

THE OMG STANDARD

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MDA Case Study: National Cancer Institute

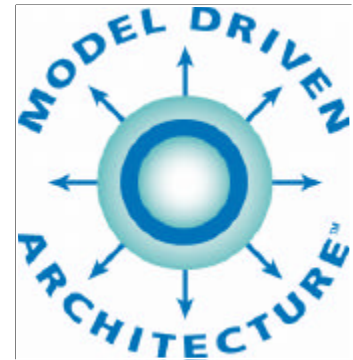
Who: The National Cancer Institute

What: The Cancer Biomedical Informatics Grid™ Program (caBIG™)

Goal: Eliminate suffering and death due to cancer by 2015

The National Cancer Institute (NCI) has a lofty goal—to eliminate suffering and death due to cancer by 2015. There are many researchers running disparate projects across the U.S. attempting to solve some small piece of the cancer puzzle. They may not know about or have access to results from other scientists that could be instrumental to solving their particular problem. The NCI decided that it was imperative to bring these scientists together – to combine and leverage their expertise and findings to achieve even greater results. To help them meet this goal, they created the Cancer Biomedical Informatics Grid (caBIG) program.

The strategy the NCI employed was to create a scalable, actively managed organization connected via a biomedical informatics network. They knew they needed to connect domain specific workspaces for individual projects with both syntactic and semantic interoperability. In essence, each researcher would need to have the ability to access and use parts and equipment on
(Continued on page 4)



Building a Service Oriented Architecture with BPM and MDA

OMG Workshop

October 16 - 19, 2006

Burlingame, CA USA

<http://www.omg.org/news/meetings/soa-bpm-mds/index.htm>

You know the buzzwords, you've read the articles, talked it over with your team

and have made your decision; you are ready to build a Service-Oriented Architecture. But how do you get started? This workshop will present practical solutions, informative case studies and in-depth tutorials on how to successfully integrate your business process modeling with model-driven design and implementation of a service-oriented architecture using web services, both inside and outside the firewall.

Recognizing that its business processes
(Continued on page 4)



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ORCA Compliance Global Regulatory Information Database Call for Participation

The Object Management Group™ (OMG™) and the OMG Regulatory Compliance Alliance (ORCA™) have issued a call for participation for a unique open database project focused on global regulations called the Global Regulatory Information Database (Compliance GRID™). OMG and ORCA invite any person or organization with knowledge of a compliance rule/regulation to submit their information for inclusion in the database. Contributors should fill out the form available at: <http://orca.omg.org/pr>.

The Compliance GRID is an open project, managed by the OMG, which will consist of contributed IP and cover more than 20 different data points for each regulation. A team of regulatory compliance experts will vet all submissions. Contributors will be acknowledged in the Compliance GRID and will be invited to attend a networking dinner reception during OMG's Technical Meeting in June 2006 to be held in Boston, Mass. Rule formats for the GRID will be coordinated with standards

managed by the OMG Regulatory Compliance SIG.

The Compliance GRID is being developed to help compliance officers, IT managers and others involved in regulatory compliance to identify the relevant laws for their geographic operating markets – and to deal with inconsistencies and conflicts. Once the database is populated, any individual or company will be able search the Compliance GRID free-of-charge after registering.

In addition to seeking submissions of compliance rules/regulations, ORCA is also seeking contributions to the profiles it is developing on the regulatory climate in its initial country targets. More information on the individual country regulatory climate profiles can be found at: <http://orca.omg.org/grid/profiles.htm>

Compliance GRID Features

ORCA's Global Regulatory Information Database (GRID) is being developed as an open database of rules, regulations,

standards, and government guidance documents that require IT action, and a survey of the regulatory climate around the world. The goal of this project is to provide the de facto compliance reference guide for global IT managers. The Compliance GRID will be searchable by vertical market and geography, so a user will be able to determine which rules apply to their firm based on those attributes.

