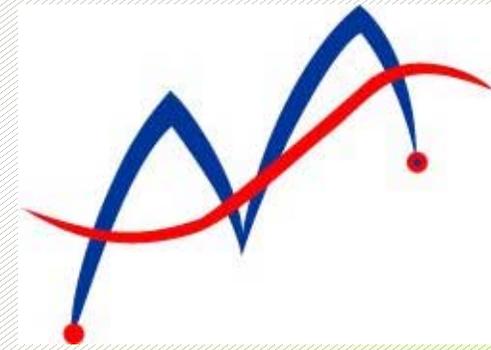


Applying the UML to Enhance Quality of Web Services

OMG Workshop



Presented By:
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April, 2003



Agenda

- Introduction
- Quality-Modelling Context
- Positioning the UML for Web-Services
- The Three Modeling Spaces:
 - Problem, Solution and Background
- Quality Checks: Syntax, Semantics and Aesthetics
- Examples with some UML diagrams in each of the Modeling Spaces



Presenter Profile

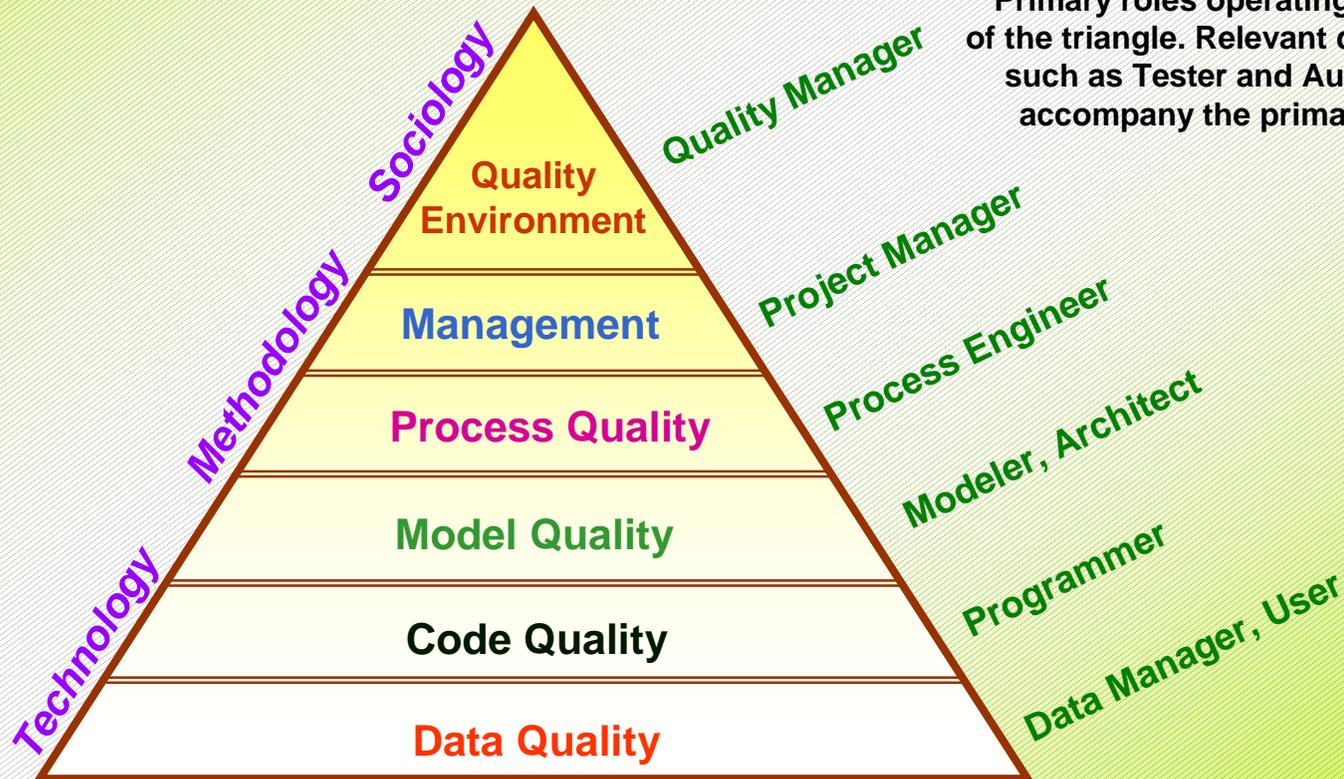
- **Bhuvan UNHELKAR** (BE, MDBA, MSc, PhD)
- University of Western Sydney
- Principal of MethodScience.com
- Author of 5 Books
- Detailed Profile on:
www.unhelkar.com

Quality in Web Services: Context..



