MDA:
An Idea Whose Time Has Come

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Today's Software Environment

- Worldwide distributed systems
- Heterogeneous platforms, languages, and applications
- Growing demands for inter-connectivity within and between companies
- Wireless and Handheld Devices
- New Technologies: XML, Web Services

E-Business Applications

- Need to be done and redone fast
- Require that you link lots of new and diverse legacy applications into new Web applications that will respond in seconds
- Has placed a premium on a systematic approach to enterprise application integration

The Good News

- Increased standardization
    - Internet Protocols, SQL, UML
- Increased openness
    - Apache, Linux
- Less custom development
    - Component Reuse, ERP Applications

Key Problems

- Legacy applications and databases
- ERP applications that are hard to modify
- Multiple, competing middleware systems
- Developing a workable enterprise architecture and infrastructure that can accommodate everything, including predictable changes

A Recurring Problem

- Standish Group 1999 Study of Large Government and Commercial Systems
  - Only 16% completed on time & within budget
  - 31% canceled
  - 53% cost growth exceeded 89%
  - Of all completed, on average, only 61% of specified features were included

How To Develop Software: A Perennial Debate

- Those who believe in a software engineering approach to software development (CASE, CMM)

- Those who believe in a "creative programming" approach to software development (XP, DSDM, Agile Programming)

CASE

- Computer Aided Software Engineering
- Structured methodologies of the early 80's led to CASE in the late 80's
- CASE products initially had a variety of goals: modeling, database generation, code generation, code reverse engineering, and non-programmer programming.
- By the late 80's there was TI's IEF

Why CASE Failed

- CASE products generated COBOL for mainframes and SQL for relational databases

- The was no common repository. IBM tried to create AD Cycle/Repository and failed

- In 1990 the software world changed from mainframes to Unix and PCs, to C and VB, and to client-server architectures

- The CASE products of the 80s couldn't cope

Non-CASE in the 90s

- The word no one dared speak
- IEF is alive and well in CA's COOL:Gen
- A whole new generation of OO modeling languages and "visual modeling" products was born: Booch, Rumbaugh, Odell, Rational ROSE, Paradigm Plus
- In 1997 the OMG standardized UML

MDA

- Model Driven Architecture
- At a minimum, MDA is a more sophisticated way of using UML
- I predict it will rapidly emerge as the standard way of handling middleware and infrastructure development for enterprise systems groups

The Demand for MDA

- A market for MDA will be created as OO modeling and development tool vendors incorporate MDA into their offerings

- That process will be facilitated by new OMG standards, and by growing support for UML, MOF, CWM and XMI in the offerings of major systems vendors.

Early Vendor Response

- Adaptive: Adaptive Framework
  - www.adaptive.com
- Codagen Tech.: Gen-it Architect
  - www.codagen.com
- Ebuilt/Codigo Solutions: CodigoXpress
  - www.codigoXpress.com
- Headway Software: Headway ReView
  - www.headwaysoftware.com

Early Vendor Response

- Interactive Objects Software GmbH: ArcStyler (Being incorporated in Borland's Enterprise Studio 2)
  - www.io-software.com
- Kabira Tech: ObjectSwitch, Kabira Business Accelerator
  - www.kabira.com

Early Vendor Response

- Kennedy Carter Ltd: iUML, iCCG
  - www.kc.com
- ONTOS: ObjectSpeak
  - www.ontos.com
- Project Tech.: BridgePoint, DesignPoint
  - www.projtech.com
- Secant Technologies: ModelMethods
  - www.secant.com

OO Tools, MDA Tools, and CASE

- Is it even proper to speak of an MDA market, or will MDA simply be a feature of OO products?

