

January 2002

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News

THE ARCHITECTURE FOR A CONNECTED WORLD

OMG Announces IBM Support for Model Driven Architecture

MDA at Core of WebSphere Open Standards Platform

The Object Management Group™ (OMG™) announces that the OMG's Model Driven Architecture™ (MDA™), the standard that addresses the complete life cycle of designing, implementing, integrating, and managing applications as well as data using open standards, is fully deployed throughout IBM's WebSphere suite of tools.

According to IBM's WebSphere MDA Architect, Stephen A. Brodsky, Ph.D., OMG MDA is a standard that has lasting power because it is inde-

pendent of platform or vendor. He states, "OMG's work outcome ensures that IBM delivers products that implement a standard upon which everyone builds.

Therefore, we end up with outstanding architectural flexibility and best practices in modeling and integration techniques, improved portability and interoperability, and most importantly models that evolve independent of the implementation. This is what WebSphere delivers with the underlying OMG Model

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Complete MDA

Spotlight

PAGE 2

OMG Hosts First Annual Web Services Workshop, March 4-7, 2002

Web Services technologies and standards are rapidly influencing the way the software industry architects, develops, and assembles software solutions. Web Services are being designed to Internet-enable legacy systems, to provide new innovative solutions to various business challenges, and as one of the architectural elements that large federations of business systems can use to reduce the long-term costs of maintaining tens, hundreds, or even thousands of interoperating systems. Designing applications that take advantage of Web Services to provide collaboration within and between enterprises, however, requires a disciplined, experienced,

standards-based engineering approach incorporating the entire software lifecycle.

Various standards organizations including the W3C, OASIS and UN/CEFACT have taken the lead on standardization of various aspects of technologies related to this broad area. The Object Management Group (OMG) has built upon its experience with distributed, object-based systems standards and architectures to promote the development of Model Driven Architectures that use UML™ to specify enterprise applications throughout the software lifecycle capable of being deployed on a variety of execution platforms. This summit of Web Services experts

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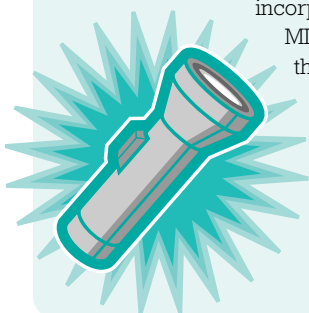
OMG Model Driven Architecture Gains Industry Notability

Less than a year after its launch in March 2001, the Object Management Group's (OMG) Model Driven Architecture (MDA) standard is emerging as a keenly influential methodology for designing software architecture that maintains a high level of integration capability as well as long lifecycle potential. OMG wrapped up a month-long nationwide Seminar Series on October 24, 2001. The Series, which traveled to New York, Washington, Boston, Austin and San Jose, received an overwhelmingly positive response from industry leaders and analysts.

Over 100 participants attended each event, which included presentations by Richard Soley, OMG Chairman and CEO, Paul Harmon, Senior Consultant, Distributed Architectures and eBusiness Services for the Cutter Consortium and Tony Mallia, Principal Consultant for CIBER, Inc. For the convenience of those who did not attend the seminar in person, a Webcast of the event is available at www.omg.org/mdawebcast. (See related story on page 3.)

The momentum around MDA is quickly gaining with further proof found in the fact that, "MDA tools are emerging quickly as our initiative takes off. We are also very happy to learn that several tool vendors, anticipating MDA, have built products that verify its concepts as they offer users a head start with MDA development. This is proof that MDA works and will continue to work to solve integration challenges that face anyone struggling to maximize software ROI in our ever-changing technological world," adds Richard Soley, Chairman and CEO of the Object Management Group. Fifteen companies have products that

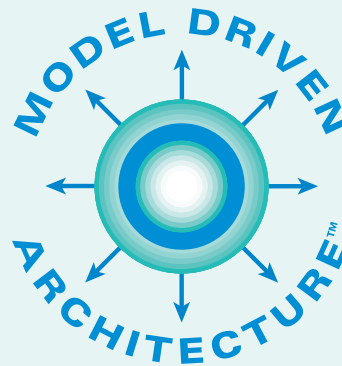
incorporate OMG MDA and are on the market now. See Industry Support at www.omg.org/mda/products_success.htm to



find out more.

