A MERGE ENGINE AND APPLICATIONS FOR MODEL-BASED ENGINEERING
“Merge” as a primitive operation
Vision

“Merge” as a primitive operation

To realize features for model-based engineering
Vision

“Merge” as a primitive operation

To realize features for model-based engineering

Based on emf
Vision

“Merge” as a primitive operation

To realize features for model-based engineering

Based on emf

Especially related to
- Collaboration
- Reuse
Project Contents

An engine tailored for the project vision

- Diff/merge engine

-2012
Project Contents

- GUI + Eclipse integration
- Traditional diff/merge usage
- An engine tailored for the project vision
Project Contents

Diff/merge engine

GUI + Eclipse integration

Modeling Patterns

Design patterns in modeling

Traditional diff/merge usage

An engine tailored for the project vision
Project Contents

- Diff/merge engine
  - GUI + Eclipse integration
  - Modeling Patterns
    - Model-based co-engineering
    - Design patterns in modeling
    - Traditional diff/merge usage
    - An engine tailored for the project vision
Project Contents

- Model Patches
  - Patch-based practices

- Co-Evolution
  - Model-based co-engineering

- Modeling Patterns
  - Design patterns in modeling

- GUI + Eclipse integration
  - Traditional diff/merge usage

- Diff/merge engine
  - An engine tailored for the project vision
1) GUI + Eclipse Integration

- Predefined use cases
  - Version control
  - Opportunistic reuse
1) GUI + Eclipse Integration

- **Predefined use cases**
  - Version control
  - Opportunistic reuse

![Comparison Configuration](image)

- **Other use cases**
  - Advanced configuration
  - Extendible per modeling tool
1) GUI + Eclipse Integration

### Predefined use cases
- Version control
- Opportunistic reuse

### Dedicated GUI

#### Advanced configuration
- Extendible per modeling tool

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Name of the company/Template: 87204467-DOC-GRP-EN-002
1) GUI + Eclipse Integration

### Predefined use cases
- Version control
- Opportunistic reuse

### Dedicated GUI

### Other use cases
- Advanced configuration
- Extendible per modeling tool

+ Integration with Local history, SVN, Git

Diagrams: extensions for GMF, Sirius
2) Modeling Patterns

Engineering Patterns

A general solution to a class of recurring problems
2) Modeling Patterns

Engineering Patterns

A general solution to a class of recurring problems

- Enforce design principles
- Share and disseminate know-how
- Productivity and design quality
2) Modeling Patterns

Engineering Patterns

Model-based Engineering

Modeling Patterns

A general solution to a class of recurring problems

- Enforce design principles
- Share and disseminate know-how
- Productivity and design quality
2) Modeling Patterns

Engineering Patterns

A general solution to a class of recurring problems

Model-based Engineering

Modeling Patterns

- Enforce design principles
- Share and disseminate know-how
- Productivity and design quality

- Formally
- With tool support
- Through Pattern catalogs
2) Modeling Patterns

Pattern creation
2) Modeling Patterns

Pattern creation

Pattern application & reuse,
Instance management,
Conformance checking
2) Modeling Patterns

Pattern creation

- Catalog browsing, Pattern/Instance update

- Pattern Instance Explorer
- Properties
- Information
- Semantic Browser

Pattern Instances in In-FlightES.melodymodeler
- SharedCatalog [In-Flight Entertainment System/SharedCatalog.patterns]
  - Audio Conversion
    - Instance v1.0 (Convert Audio, ...)
    - Instance v1.0 (Play Audio, ...)
      - Audio Packets
      - Audio-Video Stream Header
      - Convert Audio
      - Decode Audio Packets
      - Decoded Audio Stream [Decode Audio Packets -> Convert Audio]
      - Play Audio

Pattern application & reuse,
Instance management,
Conformance checking
3) Model-Based Co-Engineering

- System Architects
  - System model(s)
- Subsystem Architects
  - Specialty Eng. model(s)
- Engineers in Specialty Engineering Discipline
3) Model-Based Co-Engineering
3) Model-Based Co-Engineering

System Architects

- V1.0
- V1.1
- V1.2
- V1.3

Specialty Eng. model(s)

Subsystem Architects

Engineers in Specialty Engineering Discipline

- V1.0
- V2.0
- V3.0
- V4.0

System model(s)

V1.0
V2.0
V3.0
V4.0

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3) Model-Based Co-Engineering

- System Architects
  - V1.0
  - V1.1
  - V1.2
  - V1.3

- Co-engineering session

- Specialty Eng. model(s)
  - V1.0
  - V2.0
  - V3.0
  - V4.0

- Subsystem Architects
  - Engineers in Specialty Engineering Discipline
  - V1.0
3) Model-Based Co-Engineering

System Architects
V1.0
V1.1
V1.2
V1.3

Subsystem Architects
Engineers in Specialty Engineering Discipline
V1.0
V2.0
V3.0
V4.0

System model(s)
Specialty Eng. model(s)

Co-engineering session
Consistent co-evolution

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3) Model-Based Co-Engineering

System model(s)

System Architects
V1.0
V1.1
V1.2
V1.3

Tool support

Engineers in Specialty Engineering Discipline

Subsystem Architects

Specialty Eng. model(s)

V1.0
V2.0
V3.0
V4.0
3) Model-Based Co-Engineering

- Consistency checking + Deviation analysis
- Synchro. scope definition
- Reconciliation + Impact analysis
- Tool support

System model(s)
- System Architects
  - V1.0
  - V1.1
  - V1.2
  - V1.3
- Clarity
- Specialty Eng. model(s)
  - V2.0
  - V3.0
  - V4.0
3) Model-Based Co-Engineering

Consistency checking + Deviation analysis

Tool support

Reconciliation + Impact analysis

Synchro. scope definition

Consistent co-evolution

Sysco. scope definition

System model(s)
4) Model Patches

Compare models → Generate patch
4) Model Patches

- Compare models → Generate patch

- Give patch to someone
4) Model Patches

Compare models → Generate patch

Give patch to someone → Apply patch on other model
4) Model Patches

Compare models → Generate patch

- Give patch to someone
- Apply patch on other model
- Applicability analysis + Impact visualization
4) Model Patches

Compare models → Generate patch

- Give patch to someone
- Apply patch on other model
- Applicability analysis + Impact visualization

May happen in very different situations and contexts
Known Ecosystem

Products

Organizations
## Known Ecosystem

### Products

### Organizations

+ Eclipse community: *"Most Innovative New Eclipse Project or Feature"* award @EclipseCon World 2013
Known Ecosystem – Thales Perspective

- Design process transitions
- Version control
- Replicable elements
- Modeling patterns
- Add-on: System to Subsystem
- Add-on: XML Pivot
- Add-on: Requirements

+ In-house tools by Thales Corporate
+ In-house tools of Thales Units
Contact

**http://wiki.eclipse.org/EMF_DiffMerge**

- Forum
- Bug tracking
- Download
- Misc. information

**Main contact:** olivier.constant@thalesgroup.com
Thanks for your attention
## Log of changes and approval

### Log of changes

<table>
<thead>
<tr>
<th>Revisions</th>
<th>Description</th>
<th>Date</th>
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<td>2017 10 19</td>
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<tr>
<td>002</td>
<td>Slightly updated version</td>
<td>2017 10 24</td>
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### Approval

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<td>Written by</td>
<td>Olivier CONSTANT, Thales Corporate Engineering</td>
<td></td>
<td>2017 10 19</td>
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<td>Verified by</td>
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