M2 level for the various notations employed.

Wednesday – December 5, 2001

0900-1030 - MDA Methodology II

Chair: Paul Harmon, Cutter Consortium

MDA is being applied to many stages of the Application Development Cycle from organizational work to code generation as well as supporting a set of standards, best practices and tools. This session will cover three views of the application of MDA - the first will cover Enterprise modeling and the development of an integrated business architecture, the second will cover Model transformation techniques and the importance of the UML Profile and the third will cover development tools and code generation.

“Model-driven Business Architecture”

Pete Rivett, Adaptive Ltd

This presentation will address the application of modeling standards (including MOF, CWM and EDOC in addition to UML) to enterprise modeling at the business level. It is based on practical experience gained by Adaptive in working with blue-chip customers to bridge the 'business-IT gap'. This has involved extending the ideas of MDA to earlier in the lifecycle and attempting to apply the standards (or early versions) beyond the IT sphere. The result leads towards an integrated business architecture (similar in scope but different in shape to the Zachman Framework) to facilitate business-driven change.

“Implementing the MDA Approach with the "UML Profile" Technology”

Philippe Desfray, SOFTEAM

UML profile is a key technology for supporting MDA. In this approach, PIMs and PSM have to be derived from UML models. This presentation will describe the use of UML profiles throughout the entire software lifecycle, providing specific support for different kinds of models and different phases of software development. Evolutions to the profile technology will be presented, in order to support the different features necessary for profiles to filter the relevant models and support model transformation. Reusability and adaptations of profiles will also be discussed. All of this will be based on existing toolsets, already applied techniques, and existing user cases. In conclusion, examples of Profile architectures supporting MDA approaches specific to particular context will be presented.

“m2c: Application of UML, MOF and MDA for Component Development”

Marc Born & Olaf Kath, IKV++ Technologies

m2c is a collection of design techniques fully supported by development tools. It integrates object oriented design and component based manufacturing in a model centric approach. The application of m2c for the development of distributed systems contributes significantly to a reduction of the time to market for distributed applications and telecommunication services. m2c supports different middleware technologies, among them are plain CORBA, CORBA Components and a proprietary distributed processing platform. The talk will not only include a presentation of the conceptual foundation of m2c itself, its notations and the principles of code generation, but also a demonstration that underlines the flexibility and technology independence of the whole tool chain.

1000 – 2000 - *DEMONSTRATION AREA OPEN*

1030 – 1100 - Morning Refreshments

1100 – 1230 - MDA Case Studies

Chair: Fred Waskiewicz, Object Management Group

This session uses practical experience in providing guidance to those adopting a Model Driven Architecture approach to software systems design. Drawing from examples as diverse as a large-scale government project for designing web-based applications, a tool for model driven application generation and the specification of international standards, it offers advice on the practical issues of using modeling standards; generating applications for a variety of architectures; and best practices and lessons learned.

“Case Study: A Model Driven Architecture for Integrating Enterprise Wide Federal Web Applications”

John A Smith, Ventera Corporation

An approach for designing an integrated enterprise framework to develop federal government web based applications is presented. It is based on a Model Driven Architecture (MDA), the UML notation, and the Rational Unified Process (RUP) methodology to develop an architecture using the CORBA, J2EE, .NET and XML interoperability standards. It presents the practical issues of using modeling standards to manage complexity across multiple federal business units in order to protect investments of capital, skills, and infrastructure. It further describes how the UML captures MDA design constraints, such as the Section 508 disability accessibility legislation and electronic digital signature legislation, which are unique to federal web applications. We conclude by offering a discussion of best practices for applying UML to model integrated federal enterprise applications.

"A Case Study Using OMG MDA with ArcStyler"

Jens-Hagen Syrbe, Interactive Objects Software

This presentation provides an example of the crucial tool support required by MDA and Convergent Architecture, an architectural style that defines how the concepts of MDA are successfully applied. A specific case study examines the development of a new client management system for German saving banks to process data from approximately 40 million customers. The system is implemented using C++ and running on an IBM OS/370 Mainframe. An existing legacy IMS database is used as persistent store. Highlighted will be ArcStyler's (an Architectural IDE) approach to translative code generation and the automatic generation of utility objects from the business object model according to the MDA concepts. The presenter will offer insight into the benefits derived from the MDA approach.