For more information on the OMG Regulatory Compliance Alliance or the ORCA Compliance GRID, please contact Jeff Lichtenstein, VP, ORCA at jefflich@omg.org or +1-781-444 0404. For information about joining OMG, please visit www.omg.org or contact OMG's Director of Business Development, Ken Berk at +1-781-444 0404 or kenberk@omg.org.



OMG Welcomes New Members

Please join the OMG Staff in welcoming our newest members!

- AZORA Technologies
- Brandenburg University of Technology
- Castor Technologies Inc.
- CITI
- Cognition Group, Inc.
- Conversant, Inc.
- Corticon Technologies, Inc.
- Exaltec Software Limited
- Georgia Institute of Technology
- Homenode Group
- iCMG
- MilSOFT A.S.
- Purdue University
- University of Leipzig
- Walt Disney World Co.

Please Note:
OMG's Board of Directors has voted to reduce from five to four the number of technical meetings a year beginning in 2007.

OMG and Service-Oriented Architecture

Service Oriented Architecture (SOA) represents the best opportunity companies currently have to align their IT resources and business processes and make their systems more agile. There has been a lot of talk about SOA and many different definitions have been proposed. In essence, SOA is an architectural approach that seeks to align business processes with service protocols and the underlying software components and legacy applications that implement them. Both processes and services need to be carefully coordinated to assure an effective SOA implementation. You can't really do SOA without a clear model of the business process to be supported. And you can't link your business processes to your service models without the modeling standards the OMG is developing as part of its Model Driven Architecture® (MDA®).

Figure 1 highlights one way of organizing an SOA environment. The SOA environment is divided into four general layers. The top layer describes business processes made up of a sequence of business activities. The second layer defines business services capable of automating specific business process activities. The third level defines software components and orchestrations that allow the business services to link to and call enterprise-level shared resources as needed. The lowest level illustrates applications, packages and databases that might be called upon by the various components.

Most discussions of SOA focus on specific layers and the protocols and standards used at that specific level. These discussions can be informative, but they miss the big pic-

ture. To succeed with SOA, a company needs to understand how to model processes, services, and components and how to tie all the models together in a consistent manner. The OMG's MDA is all about modeling and the management of models – in particular, it addresses concerns of platform independence.

While other organizations have focused on specific standards for integration or web services protocols (e.g., WS-* standards), the OMG has taken a more platform independent view. Each of the SOA layers can be driven from models. MDA standards offer the capability to design a complete SOA solution through models, and minimize the effort invested in specific technologies or protocols (which are

(Continued on page 6)