- Understanding Elusive Software Quality
- *Additional* Issues in Web Services
 - Packaging of Web-service Offerings
 - Registering of Web-Services (Standardization)
 - Creation of Sufficient momentum at Cluster/Industry Level

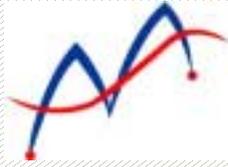
Quality in Web Services: Context





Quality in Web-Services: Further

- Quality of Models
 - Creation and Packing of Services
- Testing of Services
- Registration of Services (Yellow Pages)
- Maintenance of Services
- Security as Ongoing Initiative



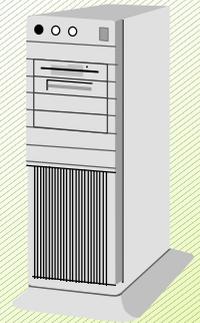
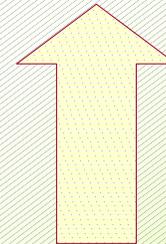
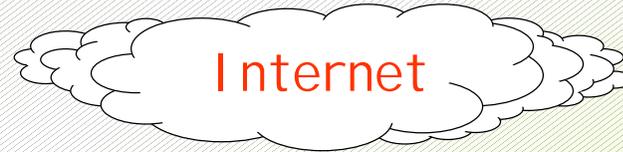
Basics of Internet Systems