MDA-based products and services promise to be every CIO's "problem solver." Here are some of the business and technical benefits that make the MDA appealing to enterprises and organizations struggling in an ever-changing software environment:

- Full support throughout the application life-cycle from modeling and design, through coding, to integration with legacy applications, and on through deployment and maintenance to evolution as technology advances
- Reduced costs from beginning to end



- Reduced development time for new applications
- Best possible representation of business rules, expressed in a technology-independent business model
- Best possible technical behavior – scalability, robustness, security
- Stable, model-based approach maximizes ROI from software investment
- Smooth integration across middle-ware platform boundaries
- Rapid inclusion of emerging technologies into existing systems

"By tying the development and maintenance of enterprise software to formal business models, OMG MDA promises

to boost efficiencies across the lifecycle, from design and production, through testing, to evolution and integration with future systems. MDA addresses one of IT's thorniest problems: the mandate to leverage past investments while accommodating ever-changing business requirements. Methodologists have long known that durable, cross-platform architecture standards are key, but it took an organization of the OMG's insight and standing to catalyze industry consensus. Now, companies can look to MDA as a stable foundation for maximizing software value and longevity," said Gordon Bennett, Senior Analyst covering Internet Infrastructure at the Boston-based Aberdeen Group.

The model-based, technology-independent MDA development process yields applications and facilities that run on, and interoperate across, multiple platforms. Enterprises no longer have to struggle to integrate an industry-standard application or facility on one platform with a legacy application on another, because this integration is done automatically by MDA-based tools as a natural part of the development process. Under the MDA, industry groups can develop standards once and support every company in their industry regardless of their chosen platform. Some of the tools cited on OMG's website, anticipating OMG's MDA, have been supporting this integration capability for a year or more; others are rapidly developing it as they add support for the MDA.

Sponsored by Kabira Technologies, Inc., Kennedy Carter, Ltd., Interactive Objects Software, GmbH and Secant Technologies, Inc., the MDA Seminar Series is now available at www.omg.org/mdawebcast. More information on MDA can be found at www.omg.org/mda.

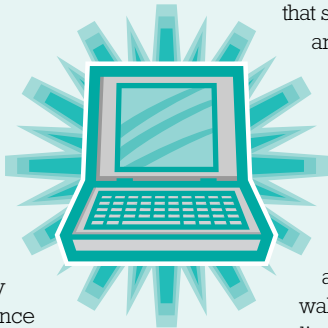
Coming soon, look for a new Spring MDA Seminar Series that will travel to five new cities nationwide in February/March. Information will be posted at www.omg.org. ■

OMG Offers Webcast of MDA Seminar Series

In November 2001, OMG kicked off a special Webcast of its popular MDA Seminar Series that toured five cities nationwide. Since then, hundreds have logged on to www.omg.org/mdawebcast to learn more about MDA. The following presentations are viewable via the Webcast:

Model Driven Architecture: An Introduction

Dr. Richard Soley, Chairman and CEO of the Object Management Group gives an overview of the OMG process for defining standards rapidly, and how the MDA approach can save time and money in building and maintenance of IT systems.



OMG MDA: An Idea Whose Time Has Come

Paul Harmon, Senior Consultant Distributed Architecture, and eBusiness Service for Cutter Consortium, presents a broad overview of the existing market for business software and positions the need for the OMG's MDA within that framework.

MDA Reality and Implementation

Anthony Mallia, Principal Consultant for CIBER, Inc., is a veteran of two successful software projects that relied on the model-based techniques now being standardized by OMG's MDA. He describes both of these projects, indicating exactly how and where MDA ensures success, and saves both time and money.

