Merging models with
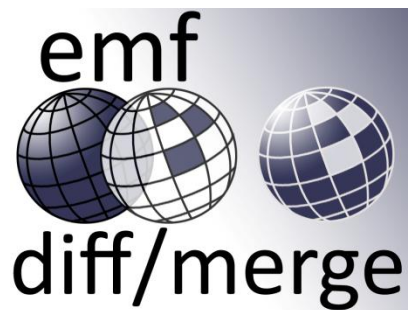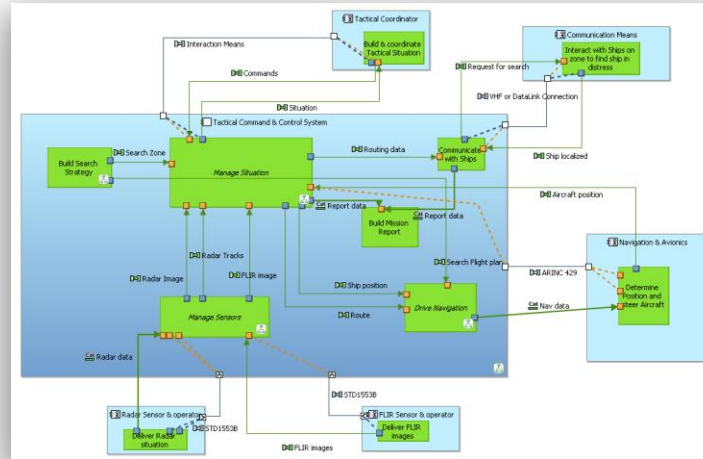
EMF Diff/Merge

Kepler Demo Camp - Frankfurt Am Main, June 25th, 2013

Dr. Olivier Constant, Thales Global Services

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Model-Based System Engineering

◆ **Thank you Eclipse Modeling!**

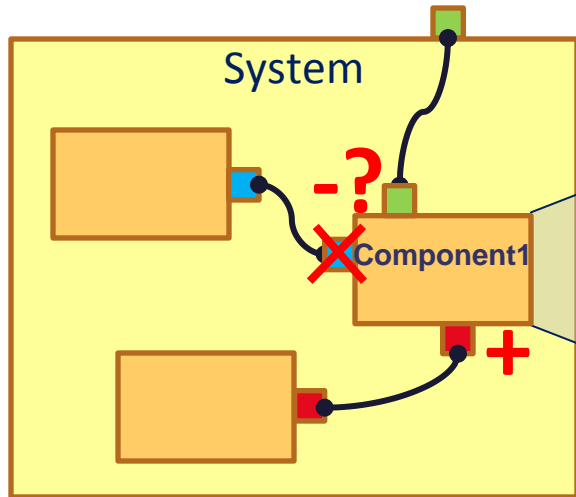## *System Engineering (model-based)*
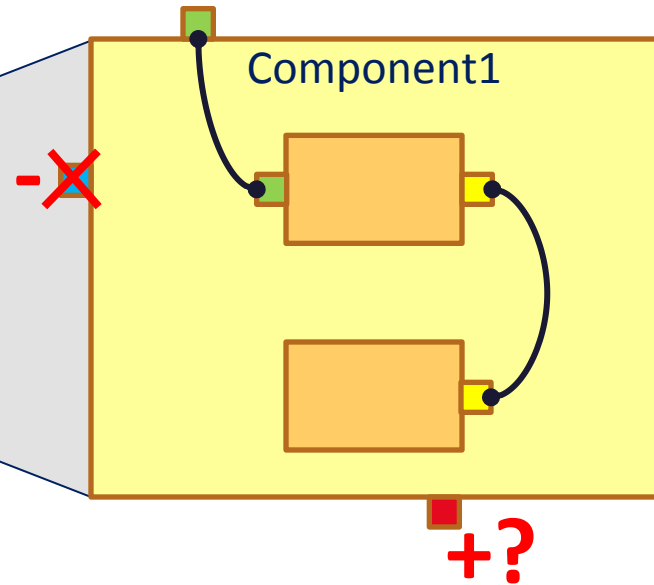
➔ *Collaborative work*