Actor



Client



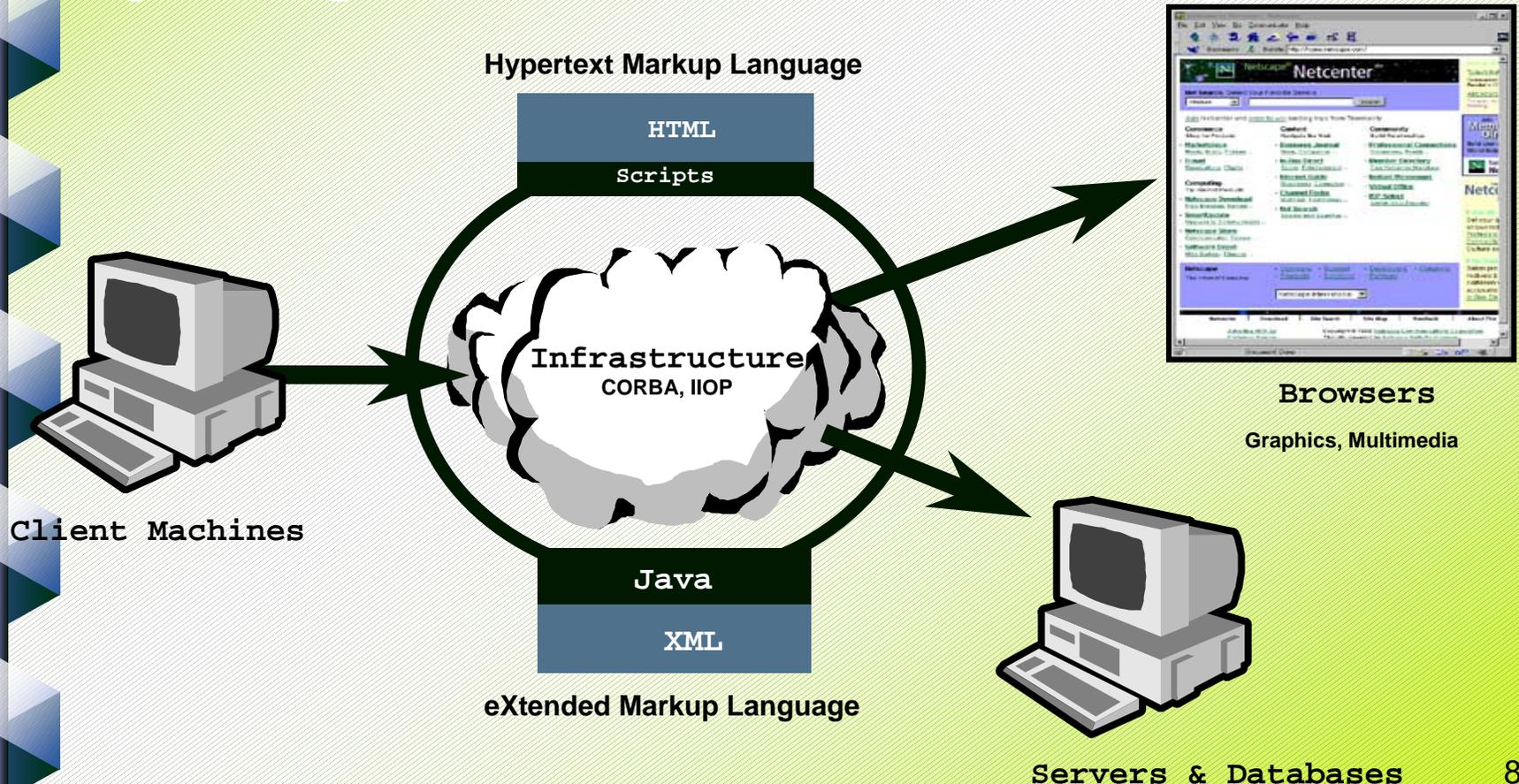
Server

The Internet Repl aces the Physical (Secured and dedicated) connection of a Client-Server Architecture by an Internet Cl oud.



Web-Service Basics

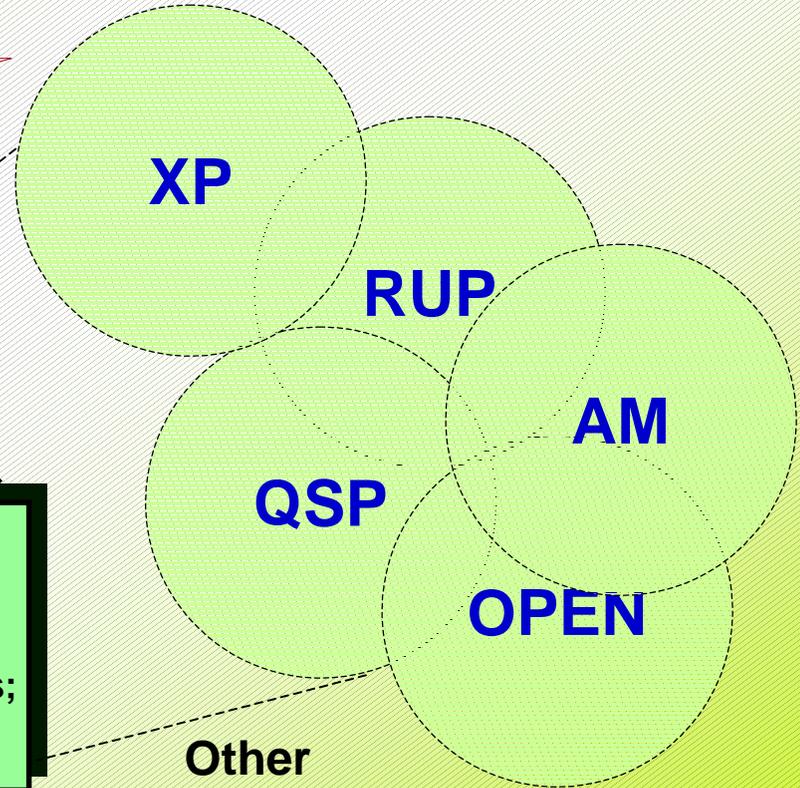
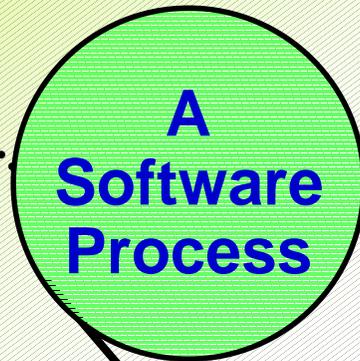
Major Ingredients of a Web-based System



The UML: Not a Process, Not a Tool, Just excellent and standard Modelling Technique

