

Raul Silaghi

– Parallax –

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

Raul Silaghi
[Alfred Strohmeier]

- 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)

- 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)

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

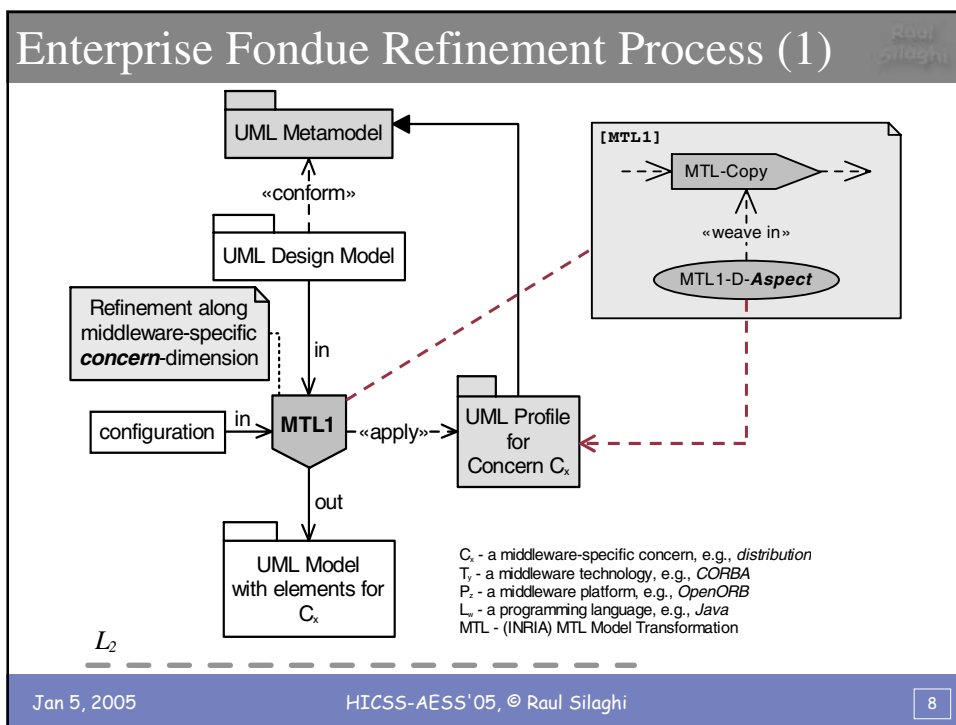
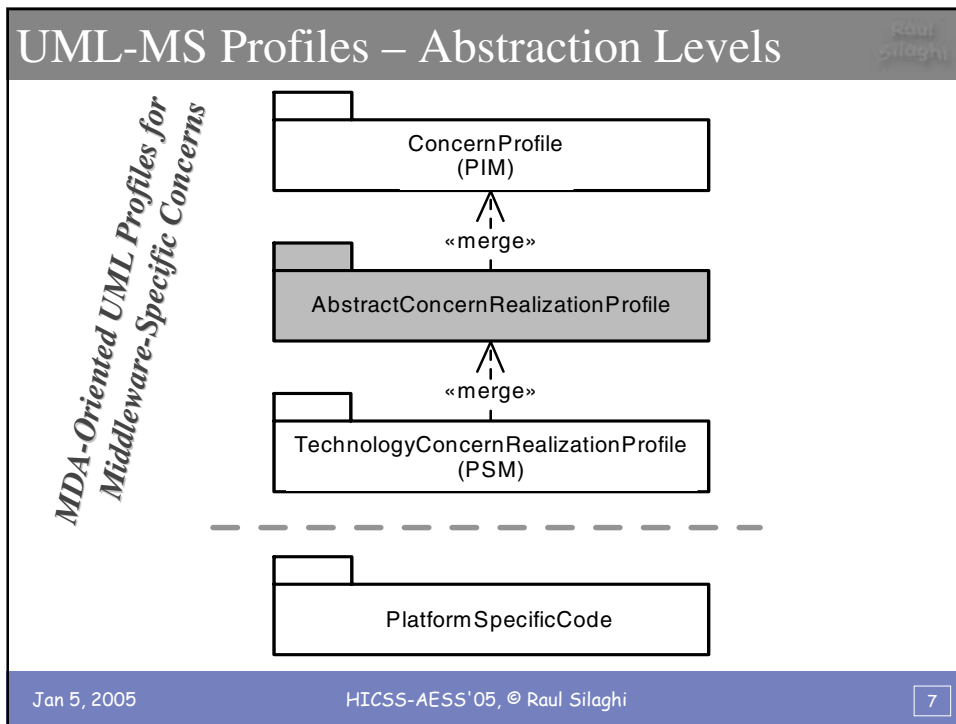
- Stereotypes
- Constraints
- Tag Definitions
- Tag Values

