

Model Driven Architecture™

The Architecture of Choice for a Changing World™



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Computing infrastructures are expanding their reach in every dimension. New platforms and applications must interoperate with legacy systems. Virtual enterprises span multiple companies. The Internet is imposing new integration challenges as it extends into every corner of every organization. New implementation platforms are continually coming down the road, each claiming to be “the next big thing.” Those who architect computer systems, whether for banks or battleships, face daunting technology choices. To protect their investments and maximize flexibility, they buy hardware that implements open interconnection standards like Ethernet and USB, and software that uses open interface standards like CORBA®. It’s the only sensible course in today’s rapidly changing, multi-vendor computing environment.

But as computers and networks become faster and cheaper, even interconnection standards must evolve. New technologies constantly appear for new application niches. One need look no further than the recent rise of XML to see how quickly this can happen. How can organizations ensure that their mission-critical information systems are rooted in standards that will adapt to new hardware capabilities and software platforms?

Now, the Object Management Group™ (OMG™) addresses this reality with MDA™, the Model Driven Architecture™. MDA supports evolving standards in application domains as diverse as enterprise resource planning, air traffic control and human genome research; standards that are tailored to the needs of these diverse organizations, yet need to survive

changes in technology and the proliferation of different kinds of middleware. The OMG Model Driven Architecture™ addresses the complete life cycle of designing, deploying, integrating, and managing applications as well as data using open standards. MDA-based standards enable organizations to integrate whatever they already have in place with whatever they build today...and whatever they build tomorrow.

Building on a Solid Foundation

The product of OMG’s proven, open standards adoption process, MDA represents a significant—though evolutionary—step forward. It is built on the solid foundation of well-established OMG standards, including: Unified Modeling Language™ (UML™), the ubiquitous modeling notation used and supported by every major company in the software industry; XML Metadata Interchange (XMI™), the standard for storing and exchanging models using XML; and CORBA™, the most popular open middleware standard.

The OMG MDA™ separates the fundamental logic behind a specification from the specifics of the particular middleware that implements it. This allows rapid development and delivery of new interoperability specifications that use new deployment technologies but are based on proven, tested business models. Organizations can use MDA to meet the integration challenges posed by new platforms, while preserving their investments in existing business logic based on existing platforms.

MDA addresses the challenges of today’s

highly networked, constantly changing systems environment, providing an architecture that assures:

- **Portability**, increasing application re-use and reducing the cost and complexity of application development and management, now and into the future.
- **Cross-platform Interoperability**, using rigorous methods to guarantee that standards based on multiple implementation technologies all implement identical business functions.
- **Platform Independence**, greatly reducing the time, cost and complexity associated with re-targeting applications for different platforms-including those yet to be introduced.
- **Domain Specificity**, through Domain-specific models that enable rapid implementation of new, industry-specific applications over diverse platforms.
- **Productivity**, by allowing developers, designers and system administrators to

use languages and concepts they are comfortable with, while allowing seamless communication and integration across the teams.

Bottom-line Benefits

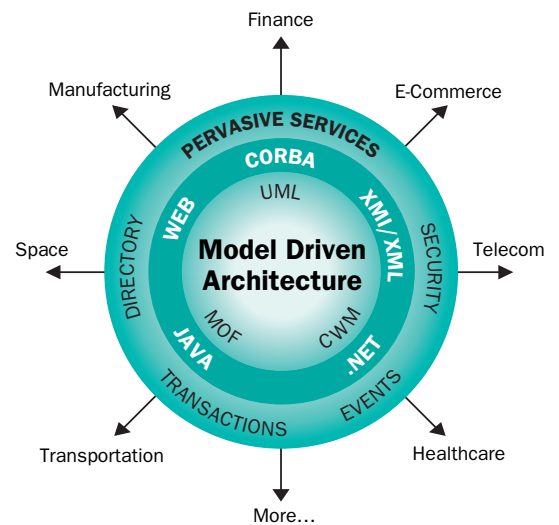
The benefits of MDA are significant-to business leaders and developers alike:

- Reduced cost throughout the application life-cycle
- Reduced development time for new applications
- Improved application quality
- Increased return on technology investments
- Rapid inclusion of emerging technology benefits into their existing systems

MDA provides a solid framework that frees system infrastructures to evolve in response to a never-ending parade of platforms, while preserving and leveraging existing technology investments. It enables system integration strategies that are better, faster and cheaper.

OMG Model Driven Architecture: How Systems Will Be Built.

MDA provides an open, vendor-neutral approach to the challenge of interoperability, building upon and leveraging the value of OMG's established modeling standards: Unified Modeling Language (UML); Meta-Object Facility (MOF); and Common Warehouse Meta-model (CWM). Platform-independent Application descriptions built using these modeling standards can be realized using any major open or proprietary platform, including CORBA, Java, .NET, XMI/XML, and Web-based platforms.



Model Driven Architecture: The CIO Problem Solver

You have a critical opportunity to impact your organization's bottom line performance: integrating your internal business systems with an architecture that takes the long view. You know you need to integrate what you've built, with what you're building, with what you will build in the future—and integrate your systems along with those of your customers, suppliers and business partners.

Adopting appropriate industry standards is a vital decision, since the business integration strategy must provide a technology- and vendor-neutral platform that future-proofs you for at least the next twenty years, while at the same time allowing existing business operations to continue and evolve.

Unfortunately, today there are multiple industry standards—CORBA, EJB/J2EE, .NET, XML/SOAP, and many others to come. Now, with the OMG MDA initiative, the OMG has solved the challenge of selecting and reconciling standards based integration with a common umbrella approach. OMG's MDA both endorses and captures existing standards initiatives and easily facilitates the automatic integration of subsystems which are built using different baseline technologies.

As new platforms and technologies emerge, MDA enables rapid development of new specifications that use them, streamlining the process of integration. In this way, MDA goes beyond middleware to provide a comprehensive, structured solution for application interoperability and portability into the future. Creating Application and Platform Descriptions in UML provides the added advantage of improving application quality and portability, while significantly reducing costs and time-to-market.

The architecture encompasses the full range of pervasive services already specified by OMG, including Directory Services, Event Handling, Persistence, Transactions, and Security. The core logic of many of

these services is already available for multiple implementation technologies; for instance, Sun's J2EE platform uses Java interfaces to CORBA's long-established transactions and security services. MDA makes it easier and faster to design similar multiple-platform interfaces to common services.

Most importantly, MDA enables the creation of standardized Domain Models for specific vertical industries. These standardized models can be realized for multiple platforms now and in the future, easing multiple platform integration issues and protecting IT investments against the uncertainty of changing fashions in platform technology.

OMG: Leading the Way

The Object Management Group (OMG) is an open membership, not-for-profit consortium dedicated to producing and maintaining specifications for interoperable enterprise applications. Our membership roster includes many of the most successful and innovative companies in the computer industry, as well as those at the forefront of using technology to gain a competitive edge in their business. All have made the commitment actively to participate in shaping the future of enterprise, Internet, real-time, and embedded systems.

OMG has developed some of the industry's best-known and most influential specifications, including CORBA, OMG IDL, IIOP, UML, MOF, XMI, CWM, the OMA, and Domain Facilities in industries such as healthcare, manufacturing, telecommunications, and many others. The Model Driven Architecture (MDA) builds on these successes, providing a comprehensive interoperability framework for defining the interconnected systems of tomorrow.

For more information on the Model Driven Architecture (MDA), please contact the Object Management Group (OMG) at +1-781-444 0404 www.omg.org/mda



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