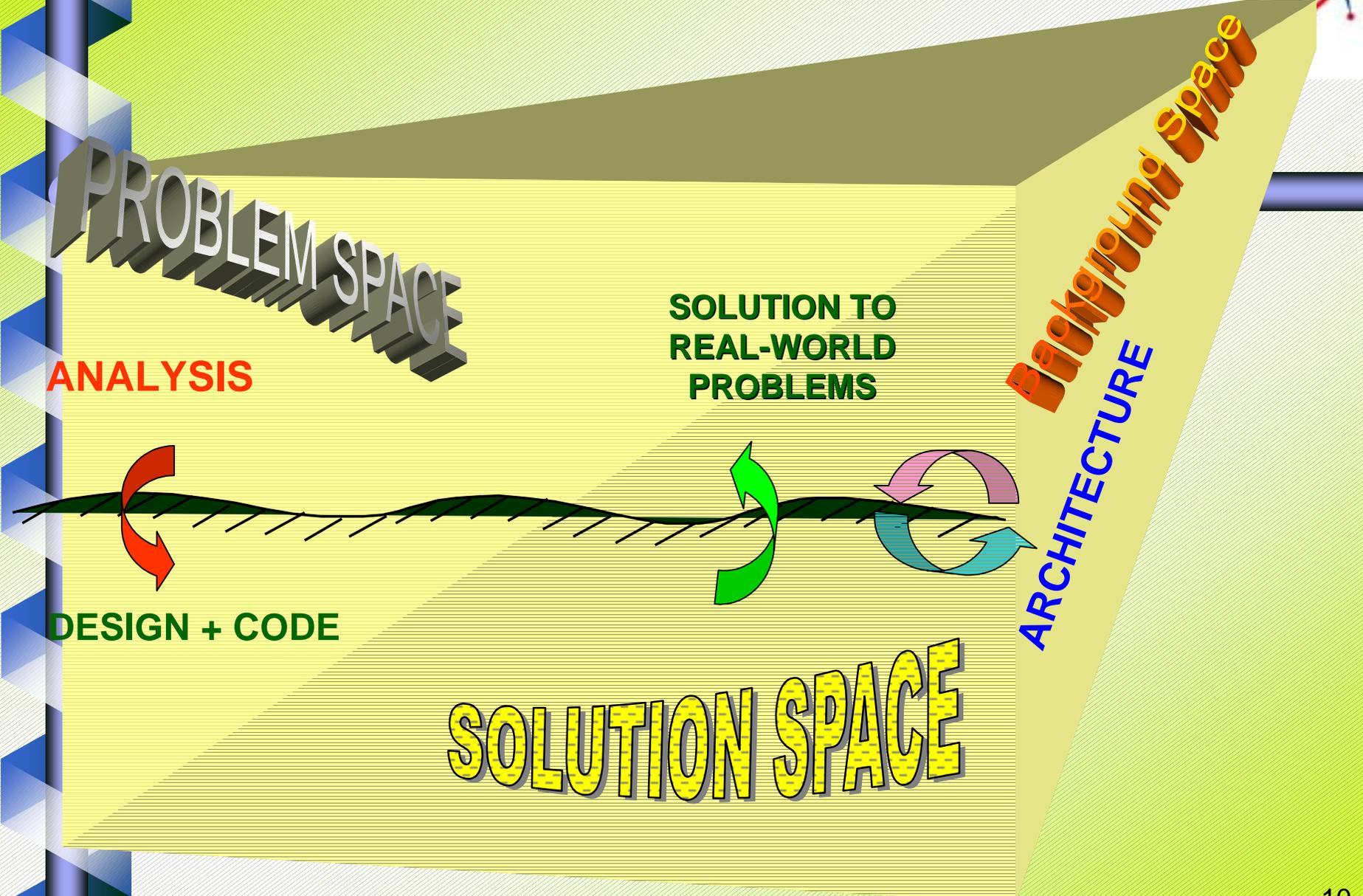


Quality Software Process

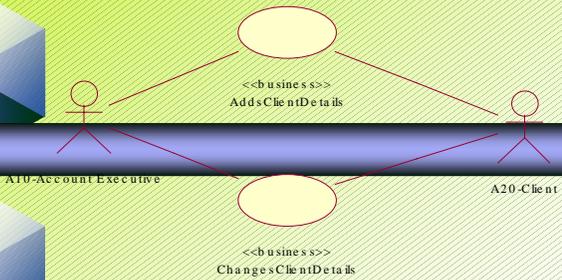


Other Processes

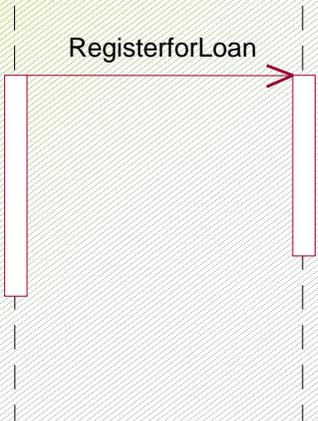
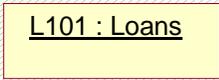
The three major modeling spaces



