

OMG in Motion

September 2001

From the Editor...



OMG anticipates a continued successful launch of the Model Driven Architecture as we prepare to take the MDA Seminar Series on the road to five different cities nationwide

in October. The Series' goal is to provide an educational forum for those in the software development community that may be hearing about this initiative for the first time. As a follow-up to the Series, OMG will be hosting a Web Cast November through December. Stay tuned for more details as they become available.

In other news, members and guests evaluated and critiqued nine submissions proposing to define the UML 2.0 Infrastructure and Object Constraint Language (OCL) at the Toronto TC Meeting; in December, following revision based on these critiques, final versions of two of these proposals will be adopted. This is an important move forward for the UML.

In this issue we profile Michi Henning, who is somewhat of an OMG celebrity, especially after his brilliant keynote at the Danvers TC Meeting in July 2001.

This issue's guest OMG writer is Arno Puder of AT&T Research Labs, who writes on CORBA conformance testing as a follow up to the previous issue's article on CORBA performance testing.

In addition, Jon Seigel, OMG Director of Technical Transfer, treats us to a step-by-step process for developing applications using a Model Driven Architecture approach.

As always, feel free to write to me with any article suggestions or questions/concerns. Enjoy this edition of *OMG in Motion*.



Nancy Lenehan
Editor

Developing in OMG's New Model Driven Architecture

By Jon Siegel, Director, Technology Transfer, Object Management Group

In this paper, we're going to describe the application development process supported by OMG's Model Driven Architecture (MDA)—the model that you build, the artifacts that you produce, how information flows from one set of artifacts to the next, and how the MDA process ultimately yields an application running on virtually any target middleware platform. OMG has introduced the MDA in several papers, all accessible via a single click from our main MDA web page www.omg.org/mda. We're not going to review the MDA or do any other introductory stage-setting here. If you need an introduction, check these references on the web.

Developing in the MDA—Single Target Platform

Although a primary advantage of MDA-based development is the ability to produce applications for virtually every middleware platform from the same base model, we're going to start with a simple example—generating a server on a single platform. Once we've completed this and traced the routes all of the various code artifacts through the process, we'll show how the MDA re-uses the same mechanism for multiple targets. We've picked the CORBA Component Model (CCM) as our example target platform but the differences among platforms, although crucial in detail, are not significant at the introductory level of this paper.

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ARCHITECTURE BOARD MEMBER PROFILE



HENNING

This month, we profile Architecture Board Member Michi Henning. Michi Henning is Chief CORBA Scientist of IONA Technologies, a major vendor of CORBA-compliant middle-

ware, where he spends much of his time developing new software and consulting to international customers. Through his work as an OMG member, Michi has substantially influenced and formed the CORBA standard. He was a major contributor to the OMG Trading, Notification, Interoperable Naming, and Telecom Logging Service specifications, and has made substantial contributions to the CORBA Core, IIOP, and C++ Mapping specifications. He is a member of the OMG Architecture Board and Chair of the OMG C++ Revision Task Force. Michi

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New Members Spotlight

bbv SOFTWARE SERVICES CORP.

Number of employees: 50

Location(s) of company: bbv Software Services Corp. PO BOX 2210, Blumenrain 10, 002, Luzern (Switzerland)

Products/Services offered: bbv Software Services Corp. specializes in the realization of software subsystems and complete systems. Real-time embedded devices and industrial applications are our key strength. bbv has extensive experience with building automation, telecom, media, distributed and online security systems. One major focus is the realization of complex, innovative Wide Area Network based systems. Our teams of highly motivated engineers are qualified to realize complex products on time, on budget, with the requested quality.

URL: www.bbv.ch

What factor(s) made you decide to join the OMG? bbv Software Services Corp. develops customer specific critical applications. Our membership allows us to use major standards to help us improve in our development activities. Open standards have been of special interest to us for a long time. In the future we would like to provide constructive input to new standard definitions.

How are OMG specifications and standards relevant to your business? Open standards are critical to the success of our customers and therefore our success. Experience shows that products based on open standards are easier to maintain and adapt to new business situations. And the return of investment for our customers is significantly higher.

