

Raul Silaghi

– Parallax –

**Viewing Designs Through a Prism of  
Middleware Platforms**

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**Raul Silaghi**  
[Alfred Strohmeier]

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- SEL – EPFL

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## Outline

- Motivation
- Enterprise Fondue Refinement Process
- MDSD with Parallax
- Conclusions and Future Work

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## Motivation (1) Raul Silaghi

- Middleware Plethora
  - COM/DCOM/COM+
  - RMI
  - CORBA/CCM
  - EJB/J2EE
  - .NET
  - Jini
  - Web Services
  - MOM: MQSeries, JMS, MSMQ
- ...
- Model-Driven Architecture (MDA)
  - PIMs → PSMs → Code

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## Motivation (2) Raul Silaghi

### MDA Approach to Software Development

```

graph TD
    PIM[Platform-Independent Model (PIM)]
    PSM[Platform-Specific Model (PSM)]
    Code[Skeleton Class Generation (Code)]
    PSM -.->|«refine»| PIM
    Code -.->|«refine»| PSM
            
```

#### Considerations

- **Middleware** = MDA Platform
- **UML** = de facto industry standard

**What about generating middleware-specific code???**

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## Motivation (3)

- MDA?
- Distributed Enterprise Systems?
- Middleware-Mediated Distributed Systems?
- Middleware Code Generation?
  
- Support for *understanding*, *describing*, and *implementing* middleware-specific concerns:
  - distribution, concurrency, transactions, security, etc.

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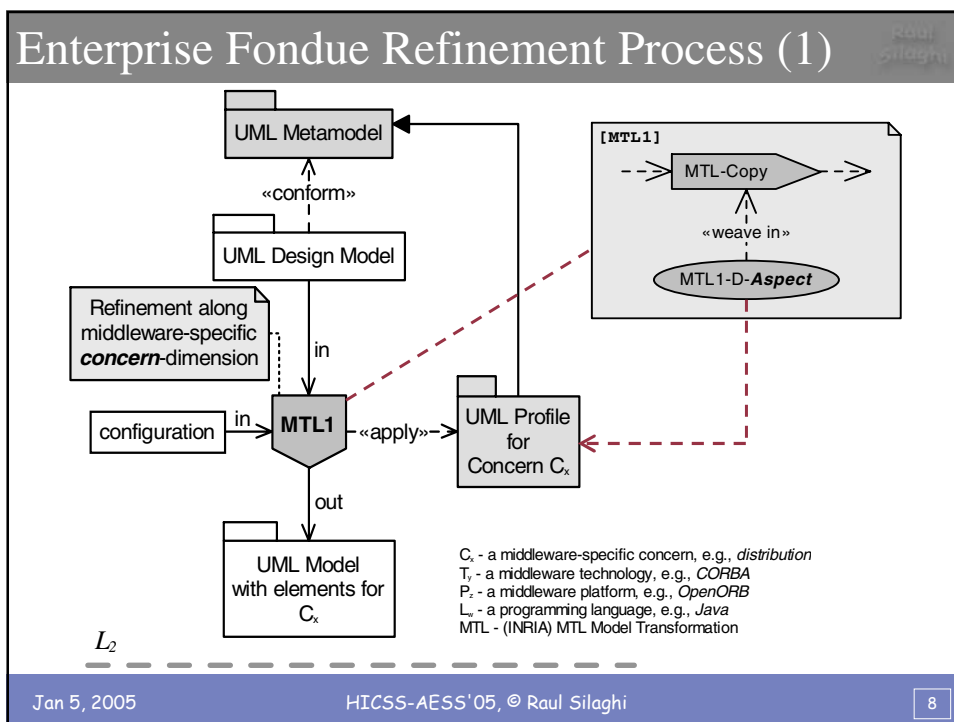
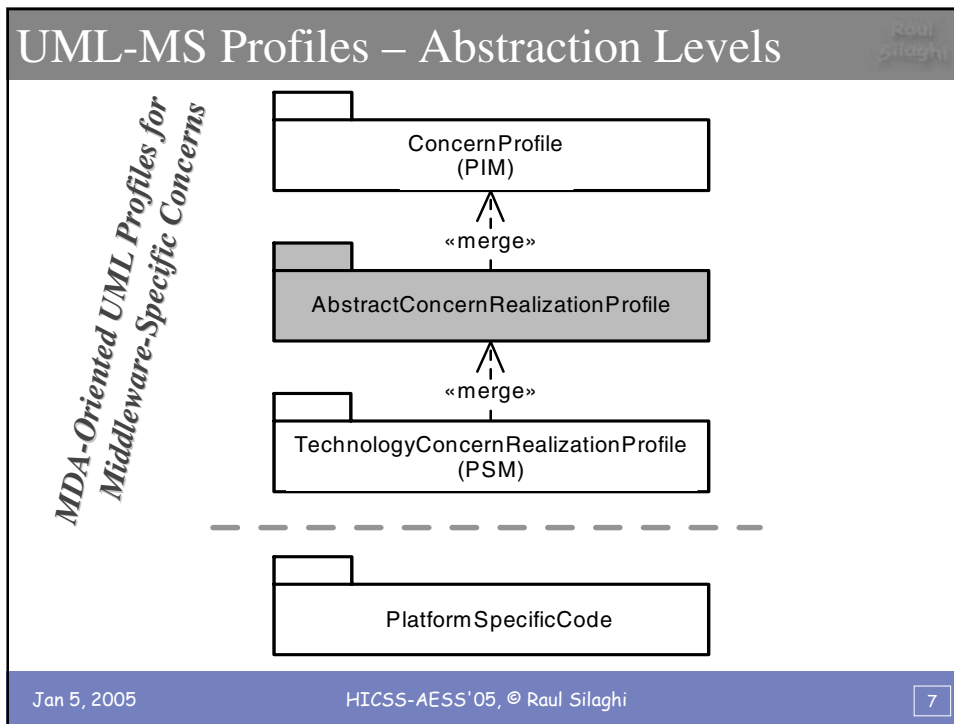
## UML Extension Mechanisms