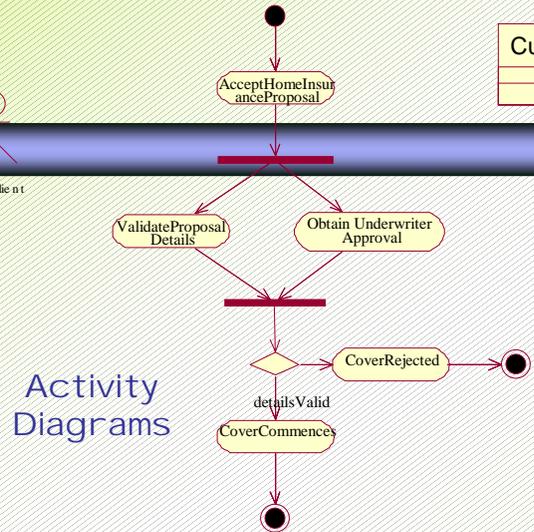
Primary UML Diagrams in MOPS



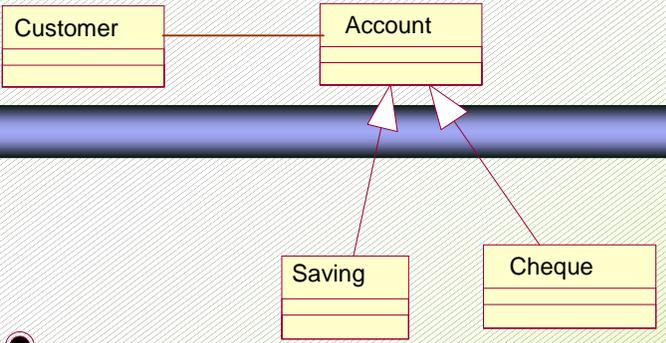
Use Case Diagrams



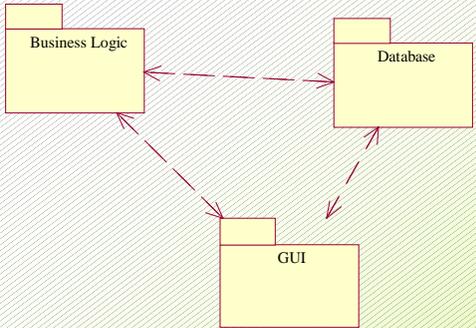
Sequence Diagrams



Activity Diagrams

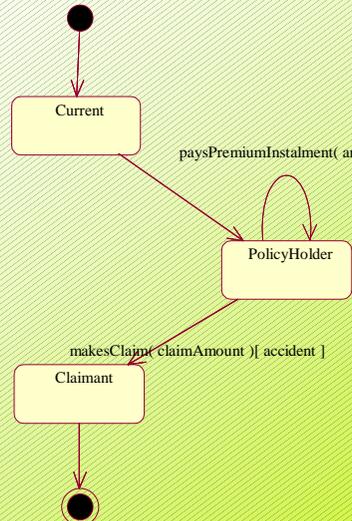


Class Diagrams (Domain Model)



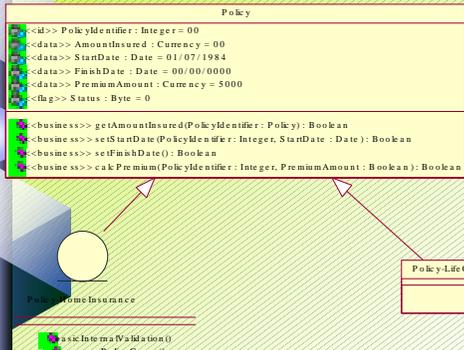
Package Diagrams

This state chart diagram describes the various states in which the Client can be.