OMG MDA™ is changing the way that software is designed, written and maintained. As the speed of new technology in the IT industry continues to outpace the ability to implement solutions, organizations need an architecture that allows their designs to survive a decade or more. In the wake of accumulating legacy applications, a sound architecture is needed to be able to survive "the next best thing."

This Webcast is an excellent way to learn about the OMG Model Driven Architecture, a standards-based approach to integrating the systems you have built, with what you are building, and with what you will build in the future. To view the Webcast, click on www.omg.org/mdawebcast. For more information about MDA, visit www.omg.org/mda. ■

IBM Supports MDA

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Driven Architecture core."

MDA is the only standardized business integration strategy that provides a technology and vendor-neutral platform that future-proofs deployment.

Tim McCrimmon, Senior WebSphere Product Manager, of IBM's Software Group agrees, "IBM's WebSphere

successfully deals with the complicated issues of integration and longevity in today's software application market. We are proud that the WebSphere architecture includes the open standard, Model Driven Architecture, a fact that allows for dynamic competition, peak time-to-market, performance, ROI, and worldwide support. OMG's MDA approach is a significant contribution to the industry"

To find out more about OMG Model Driven Architecture, visit www.omg.org/mda. ■



What's Happening

Upcoming OMG Technical Meetings, Workshops and Conferences/ Exhibits

January 7-10, 2002

EMBEDDED SYSTEMS WORKSHOP

Burlingame, CA USA
(at San Francisco International Airport)
Sponsored by IONA Technologies PLC

January 28 - February 1, 2002*

OMG TECHNICAL MEETING

Anaheim, CA USA
Co-sponsored by Borland and
Hewlett Packard Company

February 27-28, 2002

SOFTWARE ARCHITECTURE 2002 CONFERENCE

Manchester, UK
OMG members receive 20% discount
www.ericleach.com/sa2002

March 4-7, 2002

WEB SERVICES: FROM TECHNOLOGY TO REALITY – A WORKSHOP ON MODELING, ARCHITECTURES, INFRASTRUCTURES AND STANDARDS FOR BUSINESS COLLABORATION

West Coast, USA
Sponsored by Borland

March 2002

DOCSEC 2002 – SECURITY CONFERENCE

Baltimore, MD USA
Co-sponsored by Promia Inc.

April 22-26, 2002

OMG TECHNICAL MEETING

Yokohama, Japan
Sponsored by Distributed Objects Promotions
Group (DOPG)

June 24-28, 2002 *

OMG TECHNICAL MEETING

Orlando, FL USA
Sponsorship available

July 15-19, 2002

REALTIME & EMBEDDED WORKSHOP

Reston, VA USA
Sponsorship available

September 9-13, 2002 *

OMG TECHNICAL MEETING

Helsinki, Finland
Sponsorship available

November 18-22, 2002

OMG TECHNICAL MEETING

Washington, DC USA
Sponsorship available

December 3-6, 2002

UML FOR ENTERPRISE APPLICATIONS WORKSHOP

San Francisco, CA USA
Sponsorship available

* OMG Board of Directors will meet on Tuesday of this meeting week.

OMG Info Days 2002 on "Enterprise Application Integration with MDA"

The 2002 Object Management Group (OMG) Information Day tour, organized by LogOn Technology Transfer, has been scheduled for 14 cities throughout Europe beginning in February. Seven years running, OMG Days in Europe have continued to build momentum with over 1600 IT professionals in 13 European cities attending in the year 2001.

An OMG Information Day is a one-day conference and exhibition. The OMG Information Day forum uniquely bridges together IT companies, software developers, IT professionals, business end-users, consultants and the OMG.

This one day event enables attendees to discuss OMG Technologies with senior OMG executives, IT managers, and leading software developers. For a complete list of cities and dates see the table below. Learn how business-critical enterprise applications can better communicate with each other. The detailed program for each event is available at <http://www.ltt.de/omg-days.2002/>

Conference

The conference features presentations on technologies, products, applications related to OMG standards & strategies, and end-user case studies. The goal is to build awareness about the Model Driven Architecture which is built on established

OMG standards including CORBA, UML, MOF, CWM, and XML.