“The Model-driven Approach to Geographic Information System Standardisation - Lessons Learned”

Arne J. Berre, SINTEF

Since 1995 the two main standardisation organisations for Geographic Information, ISO/TC211 and OGC (Open Geodata Consortium) have worked on the specification of standards for geographic data and services. UML has been selected as the normative specification language within ISO/TC211 since 1998, while OGC is currently using UML in a non-normative way. ISO/TC211 focuses on platform independent models expressed in UML, and on a model-driven approach for mapping these to XML, while OGC is addressing implementation specifications for multiple technologies. Currently it has not been possible to fully realise the model-driven approach to standard specifications across ISO/TC211 and OGC. An analysis of the current situation, and requirements for what needs to be done to achieve this, will be presented.

1230 – 1330 - Lunch

1330 – 1400 - ***SPONSOR PRESENTATION*** – Jack Greenfield, Chief Architect
Practitioner Desktop Group, Rational Software

1400 – 1600 **MDA Panel**

Chair: Jon Siegel, Object Management Group

Representatives of companies that market, or plan to market, tools that implement MDA-based application development will discuss past experiences and future plans. Discussion will cover the extent of code generation possible today and in the near future from model-based development, and the generation of true Platform-Independent Models and Platform-Specific Models that conform to OMG-standard UML profiles. Most of the session will be devoted to questions from the audience.

PANELISTS: Jens-Hagen Syrbe, Interactive Objects Software
Conrad Bock, Kabira Technologies
Additional Panelists TBA

1600 – 1630 - Afternoon Refreshments

1630 – 1800 – **UML Profiles and Extensions**

Chair: Philippe Desfray, Softeam

“UML Profile” is a powerful technique to tailor UML for specific purposes. There are many domains, with many specific modeling and development problems, that need to be addressed by a careful adaptation of the general purpose UML standard. In this session three specific areas and

problems will provide sound examples of profiles: GUI modeling with UML based on the use of user interactions patterns; defining a UML-Notation for an Automated Deployment Process in order to allow transparent software component location, and a specific architecture description language (ADL) based on UML called “Masif-Design”.

“A UML Profile for MASIF Compliant Mobile Agent Platform”

Marie-Pierre Gervais & Florin Muscutariu, Laboratoire d’Informatique de Paris

We present the Architecture Description Language (ADL) we defined in terms of a UML profile called "MASIF-DESIGN" that enables a software engineer to describe a distributed application as a mobile agent based system. For this, the MASIF-DESIGN profile includes concepts related to the distribution aspects while enabling the description of the considered environment. This means that it addresses two issues, namely the UML representation of the platform elements of a MASIF compliant agent environment and the representation of distribution transparencies.

“Heavyweight Extension of UML for GUI Modeling”

R. Venkatesh, Tata Consultancy Services

Patterns are an effective means to document the design of a software system. When coupled with a code generator, patterns can enhance productivity, ensure consistency of implementation strategies and improve the quality of code. This presentation will show how patterns can be used to represent recurring structure in the way users interact with a distributed database application. It will present schematics of a tool that allows the user interface (UI) designer to specify user interaction patterns, extending the UML meta-model to enable modeling of patterns and their instances.

“UML-Notation for an Automated Deployment Process”

Julia Reznik, GMD Fokus

Configuration and deployment of a component-based software system are more complicated when the components which constitute the system have to be distributed onto different nodes of a target environment. The main focus of this presentation is the UML Profile to support an automated software deployment for distributed systems. The Profile offers a notation to specify configuration and deployment aspects. It is already supported by a tool, which generates automatically XML descriptors such as Software package, Assembly, and Component descriptors and which are used to guide and control the deployment process.