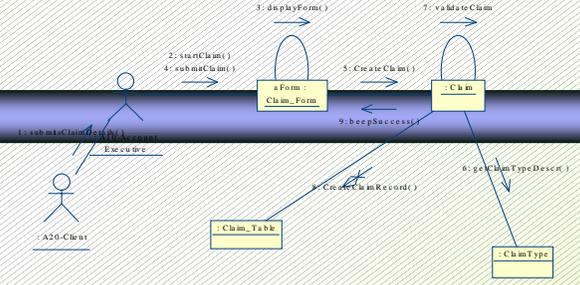


State Chart Diagrams

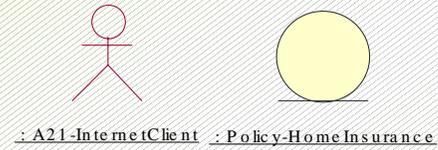
Primary UML Diagrams in MOSS



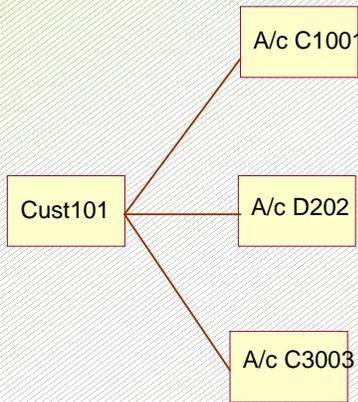
Class Diagram (Advanced)



Collaboration Diagram

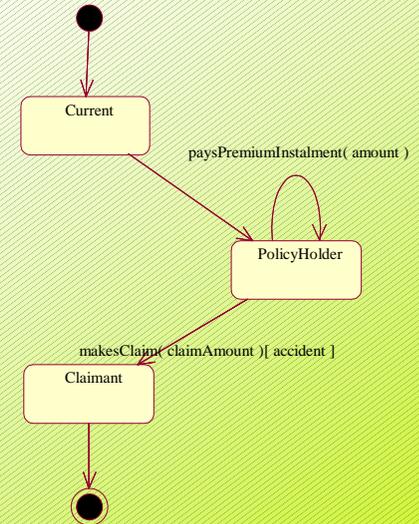


Sequence Diagram (Advanced)



Object Diagram

This state chart diagram describes the various states in which the Client can be.

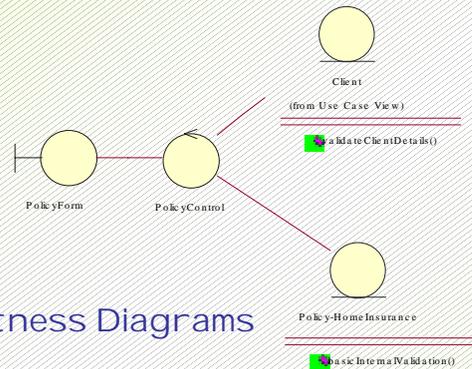


State Chart Diagram (Advanced) ¹²

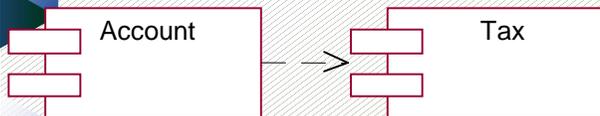
Primary UML Diagrams in MOBS



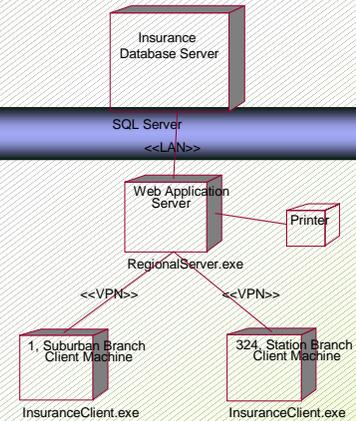
Class Diagrams
(Advance Database)



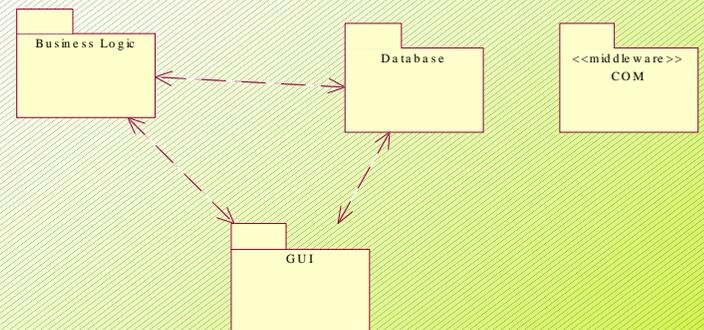
Robustness Diagrams



Component Diagrams
www.MethodScience.com



Deployment Diagrams



Package Diagrams
(Advanced)