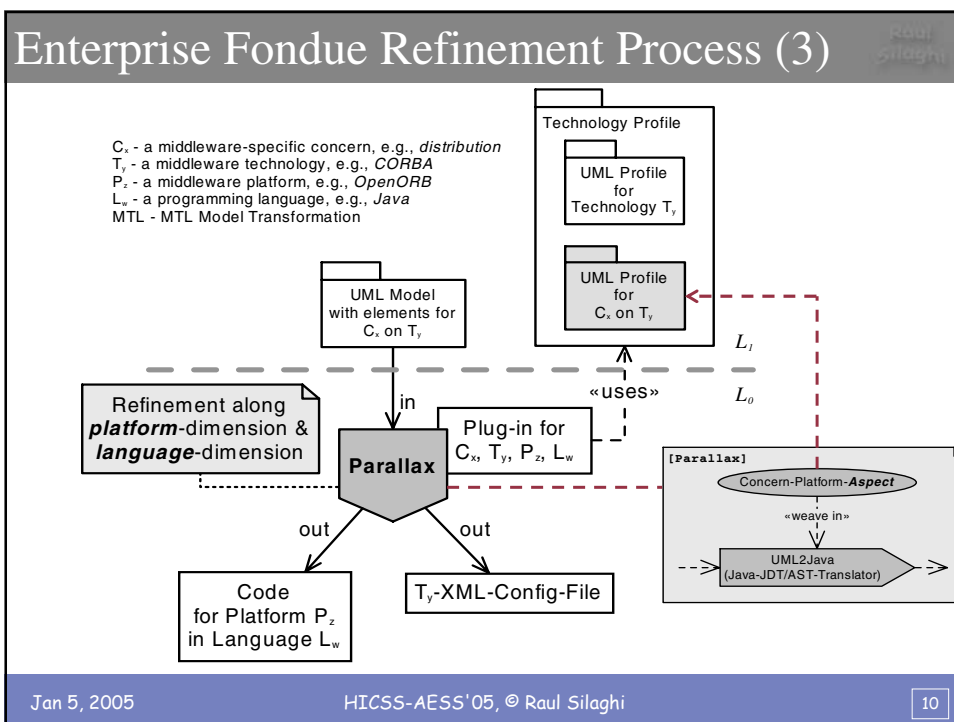
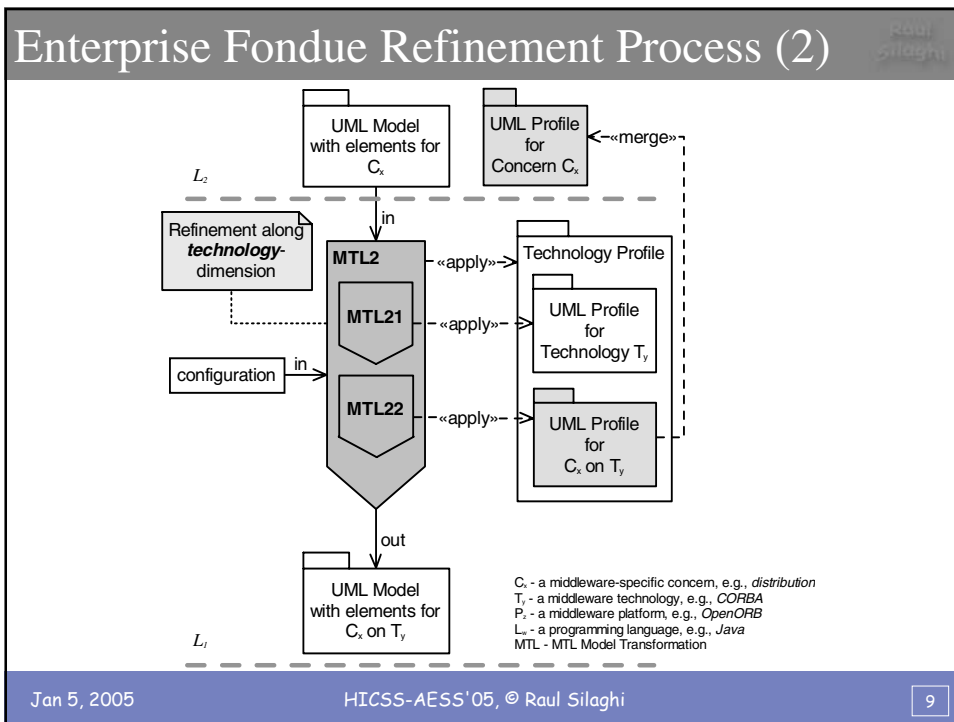
- UML **Profiles** = coherent set of extensions, defined for specific purposes