1830 – 2030 - **Workshop Reception *hosted by Rational Software***

Thursday – December 6, 2001

0900-1030 - UML Tools

Chair: Ben Watson, Tri-Pacific Software

This session explores the use of tools that provide UML support for the design and development of enterprise applications. One presentation describes a UML based code generation environment permitting developers to experiment with differing architectures and products. Another describes an implementation of a "UML virtual machine" that directly executes UML models and provides the ability to immediately observe model changes in its implementation. The third explains extensions to UML provided by an add-on to a popular modeling tool that enable frame-based representation of ontological knowledge.

“Open Toolkit for UML Model Driven Code Generation for the Enterprise”

Andy Farrar, Science Application International Corporation & William Ray, Space and Naval Warfare Center

In this paper, we look at the benefits of using an open and extensible UML based code generation environment to synthesize distributed, object-oriented servers for the enterprise from object models. Our approach combines the power of the metadata captured in the UML model with an open framework, which allows plug-able UML based code generation modules. By using an open and extensible code generator, developers can experiment more easily with different architectures and with different vendor products. The paper concludes with an overview of some of the various applications of the open UML based code generation environment.

“The Road to UML Virtual Machines”

Dirk Riehle, SKYVA International

A UML virtual machine is a virtual machine that directly executes UML models. It represents the actual running system next to its model, allowing changes of the model to have immediate effects on the running system. This approach avoids the impedance mismatch of code-generation-based systems. We have implemented such a virtual machine. However, this was only possible by taking various shortcuts and making constraining assumptions about what can be executed. In this presentation, we will present our requirements, discuss the problems we encountered and see ahead, and analyze what is missing in terms of specifications to standardize UML virtual machines.

“UML for Knowledge Representation”

Mark Dutra, Sandpiper Software, Inc.

Current tools and techniques for ontology development are based heavily on the traditions of knowledge representation research, notably the Knowledge Interchange Format and knowledge representation languages descended from KL-ONE. These systems and related tools are little known outside the artificial intelligence arena, however, and require significant expertise in the relevant knowledge representation language and modeling methodology. We have extended the UML to enable frame-based representation of rich ontological knowledge through the creation of a UML profile for frame-based knowledge representation that makes use of UML's extension mechanisms. We have also implemented an add-in to Rational Rose that supports this profile. This paper describes the motivation, implementation and use of this UML profile and Rose add-in.

1030 – 1045 - Morning Refreshments

1045 – 1215 - Tool and Implementation Case Studies

Chair: Jon Siegel, Object Management Group

OMG specifications extend the reach of UML in different directions, as we see in the diversity of the three tool implementations presented in this session. The first examines non-functional aspects of modeled systems, focusing on schedulability as defined in the UML Profile for Schedulability, Performance, and Time. The second concentrates on data modeling as it discusses design issues surrounding the Common Warehouse Metamodel. And the third presents a parameterized approach to composition of MDA Platform-Specific Models from Platform-Independent Models and platform frameworks.

“Non-Functional Analysis for UML Models, A Case Study: Model Processing for Analysis”

Ben Watson, Tri-Pacific Software, Inc.

The UML Profile for Schedulability, Performance and Time is a recent OMG standard that provides a set of stereotypes and tagged values to express a system's non-functional, time related characteristics. It identifies a way of thinking about QoS and introduces the concept of model processing for various model analysis tools. This presentation is a brief introduction to the profile, the concepts behind the profile and a case study of the

implementation of a model processor for schedulability analysis using the profile. We will present the conceptual models used for the implementation and apply the model processor to a sample UML model to show a complete cycle through the analysis process.

“The CWM Experience Implementing a UML-Based Data Warehouse Metamodel”

Doug Tolbert, Unisys Corp

The Common Warehouse Metamodel (CWM) proved to be an enlightening exercise in the construction and packaging of complex UML based models. Because of the problem domain's more practical emphasis, the CWM design team faced several issues based in the nature of the UML and MOF models upon which CWM was built. These issues required innovative solutions designed to retain the effectiveness of the CWM model in enterprise level product deployments. The presentation will summarize the problems encountered during the design of CWM, discuss the solutions selected for CWM, and point the way for future work in UML and MOF to increase their effectiveness in product implementations.

