



MDA™ Implementers' Workshop

Succeeding with Model Driven Systems

May 17-20, 2004 - Orlando, FL, USA

Workshop Program

Monday, May 17, 2004

0900 - 1230 **Tutorial 1: *Introduction to UML 2.0***

Bran Selic, Distinguished Engineer, IBM Rational

This tutorial describes the first major revision of the Unified Modeling Language standard, UML 2.0. This revision was strongly influenced by the notion of model-driven development and is a key element of OMG™'s Model-Driven Architecture (MDA) initiative. The tutorial starts with a brief review of the essential characteristics of model-driven development and MDA. This is followed by an objective critique of earlier versions of UML and an explanation of the requirements for UML 2.0. The bulk of the tutorial covers the structure of UML 2.0, its conceptual and semantic foundations, its salient new features, as well as the design rationale behind them. The presenter is the co-chair of the OMG task force responsible for producing the finalized version of the standard and was one of the principal contributors to the design of the language.

1030 – 1045 Morning Refreshments

1230 – 1315 Lunch

1330 – 1700 **Tutorial 2: *A Review of the MDA Toolkit***

David Fado, Senior Metrics Analyst, SAIC

Model Driven Architecture provides a powerful set of tools to enable better software development and management of enterprise technology assets. This tutorial will review how the items in the MDA toolkit can support these tasks, relying on practical examples. The initial review will discuss the basic elements of MDA as a way to address middleware complexity and a way to increase the power of models by making them executable. The rigor demanded to create such layers of models that can execute has implications for all phases of the software life cycle. Section two reviews these implications. Participants will receive a checklist outlining the main elements of the software life cycle with suggested areas where MDA can contribute. Participation in filling in this checklist will be encouraged and we will get a picture of just how we are "MDA Implementers". We will review the many key features of MDA now available, such as managed profiles, model sharing, platform independence, model transformations, and MDA tools. The third section considers the business context. While the return on investment may be seen during the lifetime of a single project, the revolutionary value of such rigorous models becomes apparent when applied across the enterprise.

1500 – 1515 Afternoon Refreshments

Tuesday, May 18, 2004

(Dual Tutorial Tracks)

0900 – 1230 **Tutorial 3: *Linking Simulations and Operational Systems with MDA***

Cory Casanave, President, Data Access Technologies

Collaboration and agility are the cornerstones of the modern enterprise as well as modern network-centric warfare. To achieve business and mission goals we must be able to bring together diverse assets and collaborators quickly and effectively to achieve those goals. To plan and train for how our goals may be achieved, we perform simulations. To achieve these goals we enable our operational systems to integrate and support us. To respond to the need for agility with dynamic integration of resources and an almost invisible boundary between real and simulated systems, we need an approach that can span and integrate our existing stovepipe solutions. Model Driven Architecture provides the basis for our next generation systems where real and simulated assets collaborate to achieve business, government and military objectives. This tutorial will demonstrate an approach to integrating real and simulated systems with MDA standards. The tutorial will cover the applicable standards, how to apply these standards to simulated and real systems and real-world case studies.

0900 – 1230 **Tutorial 4: *Introduction to the Eclipse Modeling Framework***

Catherine Griffin, Software Engineer, IBM Hursley Development Laboratory

The Eclipse Modeling Framework (EMF) is a framework and code generation facility for implementing structured data models in Java. Models can be specified using UML class diagrams, XML schema documents, or annotated Java classes. EMF models can be serialized in XMI or other formats. EMF was originally based on the OMG MOF 1.4, and has been used for several years within IBM for tool development. This experience led to an optimized implementation (focused on tool integration rather than metadata repositories) that uses a subset of the modeling concepts in MOF 1.4. The EMF metamodel (Ecore) is now aligned with the EMOF subset of MOF 2.0. EMF is based on the Eclipse platform and is open-source under eclipse.org. This tutorial is targeted at tool developers and will introduce the Eclipse platform and the Eclipse Modeling Framework, with a demonstration of how to use the tools to develop a structured data model and an editor.