Keynote speakers in 2002 will include:

- Dr. Richard Soley, Chairman & Chief Executive Officer, Object Management Group (*speaking in Amsterdam, Brussels, Paris, and Madrid*)
- Andrew Watson, Vice President and Technical Director, Object Management Group (*speaking in Helsinki, Stockholm, Oslo, and Copenhagen*)
- Fred Waskiewicz, Director of Standards, Object Management Group (*speaking in Milan, Zurich, Munich, Vienna, Budapest, and Prague*)
- Richard G. Hubert, CEO and Engineer, Interactive Objects Software GmbH (*speaking at all 14 OMG Days*)
- Patrick Maes, Chief Technology Officer, Wit SoundView Europe (*speaking at all 14 OMG Days*)

Exhibit Area

In addition, there will be an exhibition area where leading companies will show their products and services for enterprise distributed systems. The exhibition will be open all day and is free for all.

The event series is owned and managed by LogOn Technology Transfer and sponsored by the OMG. ■

OMG Information Days 2002

OMG Day Amsterdam February 5, 2002	OMG Day Zurich February 19, 2002	OMG Day Helsinki March 5, 2002
OMG Day Brussels February 6, 2002	OMG Day Munich February 20, 2002	OMG Day Stockholm March 6, 2002
OMG Day Paris February 7, 2002	OMG Day Vienna February 21, 2002	OMG Day Oslo March 7, 2002
OMG Day Madrid February 8, 2002	OMG Day Budapest February 22, 2002	OMG Day Copenhagen March 8, 2002
OMG Day Milan February 18, 2002	OMG Day Prague February 25, 2002	

www.ltt.de/omg-days.2002

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Jon Siegel , Ph.D.
Director, Technology Transfer
Object Management Group

Enabling the Model Driven Architecture (MDA)

OMG's Suite of Modeling Specifications

As we at OMG have presented the Model Driven Architecture (MDA) over the past year to enthusiastic audiences, we've had to answer numerous questions, such as:

- What are the benefits of the MDA?
- How does the MDA work?
- How does the MDA tie together modeling and development?
- How do I develop an application in the MDA?

The answers to these and related questions appear at www.omg.org/mda, but we're going to concentrate here on a topic that we find intriguing from perhaps another point of view: the technologies that form the foundation for the MDA. In this article, we'll outline the capabilities required to support the MDA and see why OMG's current suite of modeling specifications is ideally suited for this purpose.

Spanning the space from modeling through development with the promise of an automated connection between the two (already demonstrated in some products), the MDA places new demands on the modeling infrastructure. MDA models must represent, faithfully, every aspect of an application from its purely business functionality and behavior through its execution on every target platform, including both static and dynamic aspects. The meaning of labels and identifiers – that is, metadata – must span not only the range of platforms, but also the range of domains and businesses that integrate their applications using the MDA. This is a demanding set of requirements. Let's examine each of OMG's modeling specifications and see where it contributes. Once we've covered each individually,

we'll analyze how they combine to provide the foundation that the MDA needs.

The MetaObject Facility (MOF):

"Metadata" is not an abstract concept. Every item in an application or data file that describes something is, in fact, metadata for that thing. Why is this important? Because the MDA is about describing many things, from many points of view, and then making those descriptions – that is, models – work together. Under the best of circumstances, this is a monumental task; without a common dictionary, it is impossible. For applications, the common dictionary is the MOF Metamodel. (For data, it is the Common Warehouse Metamodel™ or CWM™ which we'll describe shortly.) Working "under the covers" where its contributions are easily overlooked, the MOF forms the foundation for the entire MDA.