“Creating Applications Using Parameterized Frameworks: Quickly Developed and Highly Customized”

Tomoo Yoda, Synergy Research Corp.

Synergy Research has been developing and demonstrating the validity of methods for constructing e-business application systems in an extremely short period. The core technology is a parameterized framework, which is essentially a parameterized MDA model. The framework model is based on UML, where the object (class) structure and collaborative behavior are delivered as a package. The model information is realized in proprietary XML formalism, readily convertible to XML. Also, because a given framework is able to import another framework, existing design patterns, platform patterns, etc. can be reused. We extend MDA such that a PSM framework can be obtained from a composition of the PIM framework and a separate platform framework through the import mechanism.

1215 – 1315 - Lunch

1315 – 1445 - MDA and Underlying Technologies

Chair: Jishnu Mukerji, Hewlett-Packard

MDA as introduced by the OMG provides a broad architectural framework and a vision. In order to realize the vision actual artifacts need to be created to populate various aspects of MDA. To do so specific technologies have to be selected and integrated within the framework. This session attempts to look at experiences with a few underlying technologies that are critical to the realization of MDA.

“From Declarative Business Models to J2EE Applications: An MDA Based Approach”

Petter Graff and Vladimir Bacvanski, InferData Corporation

We show the use of Model Driven Architecture approach in which we start the development with business UML models, transform the models into platform independent components and then into the platform specific models, from which we eventually generate skeletal J2EE applications. We explore the needed transformations from domain models to platform independent models to platform specific models. We explore rules for transformations between models that can be performed manually, and then the automated generation, based on transformation of XMI documents generated from CASE tools. We will share experiences with the use of model transformers and the development of enterprise applications in this fashion and conclude with the set of challenges and best practices for MDA-based development of J2EE applications.

“The OMG Model Driven Architecture (MDA) Meets Web Services”

Sridhar Iyengar, Unisys

While the industry is headed full steam ahead in terms of using XML and WEB Services Architecture as a core technology for E-Business application integration, less attention has been paid to the integration of software development, deployment and application integration methodologies for E-Business. The OMG Model Driven Architecture fills this gap by unifying these diverse technologies using information models/designs and mapping these models to one or more implementation technologies. A basic tenet of MDA is to use abstract/information models defined using UML and map these models to specific middleware technologies and languages. MDA principles of modeling and mapping can be extended to support web services thus bringing modeling and software architecture discipline to the emerging chaotic world of web services.

“Towards Software Fabrication”

Jack Greenfield, Rational Software Corporation

The software industry is rapidly maturing and moving towards true software manufacturing and this brings pervasive changes such as model-driven development. This presentation will introduce the audience to the most current thinking about these changes and how Rational will support and stimulate them with products and services. In particular, it explores how UML techniques and methods can be combined with other technologies, including component-based, pattern-based, asset-based and process-centric development to produce model driven solutions for the enterprise.

1445 - 1500 - Afternoon Refreshments

1500 – 1700 - **Vendors' Roundtable - UML 2.0 – Panacea or Pandemonium?**

Chair: Cris Kobryn, Telelogic

Although the recently adopted UML 1.4 minor revision includes many significant improvements for UML modelers, it is widely recognized that UML 1.x is aging and requires a major overhaul. Some of the major issues commonly cited for UML 1.x include: excessive size, gratuitous complexity, imprecise semantics, non-standard implementations, limited customizability, inadequate support for component-based development, and lack of support for diagram interchange. These substantive issues can only be addressed by a major revision to UML.

Consequently the OMG has issued four Requests for Proposals for UML 2.0, two of which are concerned with updating the modeling language part of the specification: the Infrastructure RFP, which is concerned with restructuring the core language improving customizability; and the Superstructure RFP, which is concerned with improving support for component-based development and executable models. This roundtable presents and contrasts some of the competing proposals for UML 2.0 Infrastructure and Superstructure.

PANELISTS: TBA