1030 – 1045 Morning Refreshments

1230 – 1315 Lunch

1330 – 1340 **Workshop Welcome and Opening Remarks**

Program Committee Chair: Fred Waskiewicz, Director of Standards, OMG

1340 – 1720 **Session 1: *MDA in Action Around the World***

Chair: Jishnu Mukerji, Sr. Systems Architect, Hewlett-Packard

This session presents an international set of case studies and experience reports providing rich examples of how the MDA approach is improving software development in the enterprise.

1340 – 1420 **Extending MDA for Verification and Automatic Code Generation:
A Case Study for Infrastructure Systems using UML 2.0**

Rao G. Bhaskar & Timmaraju Keerthi, Motorola India Electronics Ltd./

At Motorola, India we have conducted a prototype project to study the impact of the generated code on performance, maintainability, integration with legacy high available framework, ability to represent a scalable architecture using UML 2.0 and Telelogic Tau Generation suite. Our study has revealed that the performance of the generated code is comparable with manual code after some fine-tuning and also that the integration with legacy framework went smoothly after some initial glitches. Our presentation outlines the details of our experience to meet the performance requirements and capability of the technology to integrate with legacy HA (High Availability) framework using MDA, 100% code generation and Telelogic Tau.

1420 – 1500 **Domain-Frontier Approach to MDA Based Software Development**
Aleksandar Orlic, Founder and Chief Consultant, Craftware

This presentation is about an original approach in software system development, based on OMG's MDA. The main goal is to offer a well-defined development process that is generic enough to be applicable in the development of any kind of software system (i.e. e-commerce, real-time, embedded), and any kind of target platform (i.e. .NET, J2EE). The proposed strategy is the carefully designed system abstraction management, accompanied with a proper model parametrization. The development process starts from a very high-level abstraction of a software system. Well-known paradigms, such as MDA, Executable UML, and aspect oriented analysis and design, are then employed to gradually and controllably lower the overall system abstraction throughout the project lifecycle. The presentation gives the overview of the method and how it applies to two real world developments ending up in two different architectures and two different platforms.

1430 – 1830 ***Demonstration Area Open***

1500 – 1530 Afternoon Refreshments (***Demonstration Area***)

1530 – 1610 **Real World Applications Using MDA**
John Carter, Architect, Computer Associates and Larry Schmidt, Enterprise Architect, EDS

In today's agile business, it's more important than ever to have an enterprise architecture that remains platform independent. True platform independence should provide flexible deployment options including hardware, operating system, languages, middleware and databases. An integrated modeling development environment, combined with automated code generation, provides this flexibility, helping organizations effectively separate their business logic from underlying platform technology. This presentation will describe real-world healthcare, child welfare and customer loyalty solutions that were developed and deployed from single models to multiple target platforms and application architectures using MDA tools and methods.

1610 – 1650 **Transformation of EDOC Behavior Models to a Telecommunication Service Provisioning Platform**
Joachim Hößler & Dr. Olaf Kath, Technical University Berlin - Dr. Marc Born & Andrej Blazarenas,
Fraunhofer FOKUS - Mario Winkler, IKV++ Technologies AG

In past OMG MDA Implementers' Workshops we have presented our MOF-based open modeling infrastructure which enables an MDA-based development of telecommunication services. We have reported on the integration of an EDOC modeling tool on top of that infrastructure for PIM modeling purposes. We used a CORBA based telecommunication service provisioning platform on the PSM side (IKV's enago platform). Furthermore, we integrated eclipse to transform the modeled platform specific services to Java code fragments. However, the transformations from EDOC to enago and enago to Java did not include the behavior specified in the EDOC model (the EDOC choreographies). We have since made significant progress. This presentation focuses on the integration of behavior in transformations and modeling tools.