NeuVIS SOFTWARE

Number of employees: 85

Location(s) of company: Shelton, Connecticut

Products/Services offered: The NeuVis E-Business Development platform consists of:

NeuArchitect—an enterprise-class, integrated visual modeling and automated construction system that enables businesses to rapidly design, develop, deploy and maintain complex, end-to-end e-business applications. NeuArchitect is particularly well suited to building robust collaborative commerce applications that can readily access a wide variety of legacy systems and provide integration and

messaging via XML and Web services.



NeuMethodology—an advanced software engineering process for e-business applications, consisting of a project-management discipline, measurement and continuous improvement features (in development).

NeuXchange—an extensive set of integrated e-business functions in a single, customizable application.

URL: www.neuvis.co

What factor(s) made you decide to join the OMG? NeuVis Software offers one of the leading model driven application development platforms, and the Object Management Group is a forum for us to learn about and contribute to the latest thinking on model-based standards.

How are OMG specifications and standards relevant to your business? Our application development platform leverages OMG standards and offers customers a rapid application development uniquely suited to fast changing e-business requirements.

CANYONBLUE, INC.

Number of employees: 20

Location(s) of company: New York, NY and Palo Alto, CA

Products/Services offered: Cittera is the first UML tool to support true real-time collaboration—allowing multiple parties across various geographic locations simultaneously on the same UML model.

URL: <http://www.canyonblue.com>

What factors made you decide to join the OMG? The Object Management Group sets standards that are important to object modeling. CanyonBlue's corporate philosophy and toolset are compliant with the UML and the standards set forth by the OMG. CanyonBlue also wishes to be proactive in promoting the importance of object modeling.

How are OMG specifications and standards relevant to your business? OMG specifications are important to CanyonBlue's products and philosophy because the standards allow several people to look at or use a UML model, and they each will have the same understanding of the information. *

Michi Henning Profile

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holds an Honours Degree in Computer Science from the University of Queensland, is a founding member of Australian UNIX Users Group Queensland, and has acted as program chair and program committee member for numerous technical computer conferences. When not doing computer-related things, he desperately tries to improve his golf handicap.

■ How did you first become involved with OMG?

I started using CORBA in early 1994, when I worked on a large project that used CORBA as its integration backbone. Whenever I found a problem with our ORB, I reported it to the ORB developers (among whom was Steve Vinoski, a former AB member and my co-author). On occasion, there was doubt as to whether a particular problem with the ORB actually was a bug or not, so I started reading the CORBA specification. I pretty quickly found out that the specification wasn't perfect either and that no one would fix such problems unless I did it myself, which led to me getting increasingly involved in the OMG specification effort. My employer at the time (DSTC in Brisbane, Australia) was involved in a number of CORBA specifications as well and, before I really knew it, I was neck-deep in CORBA. In turn, this led to me writing a training course on CORBA and, ultimately, resulted in Steve and myself writing our book "Advanced CORBA Programming with C++".

■ How long have you been an AB member?

About one and a half years. (I was elected at the Denver meeting in March 2000 for a two-year term.) Interestingly, I only attended my very first OMG meeting in September 1999, in San Jose. Prior to that, I was a "virtual" person in the OMG, so much so that someone from DSTC (who shall remain nameless here) circulated the nasty rumor that Michi Henning did not really exist and was simply an e-mail alias for all of DSTC to hide behind; I believe that, since then, I have put the rumor to rest and managed to convince people that I am very much real.

■ What is your area of technical expertise?

I've worked in quite a few different areas over the years. More than twenty years ago, I started out as an application programmer, writing accounting software in BASIC and 6502 assembler. After doing that for a while,

I decided that I'd be better off with a proper degree and studied at University of Queensland, where I graduated with an honours degree in computing in 1987. My main interests then were formal semantics and operating systems, and my thesis was about formal specification techniques for verifiably secure systems; as a test bed, I used UNIX (and found my share of security holes at the time).

After graduating, I worked for two years for an Australian company on UNIX device drivers, embedded systems, and UNIX kernel performance monitoring, before I joined the kernel and compiler group at Pyramid Technologies. At Pyramid, I worked on what I believe to be the world's first commercial-quality pthreads implementation, built a debugger for threaded applications, hacked around in the compilers and linkers, and worked a lot on Pyramid's UNIX implementation for Asian markets. (We actually had a UNIX system back in the early nineties that would write a bunch of (to me) undecipherable Kanji characters on the terminal, instead of the usual boring "login:" prompt. During that time, I naturally learned quite a bit about codesets, character encodings, message catalogs, internationalization, and localization.)