The Unified Modeling Language (UML):

Now that we've defined our concepts and terms, we can model our applications using UML. But how and what shall we model, exactly? We could model static structure in a number of ways: Our class-

es, and how they inherit from each other, or a snapshot of our objects at runtime and how they call each other. If we're interested in dynamic behavior, we could focus on tasks and the actors who perform them, or objects and how they change state as our process unfolds. For all of these purposes, the standard language to express our model is the UML.

Four diagram types express various aspects of our model's static structure: Class diagrams, Object diagrams, Component diagrams, and Deployment diagrams. Five types represent aspects of dynamic behavior: Use Case diagrams, Statechart diagrams, Sequence diagrams, Activity diagrams, and Collaboration diagrams. And three represent organization: Package diagrams, Subscription diagrams, and Model diagrams. Arrow types express the various ways that diagram components relate to one another, from inheritance to instantiation. And, two sub-languages provide key support: Object Constraint Language (OCL) expresses constraints on invocations, allowing the designer to specify preconditions and postconditions in a formal way that code generators can interpret unambiguously. The Action Semantics language adds expression of dynamic behavior to UML diagrams that would otherwise define only static configuration.

Taken *in toto*, the UML is an extremely broad language that can model beyond the boundaries of any platform regardless of its capabilities. Fortunately, the UML can be tailored to virtually any existing (and future!) platform by a profile that establishes the boundaries of a modeling space. Anyone can construct a profile, but the most useful are those that many people and companies agree on such as OMG's standard profiles for CORBA®, for Enterprise Distributed Object Computing (EDOC) which concentrates on component-based architectures, and for Enterprise Application Integration (EAI) which does the same for loosely-coupled architectures. Engineered into development tools, these standard profiles guide the decisions that must be made as models are converted into code.

XML Metadata Interchange (XMI):

Once constructed, models (and meta-models) must be transferred from one tool to another, or between tool and repository, in order to be useful. For this, OMG has standardized XMI®. Based on

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OMG Technology Now

The Object Management Group Technical Update

Technology goes through a number of stages as it passes from idea to specification in the OMG adoption process. Here's a list of the processes that are in their most interesting phases:

New Technologies Adopted by OMG in November 2001, Dublin, Ireland Technical Meeting:

- UML Profile for EDOC Specification
- UML Profile for Schedulability, Performance, and Time Specification
- XMI Production for XML Schema Specification
- Action Semantics for the UML Specification
- Security Domain Membership Specification
- Surveillance Manager Specification

RFPs and RFIs Issued at the Dublin Meeting:

OMG members issue an RFP to initiate a new technology adoption process. At this stage, the process is open for any company to participate as a submitter, if they are a member of OMG at the required level. Non-members are welcome to join and participate. If you're a member at any level except auditing or analyst and would like information but not interested in submitting, you can still register for the voting list for these RFPs by sending an email to process@omg.org. Look for these RFPs on www.omg.org/schedule.

Platform Technical Committee (PTC) RFPs:

- Meta-Object Facility 2.0 Core RFP
- Meta-Object Facility 2.0 IDL Mapping RFP

- Meta-Object Facility 2.0 XML Mapping RFP

Domain Technical Committee (DTC) RFPs and RFIs:

- Laboratory Activity Broker RFP
- SOPES RFI

Initial Submissions to be Reviewed at the Anaheim Meeting:

Initial submissions, prepared in response to RFPs, represent members' first chance to find out how submitting companies plan to meet task force requirements. This is the best time to make comments that influence the revised specification; by the time revised submissions are presented later in the process, a specification has usually assumed its near-final form. If you're interested in any of these technologies, download the initial submission as soon as it's posted (around the beginning of January) and come to the presentations in Anaheim. Voting lists for some of these adoptions are still open, see www.omg.org/schedule for the exact dates.