- It will be two or three years before mature MDA tools emerge

MDA and CASE

- MDA isn't as ambitious as CASE was
- But the groundwork is much better prepared: UML, MOF, CWM, profiles…
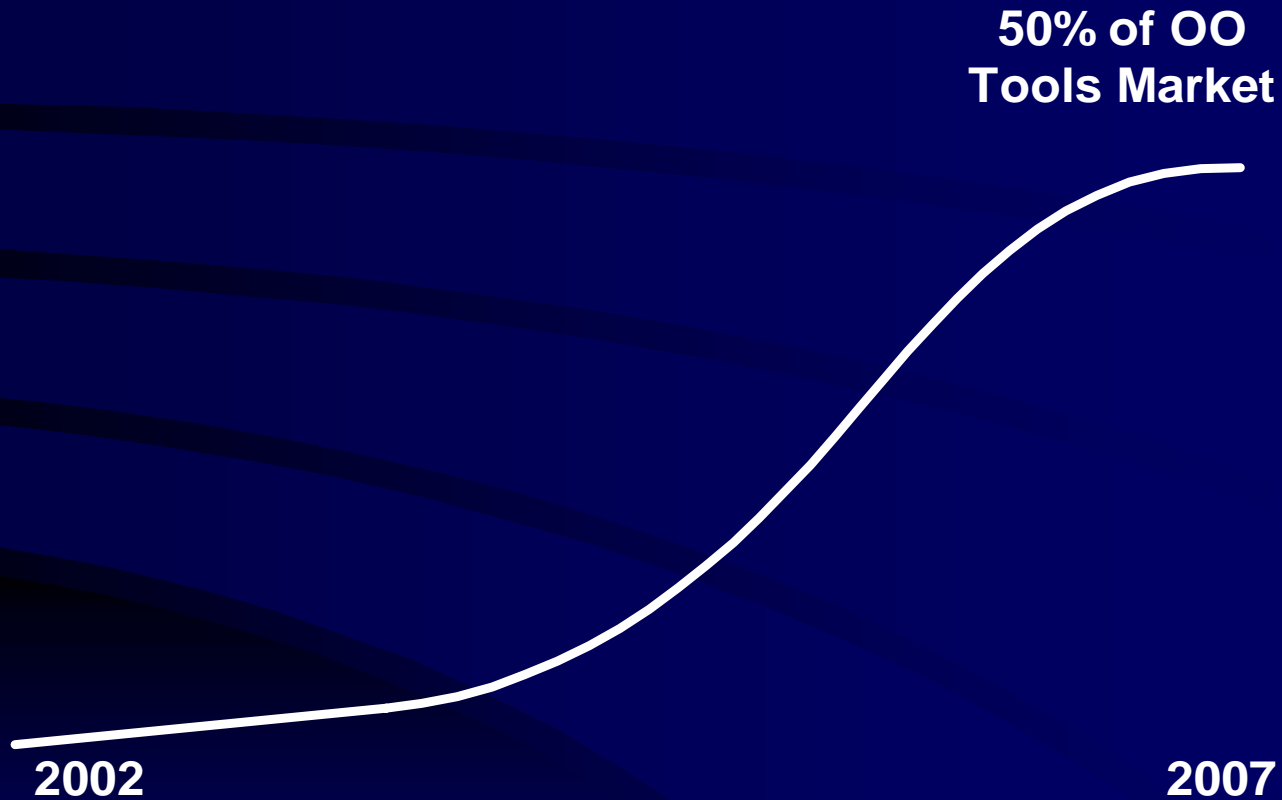- So its possible that the MDA market will grow very quickly

Best Example To Date

- Wells Fargo: MDA-like approach used to generate middleware between e-business and legacy applications

MDA Market Assumptions

- MDA will be driven by the need for e-business integration

- Just as earlier OO tools all became UML tools, they will now evolve into MDA tools.

How Quickly Can MDA Grow?

50% of OO Tools Market

2002

2007

How Can MDA Grow So Quickly?

- UML conversion of OO modeling tools was 85% complete in 3 years
- CASE grew faster in mid-late Eighties
- OO modeling tools are already in place

The Market for MDA Products

- IDC estimates the total Web-Application Design & Development Market, Worldwide, in 2000 as $8,747 Million ($8.7 US Billion)

- Most is 3GL and 4GL products

- IBM and Microsoft lead sales with 21% of the total market. Next largest is CA with 4%. Rational has 2.5%

The Market for MDA Products

- IDC 1999 numbers for Component Construction, CASE and OO Visual Modeling Tool markets was:
    - $1,000 Million ($1 US Billion)
    - Only a little growth in 2000 or 2001
    - Projected to reach $3,000 Million in 2004
    - **Let's be modest and say $2,000 Million in 2005**

The Market for MDA Products

- Assume that MDA could capture 20% of the Component, CASE and OO Modeling Tools markets by 2005 … $400 Million

- Or 33% of the OO Visual Modeling Tools market by 2005 … $500 Million

Summary

- This is the most exciting enterprise software initiative I've seen since UML

- It has the power to make a major shift in how IT organizations think about middleware

- It could take off very fast once the current economic slowdown is over

Recommendations

- Learn more about MDA now

- Move toward incorporating UML, MOF, and CWM into corporate architectures

- Explore MDA with an MDA tool and an experienced consultant

- Join the OMG to participate in the evolution of MDA profiles and standards