After three years at Pyramid, I joined a software development company with heavy involvement in network management. This is where I was exposed to GDMO, CMIP, SNMP, Frame Relay, and other telecommunications technologies. During that time, I led a large team as system architect on a development project in C++ and, after having worked with tightly-coupled distributed systems in the past, I ended up learning a lot about loosely-coupled distributed computing. In 1994, I moved to a project that used CORBA as its core distribution technology, which started my involvement with the OMG. Every since, I've been working on CORBA-related things of one kind or another.

■ **What do you feel has been OMG's most significant contribution to the computer industry?**

That one is easy: the OMG created CORBA, which, to date, is the only way to achieve vendor-neutral interoperable distributed computing for heterogeneous systems. Even though this may sound like old hat to people who have used CORBA for a number of years, it is hard to overstate the significance of this achievement. Not only does the OMG represent the largest industry consortium in the history of computing, but it actually has managed to achieve consensus among all the disparate groups and created a set of

open standards that is widely implemented and extremely successful. Anyone who did distributed system work in the days before CORBA will know how incredibly painful, complex, and pedestrian this used to be, especially if you had to deal with multiple languages, operating systems, and networking technologies.

■ **Why do you feel open standards are important?**

Pragmatically, open standards are important because they are the only kind of standard one can take seriously. So-called "industry" or "de-facto" standards are no more than proprietary technology, that is, a wolf in sheep's clothing. (As many old-timers will know, today's de-facto standard very often is tomorrow's dead duck.) Fortunately, most companies have learned their lesson and will no longer buy proprietary technology when a standards-based alternative is available. Overall, I see this as a very positive step, mainly because insistence on open standards not only creates a level playing field, but also creates stability (which is something we badly need in an environment that often changes too quickly and for insufficient reasons).

■ **In your opinion, which OMG standard has had the biggest impact on the industry and why?**

This is a difficult question to answer, simply because the number of standards is now so large, and because the importance of a standard depends on what people are doing. For example, a real-time person might consider Real-Time CORBA to be the most important specification whereas someone else would answer UML. To me personally, the answer again would have to be CORBA (meaning the core) because, without that, none of the other standards would have been possible.

■ **Please tell us about any significant projects you've worked on that use OMG specifications:**

Being employed by an ORB vendor, and having co-authored many specifications, I would have to say "all the projects I've worked on in the last few years."

■ **Tell us about your favorite OMG TC meeting location:**

Of the meetings I have attended, I would have to say that Paris is the favorite. The atmosphere in this city is incredible, and the food is simply something to be experienced. The next favorite would have to be Orlando, not because of Orlando's cultural richness, but because I'm a roller coaster fan.

■ **What is your fondest memory of an OMG TC meeting?**

During the Oslo meeting, I went out for dinner with Tom Rutt and Keith Duddy. We ended up at a very small suburban restaurant, well away from all the tourist traps. The owner was also the chef and told us a lot about the food and the local culture. The dinner culminated in an aquavit tasting, which, apart from being educational, was great fun. After the dinner, we went to Vigeland's sculpture park at dusk. The atmosphere was fantastic and the sculptures made a deep impression on me. Anyone getting to Oslo should make it a point to go there. I have never seen anything like it during all my travels.

■ **If left on a deserted island, what three items would you take with you and why?**

What, you mean after the absolute essentials are taken care of, such as a well-stocked bar fridge, satellite feed to the Internet, room service, and personal masseur? Hmm... difficult question. To be perfectly honest, most important to me are family and friends, so I'd make sure I'd have them close by. Failing that, I think the most important things would be a well-stocked library, followed by a well-stocked collection of CDs (together with a stereo to play them on). If you really insist on nailing me down to three single items, I would ask for a guitar, a diary, and a parrot (because all three of these are means to relieve loneliness).

■ **Three all time favorite books you have read:**

One book that deeply impressed me is "Goedel, Escher, Bach: An Eternal Golden Braid," by Douglas Hofstadter. Hofstadter writes about the very essence of intelligence, consciousness, and computability. This book showed me new ways of thinking about myself and the world around me.