- UML 2.0 Superstructure
- UML 2.0 Diagram Interchange
- CWM MIP RFP
- CWM Web Services RFP
- AR/AP RFP
- Telemetric and Command Data RFP

Adoption Votes Initiated at the Dublin Technical Meeting:

Once task force members and submitters agree that a submission has attained final form, it starts a series of votes that culminate in official adoption. If you're interested in marketing a product

that complies with an OMG standard, or in finding out what these products will do, this is your chance to download the soon-to-be specification and get to work. Even though the specification is not official until after the votes complete, technical aspects are extremely unlikely to change once this series of votes gets underway. If your company is either a Domain, Platform, or Contributing member and you are the voter, please cast your votes on these PTC and DTC ballots right away!

PTC Technology Adoption Votes Underway:

- Smart Transducers Specification (orbos/2001-08-04; orbos/2001-10-02 plus IDL; orbos/2001-10-04)
- UML Profile for EAI Specification (ad/2001-09-17; XMI DTDs: ad/2001-08-25)
- Additional Structures for OTS FTF Final Report [ptc/2001-11-05]
- Object Reference Template FTF Final Report [ptc/2001-10-23]
- Portable Interceptors RTF Final Report [ptc/2001-10-24; convenience: ptc/2001-10-25]

DTC Technology Adoption Votes Underway:

- Distributed Simulation 2 Specification (mfg/2001-10-01; IDL: mfg/2001-10-02)
- Clinical Image Access Service (CIAS) FTF Final Report [dtc/2001-10-02; plus other]
- CORBA-FTAM/FTP FTF Final Report [dtc/2001-08-03 through -06]
- Genomic Maps FTF Final Report [dtc/2001-11-03] ■

Siegel Guide

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UML and the MOF from OMG, and the widely-recognized XML specification, XMI standardizes the representation of meta-models and models in XML through DTDs and schemas. From our description of the MOF, you may have recognized that XMI DTDs and Schemas are metadata for our

models – that is, they describe the model components in the XML documents that conform to them. Because the language of DTDs is imprecise, a DTD does not contain enough information to enable a modeling tool to reconstruct a model from its XMI dataset. UML uses a standard meta-model (defined by the MOF, of course), so little beyond formatting information is needed when two tools exchange a UML model. If you're using XMI to transfer non-

UML models, your metamodel may be defined using XML Schema which has the precision needed for this exacting task.

Common Warehouse Metamodel (CWM):

The CWM is OMG's entry into the data modeling space. Originally standardized to enable large enterprises to combine data from multiple stores into a single warehouse for mining and related uses,

Web Services

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explores how Web Services and federations of Web Services can be best designed and deployed to produce the most useful enterprise solutions. The workshop also addresses how Web Services technologies and related modeling, architectures and standards, are and can be used in Service Oriented Architectures within individual enterprises.

Hosted by the OMG and sponsored by Borland, this workshop brings together the communities of Web Services standards bodies, Web Services practitioners (integrators), large end-users, and technology providers. Practitioners with relevant enterprise Web Services experience are invited to come and share their experiences with each other and their vendor community. The Workshop will start off with tutorials, and will feature presentations and panel discussions of case studies and technology issues and choices.

The Workshop is open to all with an interest in, and understanding of, Web Services technologies, architectures, modeling solutions and standards that apply to some combination of distributed applications, components, XML and XMI® and metadata. The four-day program will consist of two days of tutorials in Web Services, followed by two days of sessions and panels that describe case studies and technology choices for enterprise applications that were modeled with UML. For more information, visit www.omg.org. A list of topics to that were sent out in the call for presentations is as follows:

Case Studies: Using Web Services in Software Development

- Enabling existing systems to provide Web Services
- Designing new systems to take advantage of Web Services and Service Oriented Architectures
- Registries
- Negotiation aspects
- Ontologies
- Developing enterprise-level (user-community-specific) standards
- Platform-independent Web Services in vertical markets (e.g., health, finance, manufacturing, telecommunications)

Web Services Standards

- State of the art and limitations to existing standards
- Requirements for standards
- Non-technology Interoperability standards

Tools

- Product and tool evaluation reports
- Research and advanced development reports