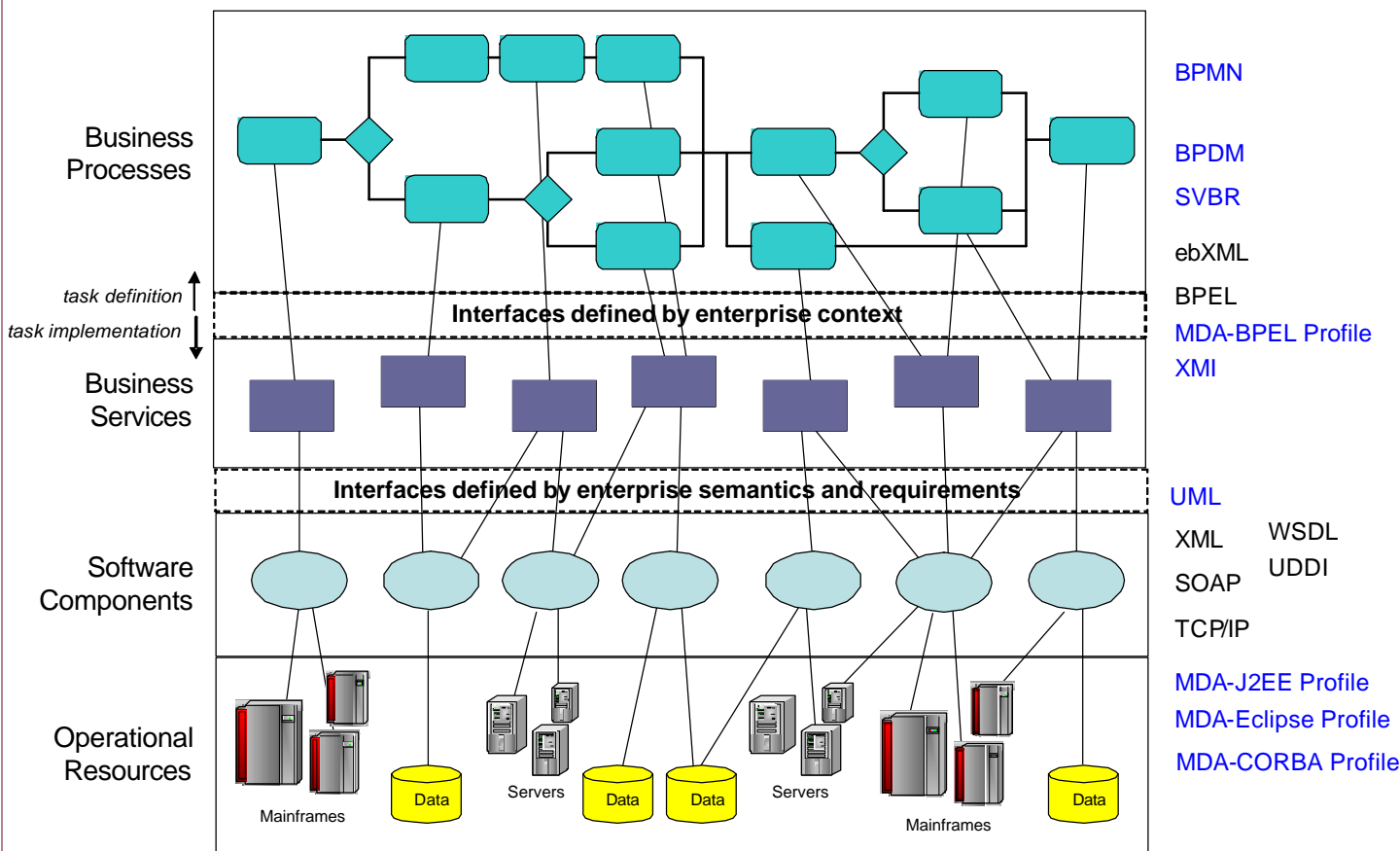


Figure 1. A Service Oriented Architecture. [1]
Some of the OMG MDA Standards that Support SOA are listed on the right in blue.

(NCI Case Study, Continued from page 1)

another system as if it were in their own environment. To solve the interoperability challenge, NCI turned to the Object Management Group's standard Model-Driven Architecture® (MDA®).

NCI chose to use MDA because it is a set of standards that have worked well in other areas, and they didn't want to have to "reinvent the wheel." The initial interoperability project involved three steps:

1. Analyze what was needed and develop use cases
2. Use UML® to standardize model representations and artifacts, often using class and sequence diagrams
3. Use meta-models to generate code

The advantage to this approach is

that MDA allowed NCI to use available tools to automatically generate some of the code, while giving them the flexibility to tailor it to their specific needs. In the future, when the system's requirements change, they can update their models and quickly regenerate the appropriate code. The NCI extended the MDA paradigm to include registered metadata and controlled terminologies. The use of metadata was especially important to eliminate ambiguity in the definitions assigned to particular data classes, attributes, and values. NCI brought together the MDA-generated code with the metadata registry and terminology components to create the caCORE Software Development Kit (SDK; <http://ncicb.nci.nih.gov/NCICB/infrastructure/cacoresdk>). Using the caCORE SDK, an organization can achieve a "Silver level" of interoperability, as defined by the caBIG Compatibility Guidelines (<https://cabig.nci.nih.gov/>

[guidelines documentation](#)). Silver systems implement object-oriented APIs derived from a UML domain information model, and thus examples of service-oriented architecture (SOA). The next level of compatibility, called "Gold", adds a grid services infrastructure called caGrid. caGrid supports the advertising, discovery, and invocation use cases, and once silver systems are properly registered with caGrid they become Gold.

