Model Driven Architecture

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Contents:

- What is Model Driven Architecture?
- How does it achieve its objective?
- Why should it be used?
- Summary
- Conclusion
- Q & A

Introduction

- Example
  You wish to build the same building in 2 different countries.
  - What things would be different?
  - What things would be the same?

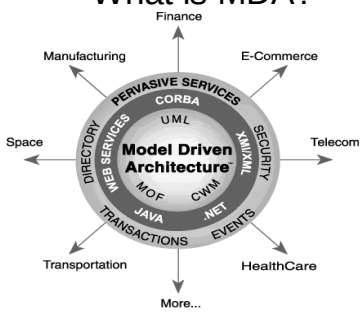
What is a model?

- A person employed to display merchandise, such as clothing or cosmetics. Jennifer Ellison?
- A small object, usually built to scale, that represents in detail another, often larger object.
- In MDA: System design. E.g. design documents/information to create actual systems.

What is MDA?

- "Model Driven Architecture is a new way of writing specifications and developing applications, based on a platform-independent model (PIM)."[OMG]

What is MDA?



Steps involved in MDA:

- Processes involved in MDA:
- 1) Create platform independent model using UML.
- - Captures functionality and behaviour of requirements.

Steps involved in MDA:

- 2) Tool that is used for the MDA creates the Pervasive Services Model
- Pervasive Services - services provided by MDA:

  (i) Directory

  (ii)Transactions

  (iii) Events

  (iv) Security

Steps involved in MDA:

- 3) Store PIM in Model Object Facility.
- Model Object Facility:
  - Acts as a repository for the PIM

Steps involved in MDA:

- 4) Create platform specific Model (PSM) from PIM.

  Achieved by using automated mapping tool.

- E.g. of PSMs: CORBA , EJB, XML, SOAP and any other middleware model.

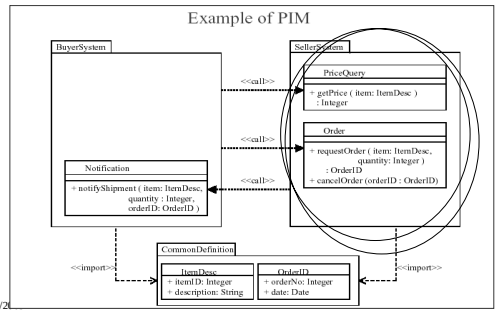
Example of MDA

- Business Requirements:

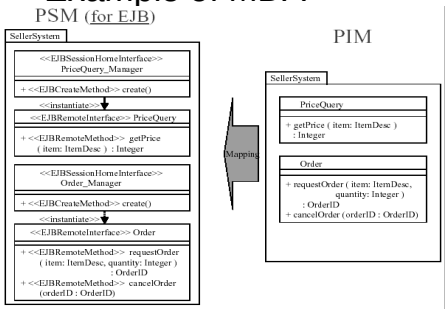
  A simple Order/response system:
  - Price Query
  - Order
  - Shipment Notification.
  - Captured by PIM

  PSM – EJB and SOAP (Simple Object Access Protocol).

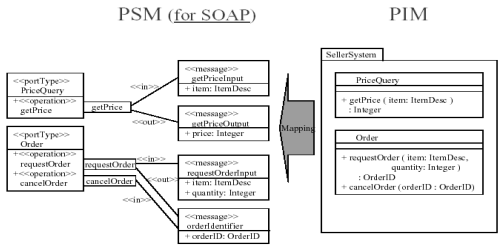
Example of MDA



Example of MDA



Example of MDA



Why should we use MDA?

- Requirements are always changing.
- New technology is always arising.
- Require to integrate old system with new system, and any other system in future.

Why should we use MDA?

- Portability.
- Interoperability.
- Domain Specific.
- Productivity.

Why should we use MDA?

MDA development focuses on the functionality and behavior of a distributed application or system - Achieved by PIM.

Unnecessary to create the PIM again when new technology arises unless requirements from customer are modified.

Why should we use MDA?

- MDA allows you to model the functionality and behavior only once.
- Therefore saves a lot of time.
- E.g. Carphone Warehouse were using Uniface Software and now are switching to Java.

Summary

- MDA includes a PIM and PSM.
- PIM is technology independent.
- Modeling is done in UML.
- MDA has many advantages.
- 2 different mappings:
  - PIM -> PSM
  - PSM -> Implementation.

Conclusion

- Current technologies will evolve.
- New technologies are always arising.
- It is necessary to integrate old system with new system and any other system that will be created in future.
- MDA lets you create a technology independent model of the requirements.
- Model Driven Architecture is the key to software development.

Further Reading

- http://www.omg.org/mda
- Wiley Convergent Architecture – Building Model Driven J2EE system with UML.

Q & A?