MOBS – Background Space Modeling and Quality of Web Services

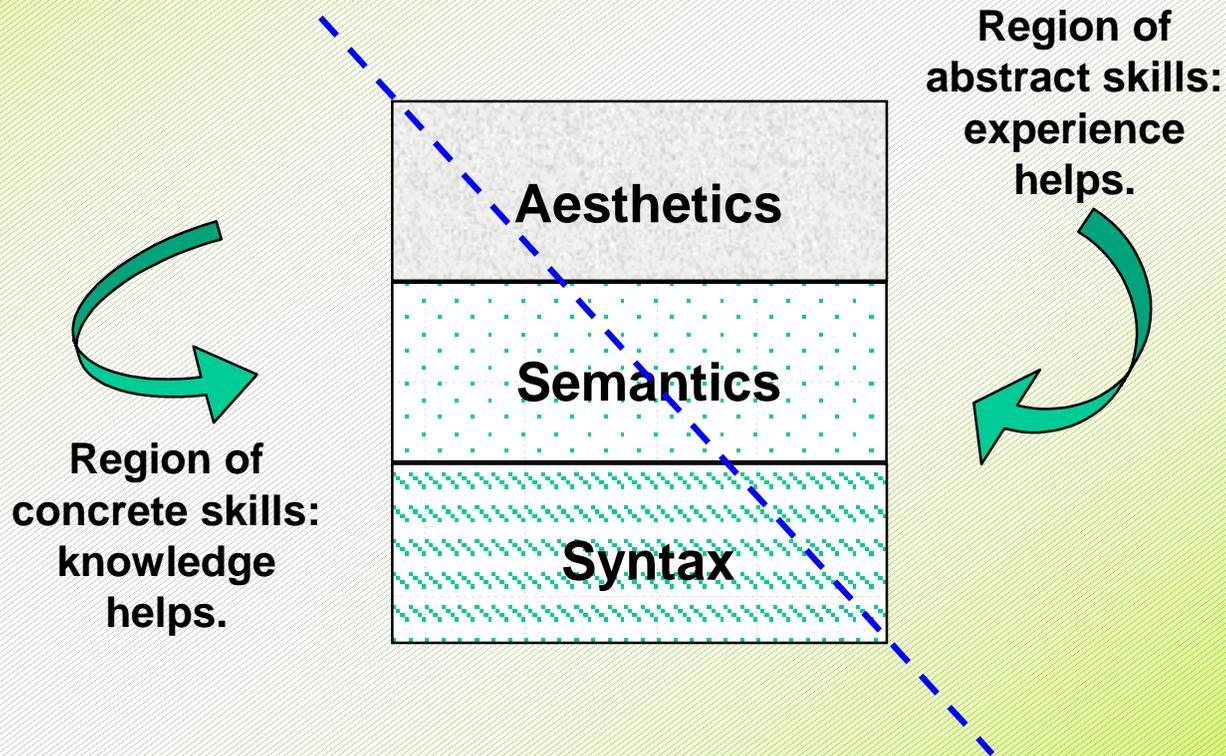


- Creation of Packages
- Modeling System Architecture:
 - Detailed consideration to Components
 - Use of Design Patterns
 - Use of Reusable In-house Patterns
- Considering Deployment
 - Hardware and Operating System related issues
 - Bandwidth and Security
- Registration of Services

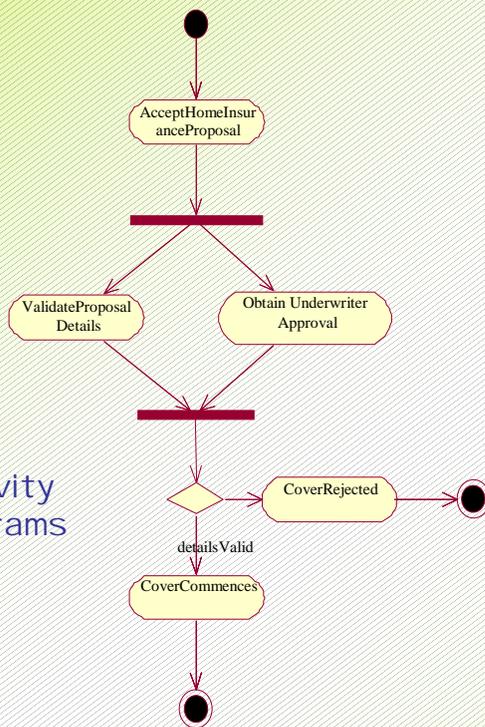
UML and Quality: Syntax, Semantics, Aesthetics