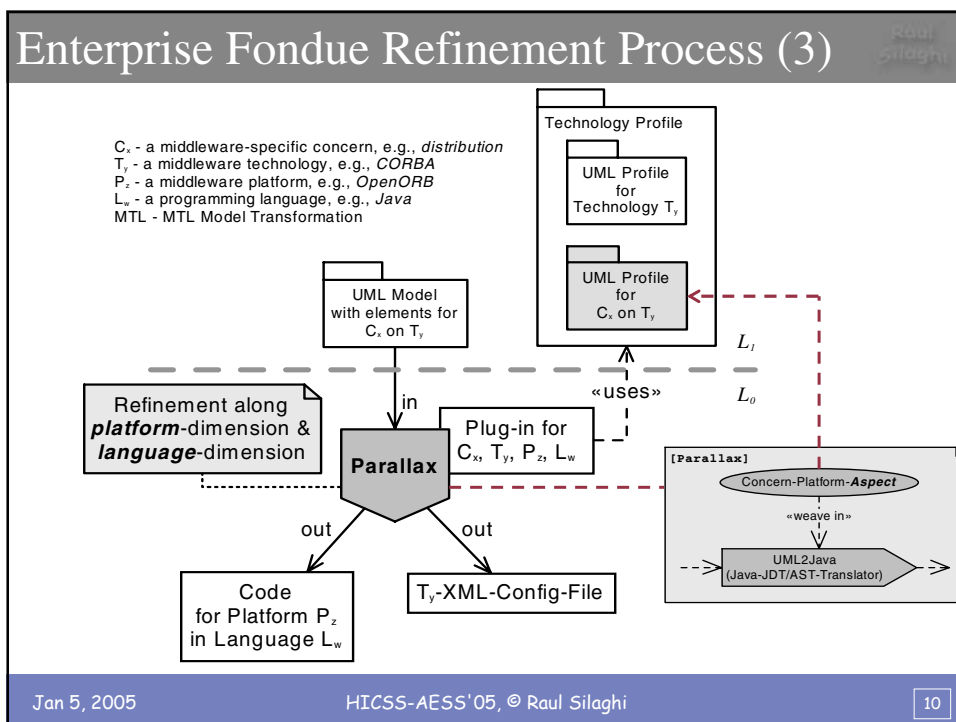
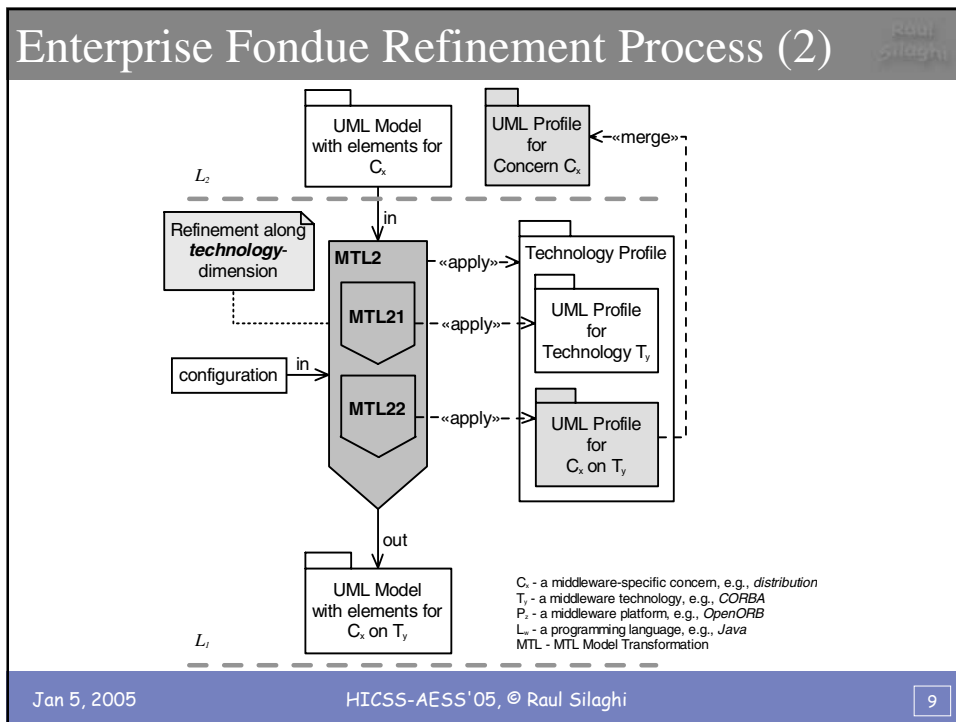
- Stereotypes
- Constraints
- Tag Definitions
- Tag Values
  