1650 – 1720 Session 1 Q&A and Discussion

1730 – 1830 ***DEMONSTRATION AREA RECEPTION hosted by***



Wednesday, May 19, 2004

0900 – 0930 **MDA FastStart**  **Program Overview**

Mr. Michael K. Guttman, Program Manager, MDA Fast Start, OMG

MDA FastStart is a new OMG program aimed at helping end-users find skilled MDA professionals to assist them in introducing MDA into their development organizations. An OMG MDA specialist provides guidance, free of charge, to help end-users determine what assistance they, and to locate appropriate Qualified Service Providers (QSPs). This session, led by FastStart Program Director Michael Guttman, explains how the program works, and how end-users -- and prospective QSPs -- can use it their advantage.

0930 – 1150 **Session 2: Practical MDA I**

Chair: Mr. Michael D Miller, Sr. Application Developer, Rosetta Biosoftware

Creating a platform independent model that truly represents all the aspects of your project is key to the success of MDA. These talks will look at practical ways to specify such aspects as behavior, collaborations, requirements and metrics in the model and then show how these are brought to bear in the later stages of the project to successfully generate and maintain the application.

0930 – 1010 **A Method for Building Executable Platform-independent Application Models**
Janusz Dobrowolski, President & Chief Architect, StateSoft

A method of achieving the application model's independence from the platform programming language, database and operating system is described. A technique for building simpler behavior models for each class meeting the criteria of an abstract Executable Specification is offered. A discussion is presented leading to a selection of classes having a behavior model expressed as Finite State Machines. An instant conversion of the behavior model specification between various presentation views like: State Transition Diagram, SDL, Table and XML is discussed. A summary of experience gained (including error rate statistics) from over 90 complex systems implementations at AT&T /Lucent is presented and explained. Explanation why the architecture of this type allows for independent iteration in the Logical and Physical Architectures is offered.

1000 - 1630 **Demonstration Area Open**

1010 - 1040 Morning Refreshments (**Demonstration Area**)

1040 – 1120 **Where Does MDA Start?**
David Hansz, Number Six Software

MDA needs to be a team effort starting at the project's inception. Having early agreement of a "core team" (at minimum, an Architect, Requirements Manager and Project Manager) on the strategies and activities to be employed to facilitate MDA is imperative to ensure a successful project and endorsement of MDA at client's and development organizations. It is well known how MDA helps the Architect and Developers, but what about the Project and Requirements Managers? Why should they be MDA-Minded"? Many say that they should stick to their Gantt charts and Use-Case Specs, but it is in the best interest of the "MDA Knowledge Holders" to disseminate "MDA awareness" to every discipline on a project and in the organization to ensure success and MDA acceptance. This presentation reviews successes and benefits of "MDA awareness" based on information management projects.

1120 – 1150 Session 2 Q&A and Discussion

1200 – 1245 Lunch

1300 – 1450 **Session 3: Practical MDA II**

Chair: Mr. Michael D Miller, Sr. Application Developer, Rosetta Biosoftware

1300 – 1340 **MDA for the Agile Enterprise**

Cory Casanave, President, Data Access Technologies

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, processes, information, events and patterns with UML and use model driven development to implement collaborative business processes using a variety of middleware technologies. This presentation will cover ECA modeling concepts, process and examples - showing how to go from abstract concepts to precise specifications leveraging reusable components in a variety of technologies such as WSDL, Soap, ebXML, EJB and Corba. It will also be shown how to use ECA as a technology independent model supporting web services and distributed objects.

1340 – 1420 **SIAP Approaches to MDA Process Engineering**

John Britis, MITRE and Basil Krikeles & Rob Merenyi, ALPHATECH, Inc.

Standard software process metrics and models no longer provide an accurate estimation of project complexity for MDA-based projects for a number of reasons, including domain model reusability and code auto-generation. New metrics and methodologies are required to generate development schedules and to do accurate cost estimation for these projects. This presentation will discuss the findings gathered in studying the use of MDA on the DoD Single Integrated Air Picture (SIAP) Program. The effect of using MDA on all Process Areas and Practices that are germane to achieving CMMI level 3 will also be discussed.