Another book I like to recommend is "The Daemon-Haunted World" by Carl Sagan. This is the best treatment of skepticism and critical reasoning I have ever seen, without losing the respect and compassion that less rigorous disciplines deserve.

Finally, I really like to recommend all of Terry Pratchett's Discworld books. To me, they represent the best humorous reading anyone has produced in decades, full of social commentary and wit. ✨

Developing in Model Driven Architecture

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Step 1: The Platform-Independent Model (PIM)

All MDA development projects start with the creation of a Platform Independent Model (PIM), expressed in UML and shown at the top of Figure 1. Reflecting business functionality and behavior undistorted by technology, MDA models at this highest level can be constructed by business experts rather than systems programmers. PIMs exist at several levels; more refined PIMs include some behavior reflecting their general platform type (a component activation pattern, for example) although they never specialize to an individual platform.

Specializations and extensions to UML give it the power to express the detailed models required by the MDA. Termed a UML Profile, a standardized set of extensions (consisting of stereotypes and tagged values) defines a UML environment tailored to a particular use, such as modeling in a specific environment or on a specific platform. PIMs will be modeled using the profile for Enterprise Distributed Object Computing

(EDOC) or Enterprise Application Integration (EAI), both near the end of their successful adoption processes. The UML profile for CORBA completed adoption by OMG in 2000; profiles for other platforms are in process.

What sorts of behavior will be incorporated into the PIM? Object Constraint Language, a part of UML, lets modelers specify invocation pre- and post-conditions very precisely, so these will surely be included in this category. Setting and getting of parameter values, a common task in business applications, is easy to automate so look for this to be well handled by code generation facilities even in early generation MDA tools. On the other hand, coding of the calculation engines for new algorithms (for financial derivative contracts or scientific applications, for example) may never be fully automated.

MDA application-modeling tools will contain representations of the Pervasive Services and Domain Facilities, allowing them to be used by or incorporated into your application as you model it, via a menu selection. Any facility defined in UML may be imported into the tool as well, and used by the application in the same straightforward way. If the service or facility runs on another middleware platform, MDA tools

There's no such thing as the "best" target platform: what's best for you may not be best for me, because of the hardware, or network, or developer teams that our enterprises already have in place.

will generate cross-platform invocations automatically.

Step 2: The Platform-Specific Model (PSM)

Once the first iteration of your PIM is complete, it is stored in the MOF and input to the mapping step, which will produce a Platform-Specific Model (PSM) as shown in the second row from the top in Figure 1. To produce your PSM, you will have to select a target platform or platforms (you don't have to run your entire model in the same component environment, as we'll show in the next section) for the modules of your application.

During the mapping step, the run-time characteristics and configuration information that we designed into the application model in a general way are converted to the specific forms required by our target middleware platform. Guided by an OMG-standard mapping, automated tools perform as much of this conversion as possible, flagging ambiguities for programming staff to resolve by hand. Early versions of the MDA may require considerable hand adjustment here; the amount will decrease as profiles and mappings mature over time.

Step 3: Generating the Application

As Figure 1 shows in its third row, an MDA tool for CCM must generate all of the files that our platform requires. Artifacts for other middleware targets will be different. Each MDA mapping will produce the file types that its middleware platform requires.

Hand-coding, when required, will be applied to the output of the code generation step. Then a middleware-specific tool will compile all of the various code elements, and create executable modules for deployment and installation.