➔ *Diff / merge (of models)*

Many use cases

◆ **Team work & version control**

◆ **Subcontracting**

◆ **Bridge with Specialty Engineering disciplines (e.g., Safety)**

◆ **Model reuse**

◆ **Others …**

    ◉ Incremental model transformation in general

Model 1: System design team

Model 2: Subcontractor

Merging models: a recurrent need ...

... but a non-trivial operation
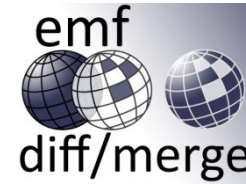
- **Model ≠ Code**
  - Complex data structure: set of interconnected elements with data
  - Constrained by a metamodel
  - Constrained by usage rules
- **Failed merge: model may be considered as corrupted by editor!**
  - Tool support needed to enforce **consistency** when merging

➔ *Relevance of model diff / merge technologies*

EMF Diff | Merge: a component for building merge-based features


- ◆ **≠ EMF Compare: integrated solution**

Vision

- ◆ **Merging = primitive, consistency-preserving operation for model manipulation, transformation, evolution**

- ➔ **Consistent merge rules automatically derived from metamodels, and extendible**

- ➔ **Operates on arbitrary model scopes**
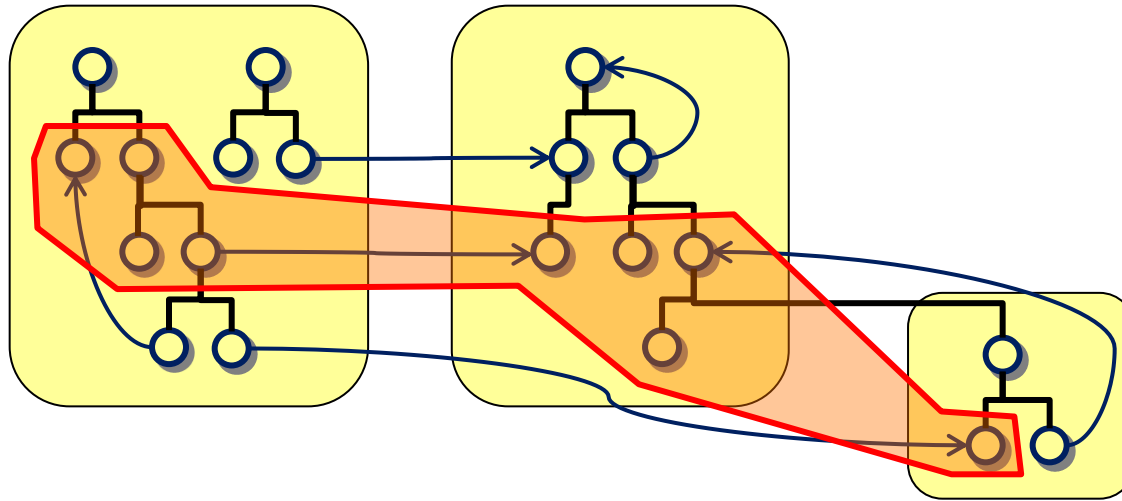
Model scope = arbitrary perimeter within models

- ◆ **Not necessarily tied to persistence or structure (EMF resources, containment tree)**