1420 – 1450 Session 3 Q&A and Discussion

1450 – 1520 Afternoon Refreshments (*Demonstration Area*)

1520 – 1700 ***Panel: Are MDA Tools Meeting User Requirements?***

Moderator: Jishnu Mukerji, Sr. Systems Architect, Hewlett-Packard

MDA provides an open approach to software development and integration, separating business or application logic from the underlying, ever-changing and myriad world of platform technology. It's vision of increased productivity will be realized by the tools that provide MDA-compliant software development environments that fully meet user requirements. This panel explores how well MDA tools are meeting that goal.

Panelists: MDA Tool Vendors and Power Users - TBA

1730 – 1930 ***WORKSHOP RECEPTION hosted by***



Thursday, May 20, 2004

0830 – 1200 **Session 4: *MDA in the Defense Sector***

Chair: Fred Waskiewicz, Director of Standards, OMG

MDA is fast becoming best practice and is on the radar as a key methodology for the Defense Sector to meet the challenges of interoperability, componentization, reuse and joint solutions. This session offers technical and program management-related experience reports of MDA usage in military and government programs. It is highlighted by an open invitation for those with MDA experience to become involved in defense programs.

0830 – 0900 **Session Keynote - *MDA and the "Design of Design"***

Dr. Michael Macedonia, Chief Scientist/Technical Director, U.S. Army PEO STRI

0900 – 0940 **Can MDA Help Defense and the Public Sector Realize Interoperable Components?**

Cory Casanave, President, Data Access Technologies

Every agency of defense and the public sector is facing the problems of interoperability and componentizing their systems assets. The requirements for effective integration, collaboration and agility come at a time of restricted resources and increasing demand. To deliver effective government to the citizen and effective capabilities to the warfighter requires new thinking in terms of processes, systems and how those systems and processes are defined, contracted and provisioned. Systems must be synthesized reliably and effectively, from available and new components. This presentation integrates the findings of a set of studies and projects aimed at exploiting MDA to realize interoperable components in defense, intelligence and civilian agencies. We will look at the technical, organizational and commercial aspects of transforming government agencies to an interoperable, model driven, component architecture.

0940 – 1020 **MDA Best Practices for the Agile Enterprise**

Lou Eyermann, Consultant

Implementing an MDA project requires buy-in at all levels, investment, planning, performance measurement and collaboration. Executive buy-in is best achieved by leveraging a business case, executive training and strategic planning best practices for senior and non-technical executives. This presentation will cover MDA strategic planning, business case development and operational transformation techniques for corporate, government and the military organizations. The presentation will identify a half-dozen best practice pilot projects within any organization that offer tremendous opportunities to create organizational agility as well as significant improvements to cost, schedule, performance and ROI. It will also explain how to implement MDA with precision, plan and build the necessary infrastructure and set priorities to dramatically improve the odds of a successful MDA implementation.

1020 – 1035 Morning Refreshments

1035 – 1115 **Open Source Invitation to the OMG Membership for Model Driven Architecture / A 100-Day Challenge**

Thomas Kelso, US Army, PEO-STRI

The agility required for the objective force warfighter combined with reduced resources and timelines requires that current methods and architectures for providing simulation and training capabilities be rethought. Multi-year development of stovepipe software solutions is not an option; systems of systems must be assembled from libraries of components that can be “plugged together” to provide solutions on demand. PEO STRI has recently changed its organizational structure to highlight four distinct organizations: product lines (managed by Project Managers), support organizations (finance, MIS, human resources, etc.), customer service and a future force organization acting as a systems or program integrator. Common Product Components is chartered with facilitating the transformation to components. The primary role of CPC is to transform STRI products from stovepipes to compositions of interoperable components. This presentation is an overview of the CPC's and the PEO's challenges and an invitation to OMG members to submit white papers and technical expertise qualifications, products / tools and other intellectual capital and technology for evaluation and consideration.