The NCI caBIG project is entering its third year and has test beds up and available online. The project is open and free for researchers to participate in. NCI application support personnel are available to answer questions about any caBIG system. NCI has been successful by using a flexible approach, knowing that one size would not fit all situations. Using MDA, NCI was able to achieve the interoperability it needed to support the researchers working diligently to find the cure for cancer by 2015.

OMG's Workshop on Building a Service Oriented Architecture with BPM and MDA

(Continued from page 1)

extend out to its customers and suppliers, the IT-enabled enterprise needs a networking environment that supports design, development, deployment, and maintenance of systems that extend business automation far beyond the firewall. Today's state-of-the-art infrastructure couples Web Services (WS) loosely into a Service-Oriented Architecture (SOA), designed and built with an eye to business processes with the assistance of OMG's Model Driven Architecture® (MDA®), since model-driven development is a

necessity for systems this large and complex. Early adopters have WS/SOA systems in place already; mainline enterprises are in various stages of investigation and prototyping as vendors move up from WS-development tools to WS-management tools.

This workshop will feature presentations from architects, developers, vendors, and end-users of SOA/WS systems, many designed and built using BPM and the MDA. It starts on Monday morning with a day of tutorials at different levels - some designed to bring neophytes up to

speed with SOA, WS, BPM, MDA, and the Unified Modeling Language (UML®); others covering advanced topics. On Tuesday, the workshop continues for three days with sessions and panel discussions. A demonstration area will feature demonstration tables and booths from participating vendors, and evening receptions add opportunities to network with attendees.

For more information visit <http://www.omg.org>.

New at OMG: Business Process Modeling Testimonial Webcast

http://www.omg.org/bpm_testimonial



Beta-test OMG's Distributed Real-Time & Embedded Certification Exam and Save 60%!

Attention all Real-Time and Embedded Systems Architects and Developers

<http://www.omg.org/ocres>

The Object Management Group™ (OMG™) offers you a **60% discount** to take beta versions of our Distributed Real-time and Embedded (DRE) computing certification examinations. Beta examinations will be available on these dates:

- Intermediate level: June 5-July 7, 2006
- Advanced level: June 26-July 28, 2006

Beta testers will receive a **60% discount** off the regular exam fee. Beta results are used to statistically validate exam questions and determine scoring; when the analysis is complete, beta test-takers will receive their certification on the same basis as if they had taken the standard test forms. Regular testing will begin towards the end of 2006.

OMG specifications standardize every step of DRE software development from requirements analysis and design, through development, to deployment and maintenance. Certifying your knowledge of this specification suite, our program starts with the Model Driven Architecture® (MDA®) and Unified Modeling Language™ (UML®) including the two DRE-specific profiles, and extends through Real-Time CORBA® and CORBA/e (CORBA for embedded), to special lightweight versions of component computing environments and related standards.

Each successful candidate becomes an OMG-Certified Real-time and Embedded Specialist (OCRES™). The OCREs website, <http://www.omg.org/ocres>, includes links to a detailed examination coverage map and on-line beta program application form, which you can fill out now. We're looking for beta-testers with a range of DRE experience, so we hope you'll register and take our tests.

OCRES is a worldwide joint venture of the OMG and UML Technology Institute (UTI).

OMG and Service-Oriented Architecture *(continued)*

(Continued from page 3)

still undergoing very rapid churn). Thus, the main intellectual property can have a long-term life, while the organization is a lot freer to choose the best technical platform based on the current best commercial and technical choices.

