MDA Process Adoption

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MDA Software Development (SD) Processes

- Novel approach for separation of business logic from underlying platform technology.
- This separation is achieved by creation of two distinct models during the software development process:
  - Platform Independent Model (PIM)
  - Platform Specific Model (PSM)
- MDA also identifies the need for model transformation which bridges the gab between PIM and PSM. In the worst case the developers must manually perform this transformation.
- MDA moves the focus from third-generation programming languages code to models expressed in UML.

Differentiating aspects of MDA SD Processes

- Critical role of work products: software models (PIM and PSM) and transformations
  - Completeness of models
  - Reusability of models
  - New concept of transformation
- Importance of disciplined enforcement of process activities:
  - Making sure appropriate models and transformations are created and packages
  - Capturing the reasoning behind important decisions
- More complex process
  - More work products and activities
- More sensitive process
  - Success of the project is dependent on correct execution of multiple actvities

Automation of SD Processes

- Three aspects of automation of SD processes:
  1. Process modeling
  2. Process enactment
  3. Process monitoring

Automation of SD Processes- process modeling

- Process Model is at M1 level of MOF model

	Level M3	**:**	**MOF**
	Level M2	**:**	**Process Meta Model**
Process Modeling →	**Level M1**	**:**	**Process Model**
	Level M0	**:**	**Instance of Process Model (Project)**

- Precise and complete model is prerequisite to process automation
- Process modeling involves:
  - Creation
  - Refinement
  - Verify

Automation of SD Processes- process enactment

- Process enactment is at at M0 level of MOF model

	Level M3	**:**	**MOF**
	Level M2	**:**	**Process Meta Model**
	Level M1	**:**	**Process Model**
Process Modeling →	**Level M0**	**:**	**Instance of Process Model (Project)**

- An instance of process model can be enacted as a project
- Process enactment involves:
  - Monitoring
  - Control (automation)

Automation of MDA SD Processes- process monitoring

- Monitor concurrent projects
- Intra-project scope
- Required for MDA processes

Importance of SD Process Automation to Adoptions of MDA

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- Critical role of work products such as, CIM, PIM, PSM, transformations and activities which produce these work products
- Practitioners have to understand the importance of the above
- MDA related activities have to rigorously enforced: **Automation**
- **MDA requires utilization of a set of processes**
  - functionality release process
  - technology evolution
- Must monitor and manage multiple dependent processes and projects

Real-world Scenario

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- Enterprise application based on J2EE technology
- 12 to 18 months functional release cycle
- No need to support a new middleware technology in the foreseeable future
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- Must move to new version of J2EE in a timely manner (within 1 year of availability)
- Important to take advantage of the enhancements in the new J2EE versions
- No need to move to different application server (vendor specific) for now, but as the application server market evolves there may be a technical or non-technical reasons to move to, or support other application servers.

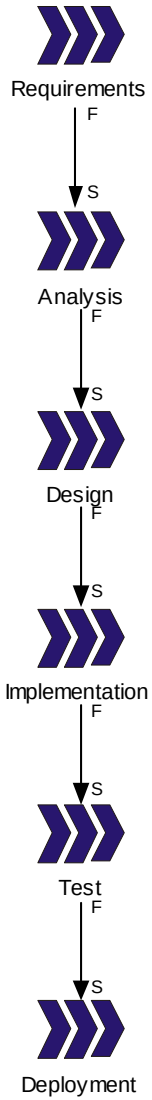
Real-world Scenario – J2EE evolution

- 1999 (no J2EE) EJB 1.0
- 2000 J2EE 1.2 EJB 1.1
  - Support for Entity beans mandatory
  - JNDI mandatory
  - Major changes to deployment descriptor
- 2001 Q4 J2EE 1.3 EJB 2.0
  - Message Driven Bean
  - CMP support for CMR
  - EJBQL
- 2003 Q4 J2EE 1.4 EJB 2.1
  - Enhancements to EJBQL
  - Container managed Webservices
- 2005 J2EE 1.5 EJB 3.0
  - Ease of development (leverage defaulting, simplification of deployment descriptors..)

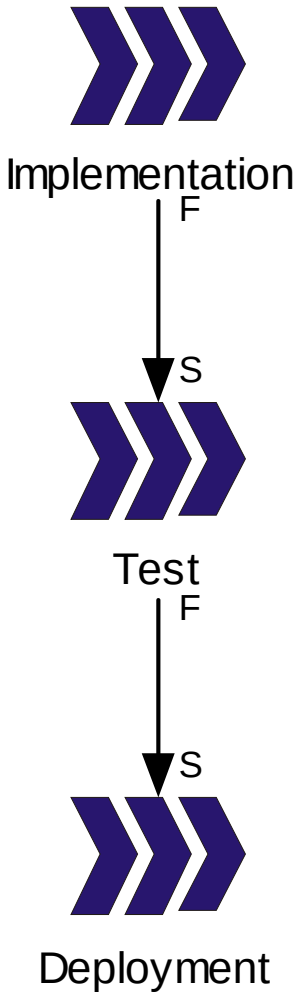
Real-world Scenario – processes

- A minimum of two processes are required:
  - Enterprise Application Development process
  - Platform Transformation process

Enterprise Application Development process



Platform Transformation process



Transformation Analysis Workflow Diagram