Developing in the MDA—Multiple Target Platforms

Although development of a model-to-code capability for a single target platform

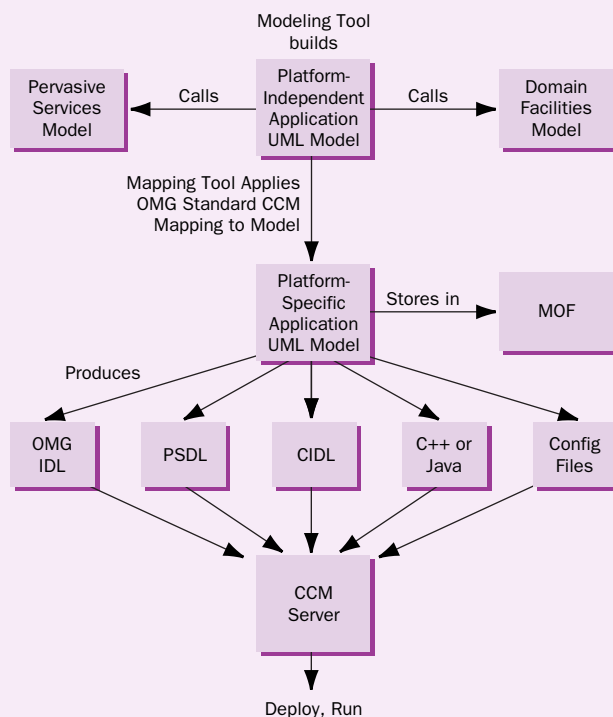


Figure 1: Using the MDA to Generate a CCM Server

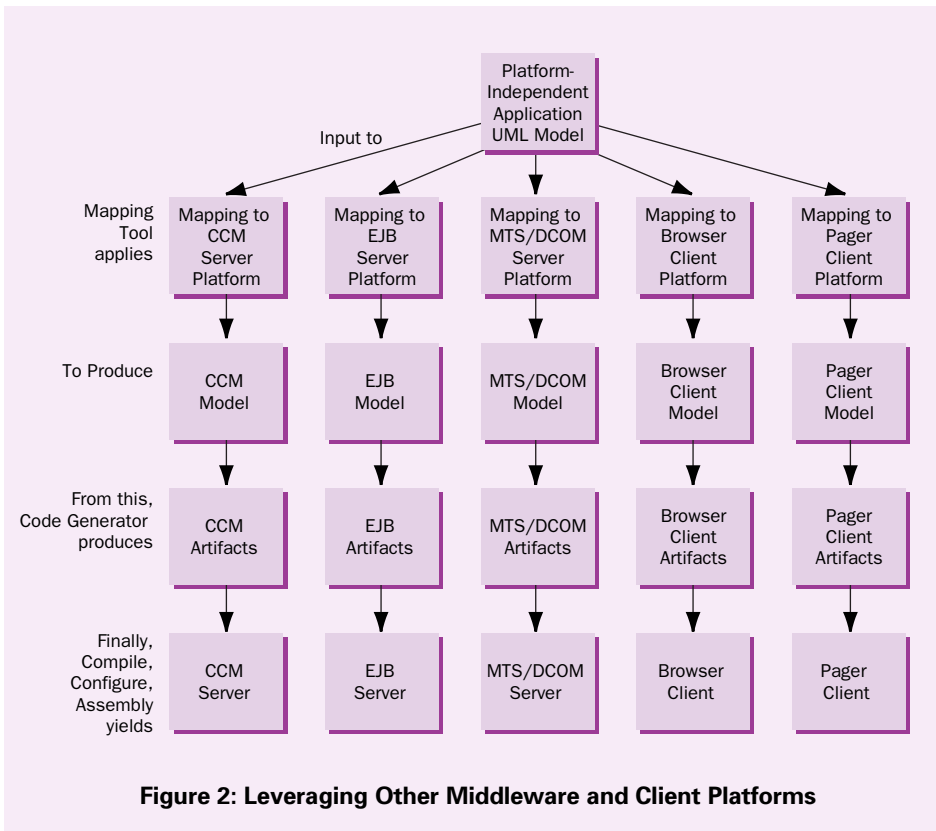


Figure 2: Leveraging Other Middleware and Client Platforms

is significant enough, benefits multiply when the MDA extends to multiple targets as we show in Figure 2.

OMG will define mappings to many middleware targets. By adding various client as well as server platforms, the MDA can be made to generate code for these targets as well, regardless of differences in calling pattern from server to any number of client types.

The first three columns of Figure 2 show MDA mappings to a number of middleware server platform targets. We've chosen the CCM, EJB, and MTS/DCOM for the figure, but these are only examples: you can expect mappings to XML/SOAP, .NET, and other new environments as well as to legacy

systems such as mainframe-based TP applications. We admit, it would be unusual for an enterprise to generate implementations of

the same application on an assortment of servers but ISVs will surely do this to support customers on a range of platforms.

The final two columns illustrate mappings to sample client platforms. Again, we've picked two only as examples; there is nothing in the MDA that would prevent any particular client platform from being included. Because clients can differ markedly even at the model level—consider a voice-activated telephone client as compared to a browser-based web version—we expect that some different client platforms will have to be modeled individually. Nevertheless, many of these will share a common server interface with differences accounted for automatically by the MDA.

