Brief Introduction to Model Driven Architecture (MDA)

CAS 747: Software Architecture Modeling and Analysis

Instructor

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Models and Meta-Models

> A model is a set of statements to describe some system under study. Where, statement means some expression about the system that can be considered as true or false.

- An XML schema, UML class diagram

> A meta-model is a model for representing models, which captures the relevant parts of modeling for a set of domains

- Again, XML Schema, and UML class diagram

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Model Driven Architecture (MDA)

➢ Model Driven Architecture (MDA) is a technique that is standardized by the OMG (owners of UML and CORBA) based on the MOF (Meta-Object Facility) and the XMI (XML Meta-data Interchange) specifications.

➢ The fundamental principle of MDA is to provide insulation and platform independence of program interfaces from middleware implementations, by defining them in an abstract system model.

➢ MDA uses this set of specifications to loosely define business-process specific integration points which are technology independent by basing the interface specifications on a protocol-neutral model description.

➢ MDA allows generation of platform specific models from platform independent models.

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Model Driven Architecture

- ➢ MDA involves the specification of a Platform Independent Model which then allows the generation of a Platform Specific Model through tools which are available for a number of standard platforms

- ➢ MOF is used to define component interfaces (like IDL) and is adopted by many MDA tools, national and international standards organizations, Microsoft, and it is the basis of XMI.

- ➢ XMI is basically an XML representation of MOF. XMI is not widely used.The problem with XMI is complexity.
  - The principle value and reason for massive use of XML is its simplicity. This is a similar story to TCP/IP, HTTP, HTML.

- ➢ Relevant topics include:
  - Model-driven development environment that provides tools to generate applications using Model Driven Design.
  - Model-driven code generation, that generates code from high-level model.

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