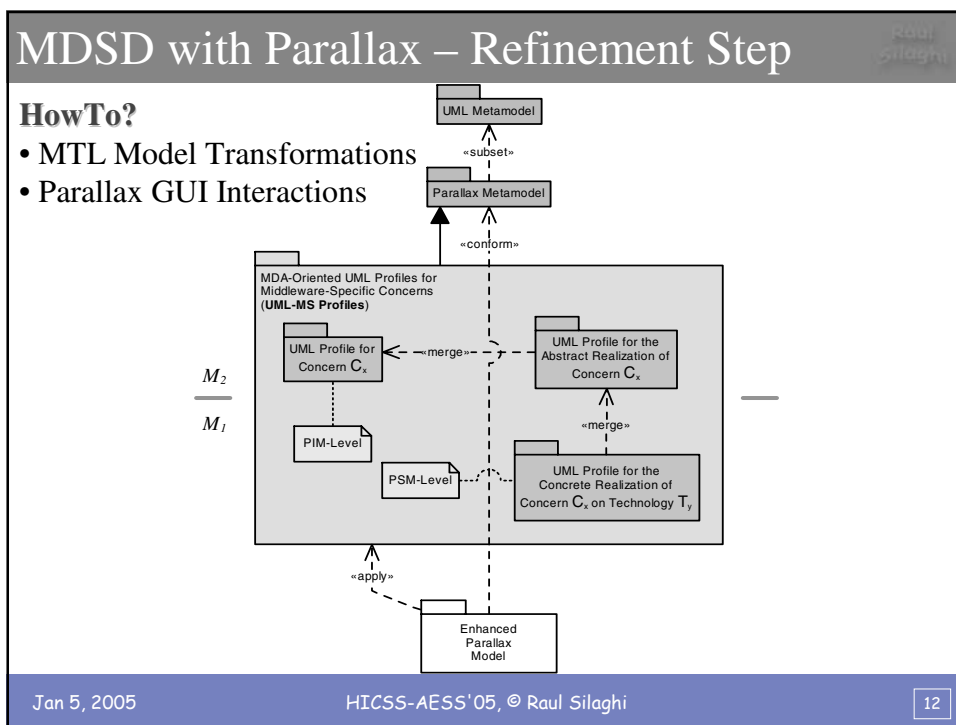
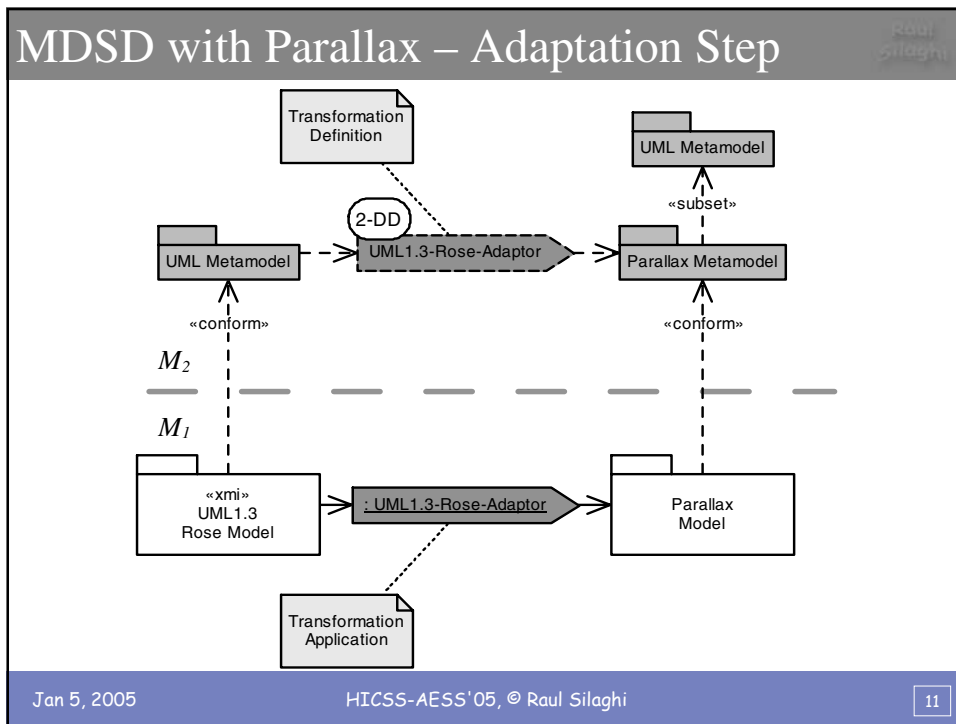
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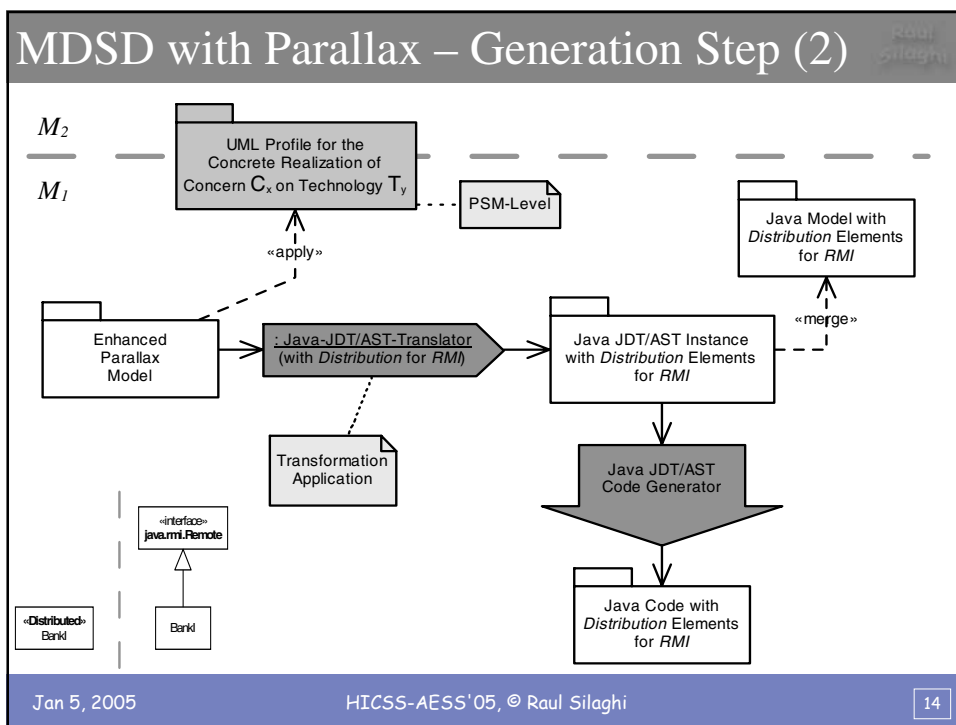
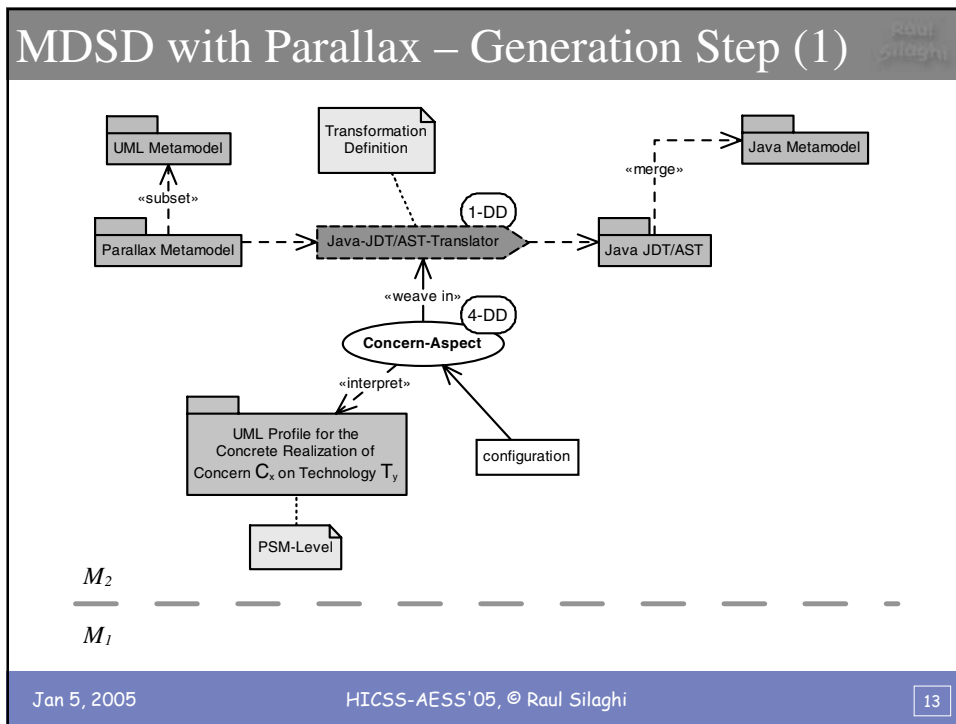
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