Conclusion

There's no such thing as the "best" target platform: what's best for you may not be best for me, because of the hardware, or network, or developer teams that our enterprises already have in place. In this world, the "best" development environment is one that lets you choose the target platform after you've modeled your application, and even move from one to another with relative ease. Even more important, you need to interoperate with every platform out there, regardless of the one you've chosen, to take advantage of business opportunities. That's what the MDA gives you. ✨

In this world, the "best" development environment is one that lets you choose the target platform after you've modeled your application, and even move from one to another with relative ease.



Masaharu Obayashi san of CBOP/Kanrikogaku Ltd. and OMG CEO and Chairman Richard Soley smile for the camera at the Toronto TC Meeting.

Member News

NEW MEMBERS

DataMirror Corporation (Computer Software), GLUON Partners Co. Ltd. (IT Consulting), Keihin Sokki Co., Ltd. (Manufacturer), BBC Research & Development (Broadcast Engineering Research and Development), InferData Corporation (Training and Consulting), eRUNWAY (Software Development), Eisenhart & Poincare, LLC (Computing Training and Consulting), SONDA Bancos (Technology Integrators), 3COM (Networking), Bayer Inc. (Pharmaceuticals), BBV Software Services AG (Software Development), International Systems Group (Middleware Consulting), Softnet Consultancy (Platform Technology Consulting), Fraunhofer IPA FhG (Research in Manufacturing), ITT Industries Aerospace/ Communications (Communications), NeuVis, Inc. (Application Development Software), BioNetrix Systems, Corp. (Authentication Management), Steel Trace Limited (Computer Software), CanyonBlue, Inc. (UML-based Modeling Tool), NTT DoCoMo, Inc. (Mobile Communications), Recinto Universitario de Mayaguez (Education), Mitsubishi Research Institute, Inc. (Survey Research and Consulting), Science Systems Ltd. (Space Agency), TTYLAS (Outsourced Messaging), Universidad de Malaga (Education), Universidad de Murcia (Education), NASA Goddard Space Flight Center (Government), InteliData Technologies Corporation (Electronic Banking), Bolero International Ltd. (e-Commerce), De Novo Pharmaceuticals (Life Science Research and Development), method park Software AG (i.G.) (Software), General Dynamics Land Systems (Military Subcontractor), Dr. Ing.h.c.F.Porsche AG (Automotive), National Science Foundation (Federal Research Funding Agency), Sterling Commerce (e-Business Integration), National Lab, Distributed Process, China (Research and Development on Distributed Objects)

NAME CHANGES

BBN Technologies, A Verizon Company changed to *BBN Technologies*

Naval Reserve Information Systems changed to *SPAWAR ITC*

ENVOY changed to *WebMD*

Orion Capital Companies changed to *Royal & Sun Alliance*

Talk2.com changed to *Talk2 Technology*

Cemax-Icon changed to *Eastman Kodak*

Riverton Software Corporation changed to *Riverton Corporation*

Nippon Steel Solutions changed to *NS Solutions*

Information Builders changed to *iWay Software*

Sigma Exallon Systems changed to *Teleca Exallon AB*

CEA/LETI changed to *Commissariat a l Energie Atomique-CEA/LIST*

NTT DoCoMo changed to *DoCoMo Communication Laboratories Europe GmbH*

Digital Convergence changed to *Ceira Technologies, Inc.*

PSINet Consulting Solutions changed to *Metamor Enterprise Solutions*

Rockwell changed to *Rockwell Collins*

Atos changed to *Atos Origin S.p.A.*

Care Data Systems changed to *LuoSys, Inc.*

Enea Data AB changed to *Enea Business Software*

Aetna Financial Services changed to *ING NorthAmerica*

D-Tec changed to *navit GmbH.*

Vayda & Herzum changed to *Herzum Software, LLC.*

Information + Graphic Systems changed to *IGS, Inc.*

TopS Ltd. changed to *TopS Business Integrator*

Members Meet in Toronto, Sept. 10-14

OMG Members Meet to Chart Course for UML 2.0; MDA and Safety Critical Software Highlighted

Members of the Object Management Group™ (OMG™) met in Toronto, Ontario, Canada from September 10 through 14 to chart the course for the second release of the organization's Unified Modeling Language™ (UML™) standard. Members and guests evaluated and critiqued nine submissions proposed to define the UML 2.0 Infrastructure and Object Constraint Language (OCL); in December, following revision based on these critiques, final versions of two of these proposals will be adopted as official OMG specifications.