(Based on Unhelkar, 2003, Process QA for UML-based Projects, Addison-Wesley, Boston)



MOPS – Problem Space Modeling and Quality of Web Services



Aesthetics:

- Web Processes are in Balance –especially with the infrastructure
- Number of Activities & Swimlanes
- Number of Diagrams representing Services

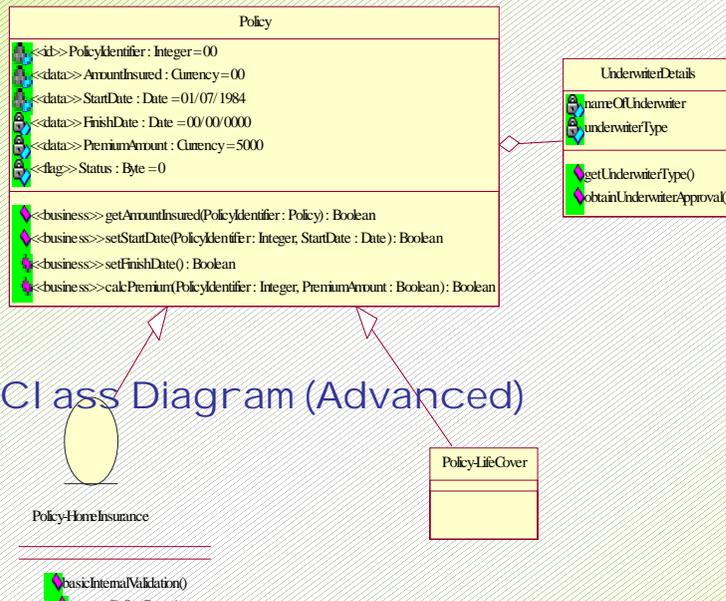
Semantics:

- Meaning understood by Business of the diagram
- Parallel processes, Decision points

Syntax:

- Dependencies of Activities
- Start and End points

MOSS – Solution Space Modeling and Quality of Web Services



Class Diagram (Advanced)

Aesthetics:

- Number of Classes, relationships
- Cohesiveness of Classes on a diagram

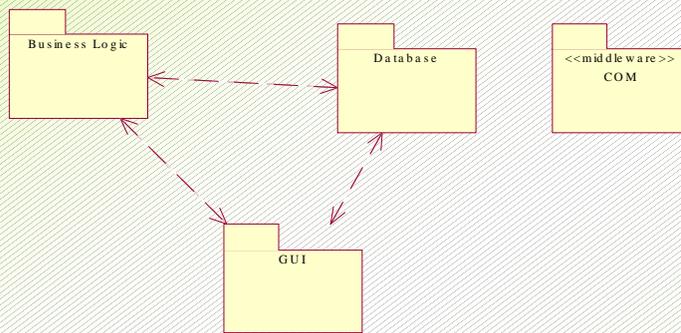
Semantics:

- Internal processes computed
- Interface of Services offered (Methods)
- Registration of Methods

Syntax:

- Naming of Class, Methods, Attributes
- Typing – as per Language/DB

MOBS – Background Space Modeling and Quality of Web Services



Package Diagrams
(Advanced)

Aesthetics:

- Size and Cohesiveness of Package
- Coupling between Packages

Semantics:

- Business Concept Represented
- Relationship with Language / DB packages

Syntax:

- Notation, Interface
- Direction of Message flow



Standards and Regos:

- www.uddi.org
- www.omg.org

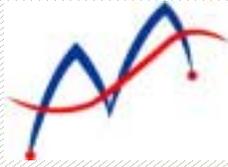


Conclusions & Future Directions

- Web Services Modeling Requires UML
- Application to Mobile Internet
- Standardization is Key to Availability and Use



Do you see what I see?



THANK YOU !!



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Contacts Welcome!!