1115 – 1155 **Use of MDA in the SIAP Program**
Basil Krikeles & Rob Merenyi, ALPHATECH, Inc and John Brtis, MITRE

The DoD has long faced the daunting task of reconciling the battlespace views of multiple, heterogeneous weapons systems into a Single Integrated Air Picture (SIAP). These systems are developed by multiple vendors, and are typically based on vendor-specific logic for converting raw data from a variety of sensors into normalized measurements and higher level constructs such as target tracks. This presentation provides a description of the use of MDA by the government to improve the quality of the SIAP and to use MDA as a catalyst for a transformational new approach to government procurements.

1155 – 1230 Session 4 Q&A and Discussion

1230 – 1315 Lunch

1330 – 1655 ***Session 5 – MDA: Beyond Code Generation***
Chair: David Fado, Senior Metrics Analyst, SAIC

Model Driven Architecture provides standards that enable the manipulation of metadata for a variety of goals. In addition to code generation, models can provide powerful tools for assessment and validation of system concepts. This session will discuss the benefits of using models in pursuit of such aims that go beyond code generation.

1330 – 1410 **Model Driven*: Going Beyond Code Generation**
John Hogg, COO, Zeligsoft

We walk before we can run, and to many people "MDA" begins with a model and ends with code. This is a good first step, but it delivers only a small part of the full value of MDA. Model driven requirements management, debugging, testing, analysis, verification, validation and deployment are powerful and logical aspects of a full model driven approach to application development. This presentation surveys current and future applications of MDA beyond the code generation box. It will help MDA users understand available solutions. It will also guide MDA implementers to premium value-added opportunities.

1410 – 1450 **Model Validation: Gain Without Pain**
Ashley McNeile, Metamaxim Ltd.

MDA is usually positioned as a full lifecycle approach. However, model execution can be used in a more focused way as a means of exploring and validating emerging models with users early in the development process, even if traditional techniques are then used to build the final code. This session will describe via case studies how model execution can be used in this way and the value that can be obtained, and show how such use can provide an entry into model driven techniques for those not yet ready to commit to full lifecycle toolsets.

1450 – 1505 Afternoon Refreshments

1505 – 1545 **Reusable Models and Disposable Code with Model Driven Architecture (MDA)**
David Zygmunt, CEO & Co-founder, Metanology Corporation

For years, the software development industry has sought the holy grail of reusable components. Web services are the latest technology promised to deliver that dream. In fact, reusable components are a red herring. Moreover, their quest proliferate arcane, heterogeneous, legacy technology. MDA provides new development techniques that improve enterprise software development. MDA describes an application in a Platform Independent Model (PIM) using UML. An MDA tool translates the PIM into a Platform Specific Model (PSM), and ultimately, into an implementation. Learn how model manipulation with MDA changes the quest from reusable components to reusable models and disposable code.

1545 – 1625 **Model Driven Architecture Enabling Service Oriented Architectures**
Rakesh Radhakrishnan, Sr. IT Architect, Sun Microsystems

This presentation highlights the significance and value-proposition of leveraging the fundamental principles and concepts behind Model Driven Architectures (meta-data as well as meta-models) and Service Driven Architectures. It will identify 5 dimensions from which these synergies occur: Grouping, inter-linking and coupling services (Service Brokering); Integrating Services built on differing underlying Technologies; Building Value added Data-driven Services; Delivering context-sensitive and profile-based Services; and Total Business Integration (end to end STP).

1625 – 1655 Session 5 Q&A & Discussion

1655 – 1700 ***Closing Remarks***

Program Committee

Chris Armstrong, ATC Enterprises

Marc Born, Fraunhofer FOKUS

David Fado, SAIC

Matt Hettinger, Mathet Consulting, Inc.

Kevin Loughry, Object Management Group

Michael D Miller, Rosetta Biosoftware

Steve Mellor, Mentor Graphics

Jishnu Mukerji, Hewlett-Packard

Mike Rosen, M2VP

Jon Siegel, Object Management Group

Fred Waskiewicz, Object Management Group (Chair)