- ◆ **Customized for specific diff / merge use cases**

    - ○ E.g., special semantics to addition / removal …

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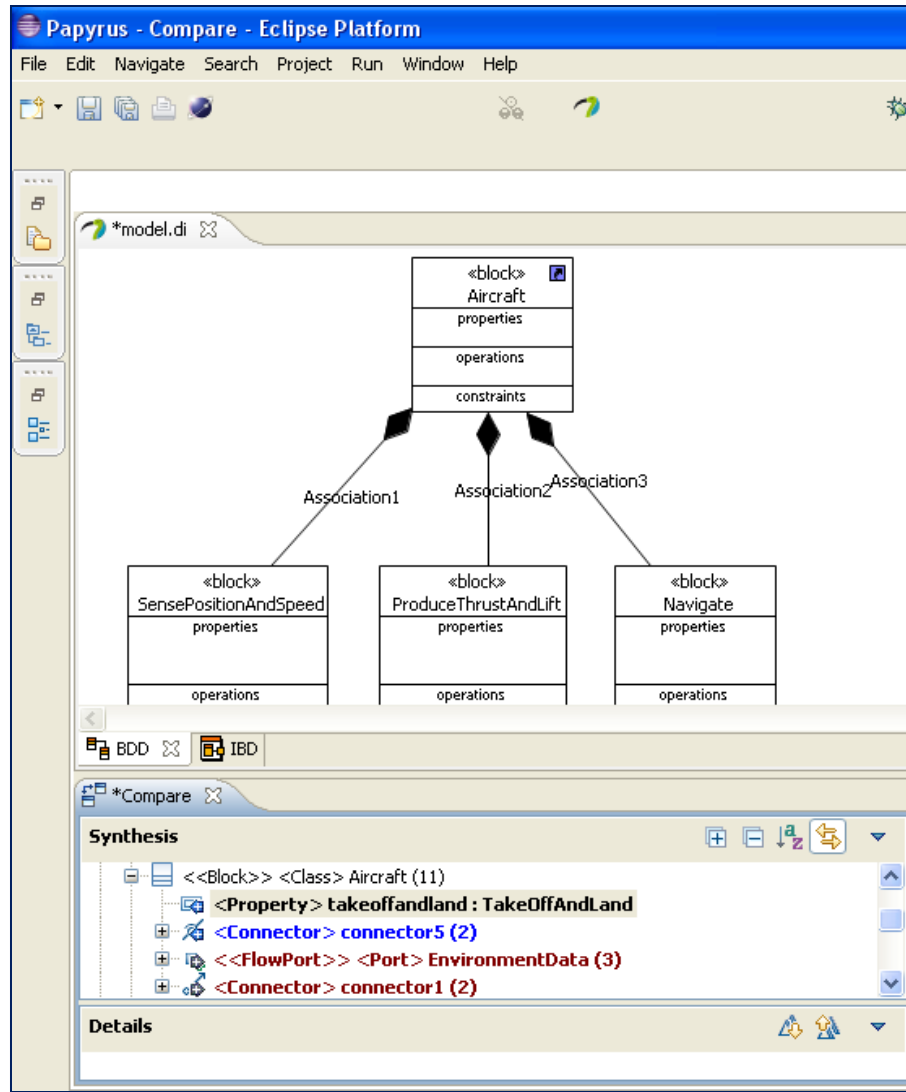
July 2012: Eclipse project created

◆ **Thanks to the AGeSys
French collaborative project**

November 2012: joined Kepler release train

*March 2013: "Most innovative project/feature" award
@EclipseCon, Boston*

October 2013: in Polarsys IDE 1.0

◆ **Eclipse Industry Working Group for embedded systems**

Now: Operationally used in Thales projects

◆ **Both as front-end tool and feature enabler**

Integration / support

- ◆ **UML/SysML, CDO, Sirius**

Flexibility enhancements

- ◆ **UI extension for easy definition of model scopes**
- ◆ **Enhanced impact analysis**
- ◆ **Validation of alternative matching algorithms (generic IDs)**

Higher-level technologies

- ◆ **Modeling patterns (MERgE ITEA2 project)**

MERgE
SAFETY & SECURITY

Longer-term

- ◆ **Dynamically react to model changes**
- ◆ **Support use cases that exploit deltas**

Thanks for your attention!

Questions?