Some of the various standards the OMG has developed or are working on are listed on the right side of Figure 1. Those listed focus on the model content; others (not shown) define how the more abstract models can be translated into software designs and code, such as the OMG's Meta Object Facility (MOF™), XML Metadata Interchange (XMI®), Query View & Transformation (QVT) and Model to Text (M2T). These OMG standards provide the overall MDA architecture with its support for automatically moving from one model on one level, to other models on other levels, and to the XMI (the XML Interchange format) that allows all MDA models to be interchanged in a standard manner. Finally the RAS standard allows both services and components to be packaged, catalogued and reused and the SPEM standard allows the definition of SOA-specific software development processes including service development lifecycles, reviews, and roles.

At the Business Process Level, the OMG has adopted the Business Process Modeling Notation (BPMN™), the Semantics of Business Vocabulary and Rules (SBVR), and is working on the Business Process Definition Metamodel (BPDM). The Ontology Definition Metamodel (ODM) provides a means of incorporating the work of the Semantic Web Community (which includes RDF and OWL) into MDA models – in order to define richer semantics for both services and the information interchanged. At the Business Services Level the OMG has defined the Unified Modeling Language™ (UML® 2.0).

Integrating components and legacy applications present a special problem. Good SOA services cannot be achieved by sim-

ply exposing legacy applications and data directly. Rather, they need to be transformed to support enterprise semantics. The OMG's Architecture Driven Modernization activities provide an MDA based approach for addressing these challenges: the main standard of relevance here is the Knowledge Discovery Metamodel (KDM). Similarly, MDA meta-models facilitate the modeling of all forms of databases and business intelligence systems, defined using the Common Warehouse Metamodel (CWM™), middleware systems like CORBA®, and programming environments like J2EE. Thus, at the Component and Operational Levels, the OMG has developed a variety of different standards. For example, BPDm has all the information needed to generate BPEL code (and QVT and M2T define standard means to model and tailor the transformations themselves).

Recently a new OMG group, the SOA Special Interest Group, has formed to coordinate SOA efforts within the OMG and between the OMG and other SOA standards groups, including W3C, The Open Group, and OASIS. The SOA SIG will work with other task forces within the OMG to ensure that, as SOA-specific modeling approaches and best practices stabilize, OMG standards are evolved (or new ones commissioned) in order to enable the top-to-bottom, end-to-end modeling of SOAs. Please visit <http://soa.omg.org/> for additional information on the SIG activity.

The current interest in SOA and BPM has already resulted in a proliferation of protocols and tools, many of them incompatible with each other. Predictably, some companies will undertake costly investments in applications and tools that will later prove impossible to maintain or convert to evolving standards. Most organizations want both SOA and agility. That requires a common semantic foundation for all of the models and languages used in SOA, which is exactly what MDA provides, i.e. a 360° perspective of SOA for business and technology stakeholders.

The OMG will emerge as a leading player in SOA by creating the common semantic modeling system made up of specific modeling standards and a common approach to cross-model communication – the Model Driven Architecture, – which assures that future SOA products and applications will be able to talk with one another. That, in turn, provides companies with the flexibility and agility they will need in the years ahead.

[1] This figure is adopted from an article on BPM and SOA, Where Does One End and the Other Begin, by Mike Rosen that appeared on BPTrends in January 2006.

What's Up? Upcoming Events

Workshops

Real-time & Embedded Systems Workshop

Washington, DC USA
Co-sponsored by: PrismTech and
Vanderbilt University
July 10-13, 2006

Software standards for real-time & embedded systems must support stringent resource, reliability, and timing requirements. Middleware standards cope with performance and reliability variations of the underlying infrastructure. The workshop is for standards users, researchers and implementers.