Every attendee was saddened by the tragic events of Tuesday, September 11. Members took time out to deal with their feelings and then, perhaps reluctantly, passed the time by getting back to work. Our hearts go out to all of the victims and their families.

Attendees new to OMG's Model Driven Architecture® (OMG MDA™) learned the basics at a half-day MDA™ Information Seminar. The MDA "future-proofs" software investment by expressing an application as a platform-independent UML model; MDA tools use this base model to generate implementations on multiple platforms. This MDA seminar will be given in five additional cities across North America during October. To find the seminar in your area, click on the seminar icon at www.omg.org/mda. In addition, an all-day workshop focused on the use of commercial software in High Confidence/Safety Critical Systems installations such as medical and emergency care delivery systems, and control systems for transportation, nuclear plants, and military weapons.

At its meetings, the OMG adopts software standards in object-oriented analysis and design (A&D), middleware infrastructure, and specific industries such as Air Traffic Control, Utilities, Manufacturing, and others. At this extremely busy meeting, the group started final adoption votes on five new standards that have completed member evaluations, and issued Requests for Proposals (RFPs) initiating the adoption of two new specifications.

Two of the new standards support object oriented modeling, analysis, and design. One introduces schedulability concepts to UML,

allowing the language to model real-time computing systems; the other supports UML representation of component-based infrastructures. Another of the new standards integrates the W3C XML schema definition with OMG's suite of modeling specifications.

Two more standards already have completed member evaluations and started final votes at the meeting: One extends OMG's already-mature CORBAsecurity specification to manage objects as members of discrete domains; the other supports Air Traffic Control with a standard architecture and facility to maintain surveillance of aircraft.

The two new RFPs issued at the meeting will extend middleware infrastructure standards. One will extend CORBA® real-time systems with a standardized architecture for data distribution. Frequently used in situations where reliability is crucial, CORBA already supports a robust fault-tolerant

Members and guests evaluated and critiqued nine submissions proposing to define the UML 2.0 Infrastructure and Object Constraint Language (OCL)...

mode. This will be augmented with a live online upgrade capability, allowing 24x7 operation in a completely standard environment.

Sponsored exclusively by IBM Canada, the meeting was held in the Regal Constellation Hotel in Etobicoke—Toronto, Ontario, Canada. Tutorials during the week included an overview of OMG's specification suite, and separate introductions to CORBA 3 and UML. A full-day workshop focusing on High Confidence and Safety Critical computing systems attracted over 50 attendees. Two outside organizations met in Toronto to work with OMG subgroups: The CCAPI (Command Center Application Programming Interface) International Working Group of the Electric Power Research Institute (EPRI) met with OMG's Utilities Domain Task Force, and the Human Resources XML (HRXML) Consortium met with OMG's HR Domain Special Interest Group. *

OMG in Motion Contributors—Editor:
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Arno Puder



What's Happening?

Schedule of Upcoming Events October 2001–December 2002

www.omg.org/news/schedule

October 9-11, 2001

CONTENT MANAGEMENT 2001 CONFERENCE
Swallow International Hotel, London, UK
OMG members receive a 20% discount
www.ericleach.com/cm2001

October, 2001

MDA SEMINAR SERIES
New York, NY October 2
Washington D.C. October 3
Boston, MA October 4
Austin, TX October 23
San Jose, CA October 24

October 16-19, 2001

METADATA SOLUTIONS
Boston, MA
OMG members receive a 10% discount

October 22-25, 2001

**MOBILE CONTENT MANAGEMENT CONFERENCE AND
MOBILE MIDDLEWARE SEMINAR**
Hotel Okura Amsterdam

November 12-16, 2001

OMG TECHNICAL MEETING WEEK
Dublin, Ireland
Sponsored by IONA Technologies

November 12, 2001

TELECOM AND OMG TECHNOLOGIES WORKSHOP
Dublin, Ireland

November 25-28, 2001

OD 2001
Sao Paulo, Brazil

November 27-28, 2001

ENTERPRISE REPOSITORY 2001
London, UK
OMG Members receive 20% discount
www.ericleach.com/cm2001