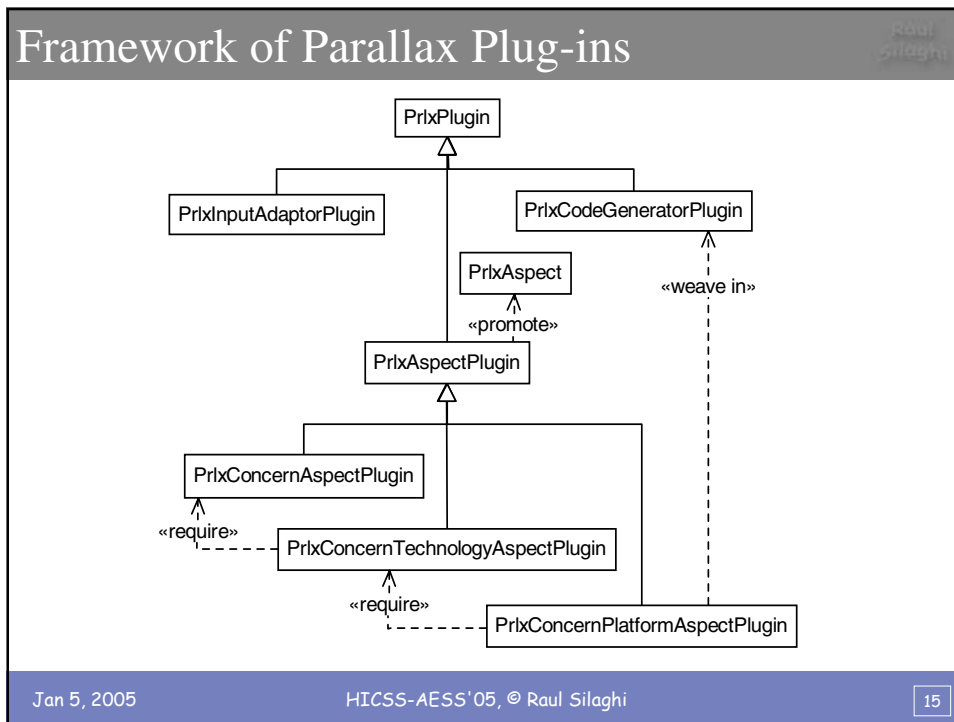
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- ### Dependency Dimensions of PrlxPlugins
- PrlxInputAdaptorPlugins (**2-DD**)
 - UML-Specification
 - UML-Case-Tool (UML-Case-Tool-Exporter)
 - XMI-Specification (???)
 - PrlxCodeGeneratorPlugins (**1-DD**)
 - Programming-Language
 - PrlxConcernPlatformAspectPlugins (**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...???
- 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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