Architectures

- Challenges going from individual systems to architectures for federations of systems
- Relationship and coexistence between components and Web Services
- Web Services in product, product line, and product suite developments
- Enterprise architectures: Web Services and other architectural approaches
- Model Driven Architecture™ (MDA™) for Web Services
- UML aspects and profiles for Web Services

- Relationships between MDA, Web Services, Service Oriented Architectures
- Federation of business systems
- Web Services and product development
- Designing for robust Web Services

E-business development

- Web Services and ASPs
- Web Services, portals, marketplaces
- New E-business models enabled by Web Services
- E-business communities

Methodologies

- Application of MDA to the definition of interfaces and contracts for federation of systems.
- Application of Architecture/ Engineering principles, best practices, and standards to the development, testing, and deployment of federated systems of Web Services.

Technologies

- J2EE, CORBA, .Net and other infrastructures for Web Services
- Interoperability among different technologies
- Comparison and contrast between classical ORBs (Object Request Brokers) and XML Request Brokers

State of the Art and the Future of Web Services:

- Security
- The new shape of systems
- MDA, Web Services and the GRID computing
- MDA, Web Services, the Semantic Web and the Object Web ■

the CWM places data modeling onto the same firm ground as the MOF does for application modeling: Where the MOF metamodel defined Class and Attribute, the CWM defines Row and Column for relational data models, and corresponding terms for OO, record-based, and multidimensional data models.

In Conclusion – Supporting the MDA:

Although each of these specifications

is capable on its own, it is the combination that packs the power to support the MDA: The MOF and CWM form a foundation for application and data modeling and repositories to store the results; the UML builds application models (and CWM defines how to build data models); and XMI transports them among your tools and repositories. In short, they span the space where modelers work, letting us build our models and deliver them to the

next stage of MDA development. If your industry would like to build specifications in the MDA, the OMG is the logical place to do it. If we don't already have a task force working in your area, we will work with you to start one. For membership information, check out www.omg.org/membership or email info@omg.org. For more information about OMG specifications in the MDA, visit our web page www.omg.org/mda/specs.htm. ■

OMG Press

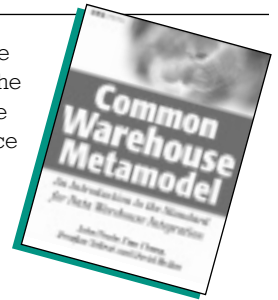
Presented by Wiley Computer Publishing

Common Warehouse Metamodel: An Introduction to the Standard for Data Warehouse Integration

John Poole, Dan Chang, Douglas Tolbert, David Mellor
ISBN: 0-471-20052-2
Available November 2001
Price \$34.99

The Common Warehouse Metamodel (CWM) is the new OMG standard that makes the sharing of data seamless. The CWM standard development team provides developers with a complete overview of what CWM is and how it works. After acquainting readers with the CWM architecture and how each CWM component fits into existing database and

data warehouse architectures, the authors provide expert guidance on how to plan for, implement, and deploy CWM technologies. ■



Convergent Architecture: Building Model-Driven J2EE Systems with UML

Richard Hubert
ISBN: 0-471-10560-0
Available November 2001
Price: \$39.99

Architecture (MDA).

You'll discover the value IT architectural style brings to development projects and you'll learn how Convergent Architecture (CA) leverages MDA to resolve many of today's complex IT-related problems at the source.

This step-by-step guide walks you through the process of designing and implementing both corporate architectural

mizes UML, the Rational Unified Process, and J2EE/EJB to achieve new levels of lasting architectural integrity.

In addition, this informative book shows:

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When David Taylor introduced the concept of Convergent Engineering in 1995, there was no telling how far this innovative approach would go. With this book, Richard Hubert follows up on Taylor's vision by providing a comprehensive guide to modern architectural style and its implementation using Model Driven



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In Memoriam—Henry Lowe

With deep sadness we announce that our long-time friend, co-worker and Liaison Director Henry Lowe passed away on October 27, 2001 after a brief struggle with cancer. Henry was a true gentleman and we shall all miss him.

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