Model Driven Architecture
Vision VS Reality

EDOC 2001
September 4-7, Seattle, USA

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Model Driven Architecture
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- Sridhar Iyengar, Unisys (Panel Chair)
- Jon Siegel, OMG
- Ariel Aloni, Merryl Lynch
- Stephen Brodsky, IBM
- Chris Horn, IONA
- Eugen Ardeleanu, Microsoft
- Jack Greenfield, Rational
The Business Application Life Cycle

Architecture Centric, Business driven,
Complex Life Cycle, Many Tools

Discovery and Transformation

Modeling Architecture, Object, Data...

Add Business Logic

Build /Wrap Components

Assemble & Test Components

Configure & Deploy Components

Component Runtimes (EJB, COM+)

Manage Components

Acquired Components

Models, Metadata, Mappings, Middleware

Rigorous

RAD

And do this with quality in a distributed environment
Solution for Managing Complexity: MDA: Model Driven Architecture

- An evolution of OMA that includes best practices in Modeling, Middleware, Metadata and Software Architecture
- Model Driven (UML, MOF, CWM…)
  - Platform Independent Models (PIM)
  - Platform Specific Models (PSM)
  - Mappings: PIM $\leftrightarrow$ PSM
- Key Benefits
  - Improved Productivity for Architects, Designers, Developers and Administrators
  - Lower cost of Application Development and Management
  - Enhanced Portability and Interoperability
  - Business Models and Technologies evolve at own pace on platform(s) of choice
OMG Model Driven Architecture
MDA for Enterprise Integration

UML
Model & Design (PIM)

EDOC
UML4EDOC* (PSM)
UML4EAI* (PSM)

CORBA
UML4CORBA (PSM)

EJB
UML4EJB* (PSM)

Integration for

Vertical Industry Applications
Business Components
Model Driven App Integration
Model Driven App Development
MetaData Management
Business Process Integration

PIM : Platform Independent Model
PSM : Platform Specific Model
*Coming
Mapping from PIM to PSM - Simple Example using MOF/XMI

UML Model (PIM)

Auto
- Color : String
- Door : Integer
- Engine : Integer

XMI Document (PSM)

<Auto>
  <Color> Red </Color>
  <Door> 4 </Door>
  <Engine> 2 </Engine>
</Auto>

IDL, Java… (PSM)

interface Auto

Class Auto
{
  public String color;
  public int Door;
  public int Engine;
}

XMI DTD, Schema (PSM)

<!Element Auto
  (Color*,
   Door*,
   Engine*)>
OMG MDA Technologies

- Submissions
- EJB
- Java
- SPEM
- UML Profile for EDOC...

- Evaluating
- UML
- MOF
- CORBA Med
- Manufacturing
- Life Sciences
- CWM
- Electronic Commerce

- CIAS
- Enterprise App Integration
- Document Management
- Etc.

- Standards
- MOF
- UML
- XMI
- CCM
- IDL UML4CORBA
- CWM
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Steve Brodsky
IBM
Senior Technical Staff Member
WebSphere MDA
Powered by MOF/XMI

Web Architecture Models
- Java
- EJB
- XML
- Mapping
- HTML
- JSP
- RDB/CWM/SQL
- WSDL
- MQ/FCM
- COBOL

User Model + User Application Model

Deployed Application = User Web Application
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Eugen Ardeleanu
Microsoft
VisualStudio.Net Program Manager
Enterprise Application Integration

- UML profiles (metamodels) targeting specific platforms – viable solution
- Registration (meta-data)
  - How are reusable assets (services) registered?
  - Is automatic detection possible (reverse engineering)? The core has to be rich enough (a union of all profiles?);
- Composition: Completeness & Consistency
  - How can the information in the model help compose different components: is all the right information there?
- Execution & Deployment
  - How is the execution semantics expressed (UML Action Semantics work in progress?)
- Constraints Language?
**Microsoft UML modeling tool**

- UML standard compliant
- Model validation according to the standard well-formedness rules
- Export UML models to XMI
- Integration with Visual Studio .NET
  - Code generation/reverse engineering to/from VS.NET (C#, C++, VB)
  - VS.NET templates support
- Based on the Visio design surface