- UML **Profiles** = coherent set of extensions, defined for specific purposes

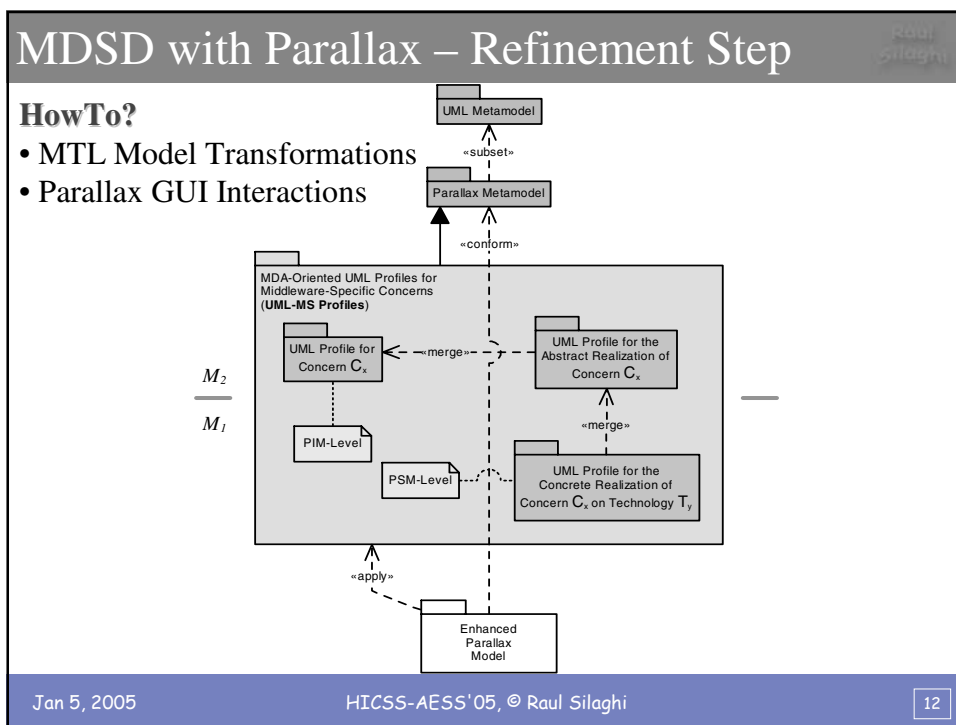
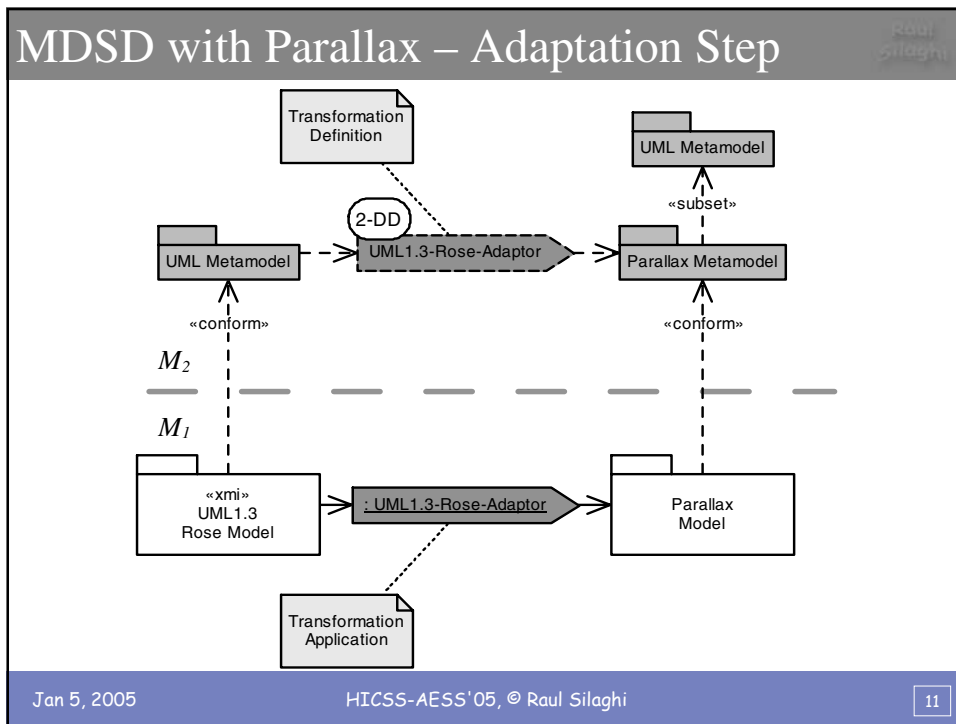
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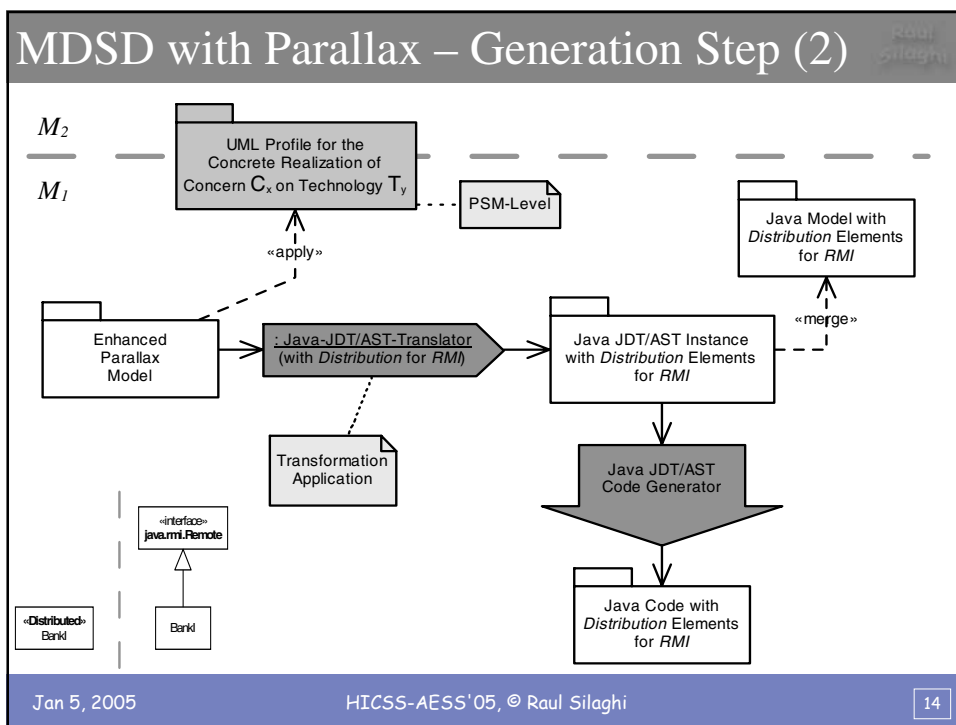
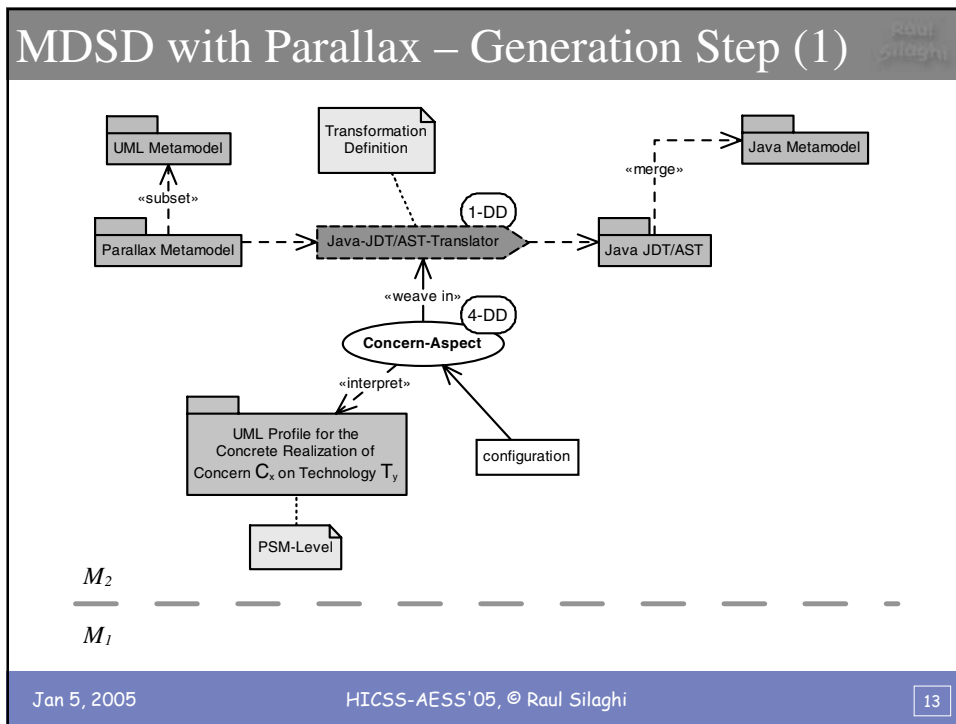
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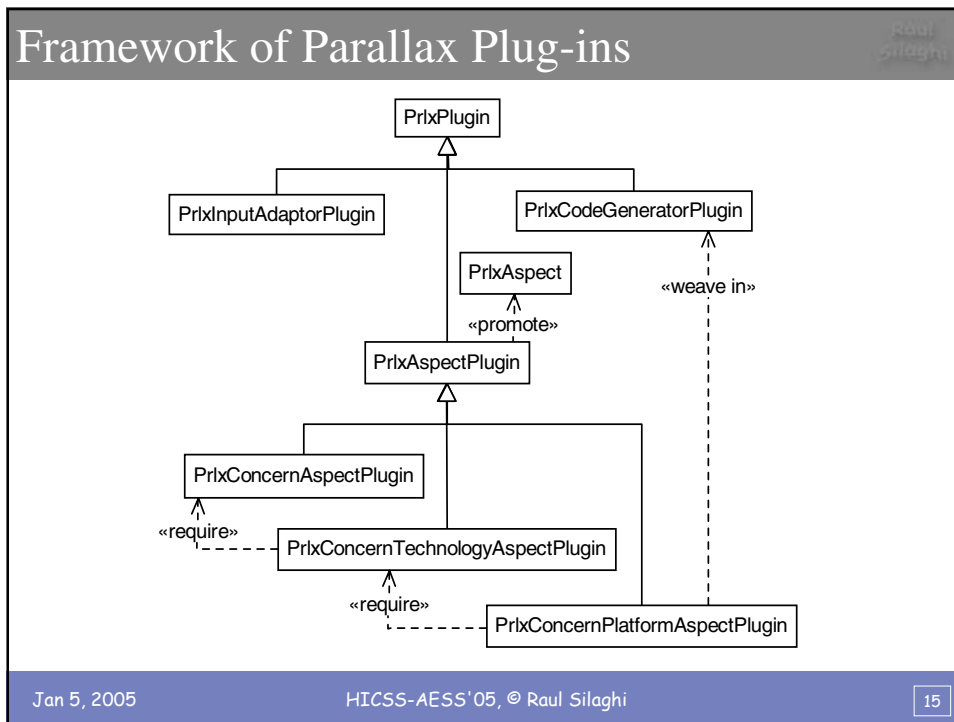
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- ### Dependency Dimensions of PrlxPlugins
- PrlxInputAdaptorPlugins (**2-DD**)
    - UML-Specification
    - UML-Case-Tool (UML-Case-Tool-Exporter)
    - XMI-Specification (???)
  - PrlxCodeGeneratorPlugins (**1-DD**)
    - Programming-Language
  - PrlxConcernPlatformAspectPlugins (**4-DD**)
    - Middleware-Concern
    - Technology
    - Platform
    - Programming-Language
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## Conclusions

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### Parallax Tool Support

- MDA Eclipse Support for
- Addressing *Middleware Concerns* Based on
- Aspect-Promoting Plug-ins
- <http://parallax-lgl.epfl.ch/> [/update]
  
- Modularization
  - Framework of plug-ins, extension points
- Separation of Concerns
  - Aspect-Oriented Programming (AspectJ)

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## Future Work

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- Complete the Eclipse Contribution Circle
  - **Publish** the PrlxExtensionPoints

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- Generating aspects...???

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- Online Auction System [composition of concerns!]
- Generating aspects...???
- Incorporate the UML 2.0 enhanced interactions  
**Fragments :: InteractionOperators**  
(seq, alt, opt, break, loop, etc.)
  - PrlxMetamodel + PrlxCodeGeneratorPlugins

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Thank You !

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