Building a Service Oriented Architecture with BPM and MDA Workshop -

Burlingame, CA, USA
(sponsorships available)
October 16-19, 2006

Conferences

The 30th Internationalization & Unicode Conference (IUC 30)

Washington, DC, USA
(sponsorships available)
November 15-17, 2006

Technical Meetings

OMG Technical Meeting

Boston, MA, USA
Co-sponsored by Boeing
(additional co-sponsorship available)
June 26-30, 2006

Featuring Three Special Events:

"Commercial Software Defined
Radio in 2006" Information Day
Tuesday, June 27
9:00 a.m. – 5:00 p.m.

"Compliance GRID Preview"
Tuesday, June 27
10:00 a.m. – 1:00 p.m.

"1994 to Today and Tomorrow - The
SOA Roadmap" Service-Oriented
Architecture (SOA) Information
Day
Wednesday, June 28
9:00 a.m. – 5:00 p.m.

OMG Technical Meeting

Anaheim, CA, USA
(sponsorship available)
September 25-29, 2006

For sponsorship opportunities,
contact Ken Berk at
kenberk@omg.org.

To exhibit at an OMG event, contact
Kevin Loughry at loughry@omg.org.

For the full schedule of upcoming
events, both OMG and co-
sponsored, visit:
<http://www.omg.org/calendar>.

Learn More About the Benefits of OMG Membership
<http://www.omg.org/memberguide>

Technical Meeting Resource Hub Now Available

Be sure to visit the members-only
Technical Meeting Resource Hub at
[http://www.omg.org/members/
TMResourceHub/](http://www.omg.org/members/TMResourceHub/). There you will
find meeting minutes and meeting
summaries as well as the co-sponsor
presentation:

"CORBA Still Delivering"
Presented by Malcolm Spence,
Director of Business Development,

Object Computing, Inc.

Information from previous technical
meetings is also available. See the
Past Meeting Presentations archives
at the bottom of the page.

*Be sure to visit the
Technical Meeting
Resource Hub after
each Technical
meeting!*

THE NEWSLETTER OF THE OBJECT MANAGEMENT GROUP

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OBJECT MANAGEMENT GROUP

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To subscribe to The OMG Standard, visit
<http://www.omg.org/newsletter>.

OMG™ is an open membership, not-for-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications.

Our membership includes hundreds of companies, with half being software end-users in over two dozen vertical markets, and the other half representing virtually every large company in the computer industry and many smaller ones. Most of the companies that shape enterprise and Internet computing today are represented on our Board of Directors.

Our flagship specification is the multi-platform Model Driven Architecture® (MDA®). It is based on modeling specifications including UML®, MOF™, XMI®, and CWM™. OMG's own middleware platform is CORBA®, which includes the OMG IDL, and the IIOP protocol.

All of our specifications may be downloaded without charge from our website.

Any company may join OMG and participate in our standards-setting process. Our one-company-one-vote policy ensures that every company, large and small, has a effective voice in our process.

OMG Recent News

Recent Press Releases:

- **OMG Announces Appointment of Jeffrey S. Lichtenstein as Vice President, OMG Regulatory Compliance Alliance Program**
Lichtenstein to lead program that provides C-GRID, the comprehensive open database compliance reference guide to global IT managers
- May 4, 2006
- **OMG Announces Results of BPMI Steering Committee Election**
- March 27, 2006
- **Call for Participation: OMG Regulatory Compliance Alliance (ORCA™) Developing Open Global Regulatory Information Database (GRID)**
Open database project to provide comprehensive compliance reference guide to global IT managers
- January 30, 2006
- **OMG and Unisys to Provide Stamp of Approval for UML Modeling Tool Interoperability**
OMG and Unisys join forces to develop modeling tool test suite
- January 18, 2006

To view these and all recent press releases, visit:

<http://www.omg.org/news/releases/pr2006/pr2006.htm>.

Note: MDA, Model Driven Architecture, OMG Logo, UML, IIOP and CORBA are registered trademarks, and OMG, Object Management Group, MOF, MDA Logos, Unified Modeling Language and UML logo are trademarks, of Object Management Group. All other trademarks are the property of their respective owners.