December 3-6, 2001

UML FOR ENTERPRISE APPLICATIONS WORKSHOP
Burlingame, CA USA
Sponsored by Rational Software

December 6-7, 2001

INTEROPERABILITY SUMMIT
Orlando, FL USA

January 7-10, 2002

EMBEDDED OBJECT-BASED SYSTEMS WORKSHOP
Burlingame, CA USA
Sponsored by IONA Technologies PLC

January/February, 2002

OMG TECHNICAL MEETING
West Coast, USA
Co-sponsored by HP Arjuna Labs

February 11-14, 2002

**MODEL DRIVEN ARCHITECTURE FOR ENTERPRISE
APPLICATION INTEGRATION WORKSHOP**
Orlando, FL USA
Sponsorship available

March, 2002

DOCSEC 2002
Security Conference
Sponsorship available

April 22-26, 2002

OMG TECHNICAL MEETING
Japan
*Sponsored by the Distributed Object 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
Europe
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

CORBA Open Source Testing

As a follow up to the June 2001 Open CORBA Benchmarking article by OMG member Petr Tuma, this month's guest OMG member writer is Dr. Arno Puder, Senior Technical Staff Member at AT&T Labs Research. In this article he provides an overview of CORBA conformance testing.

The CORBA specification provides the blueprints for an object-oriented middleware platform. There exist many implementations of CORBA, both in the commercial and the open source domain. A crucial aspect of any CORBA implementation is its conformance to the specification. Conformance is a quality, whereby an implementation fulfills all requirements of the specification. Only through conformance to the CORBA specification, one can hope for the result of greater portability and interoperability.

In particular interoperability will play a more important role for end-users in the near future. Clearly, a heterogeneous environment will continue to exist. Given that a single vendor solution is neither desirable nor possible, the enterprise integration problem needs to have an open standards approach as part of the solution to support business

imperatives. With mergers, acquisitions, and partnerships, the demand for interoperability will rise dramatically. Conformance is a necessary prerequisite for this.

On a technical level, conformance can be validated by a test suite. A test suite is a collection of test cases, each one testing an individual feature of the CORBA specification. Running a complete test suite yields a matrix of features which are either supported or not by a given ORB implementation. All ORB providers (commercial or open source) have to go through their internal testing cycle before releasing the product to ensure its quality. On the other hand, many CORBA end-users also have their internal test environment to validate the quality and interoperability of a given ORB implementation with other middleware products before introducing it to the business environment.

Late last year, the OMG, some ORB vendors and CORBA end-user companies decided to launch an Open Source effort to leverage the testing efforts that were already in place in various forms and to provide freely available CORBA conformance test suites to the public. The project is called COST (CORBA Open Source Testing), and serves as an umbrella to collect

and consolidate test suites contributed by the COST members, among which are Iona/OOC, Borland, DOPG, AT&T, GMD-Fokus, and OCI. All COST members have agreed to release their internal test suite under an approved Open Source license and to contribute engineering power in order to maintain the test suite. The results of this ongoing effort can be viewed at <http://cost.omg.org>.

Placing the test suites under an open source license has a number of benefits. The end-user benefits are the reduction of internal product evaluation costs by collaborating and sharing the testing effort. For them, COST can be used as a tool during the evaluation of a potential candidate. Problems are identified early on, thus increasing cross-platform interoperability and portability.

The ORB vendors have the benefit of reducing the cost of internal test suite development by using test suites that are available from COST, potentially exposing their ORB to a greater number of test cases. Doing so will increase the quality of their products. Another benefit for the ORB vendors has to do with their own test suite. Since their source code is released under an Open Source license, it will be subject to independent peer review. Finally, during the COST test suite testing, shortcomings of the CORBA specifications can be identified and fed back to the OMG revision process to benefit the overall OMG community.

Today, the first batch of contributions is freely available to download from the COST homepage. Please note that some of the test code has not been completely scrutinized and user-tested. While continuing our testing among the contributing members, we are also working on our next phase plan to enhance the usability of the test suites, such as providing categories of test cases and score card. Your feedback on this project is more than welcome. Please visit <http://cost.omg.org>. *



Member Scott Markel of NetGenics, Inc. and OMG Japan staff member Yurie Ito san have a discussion at the Toronto TC Meeting.

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