



ArCon, a Candidate Polarsys Component

**Gert Johansson
Combitech
2013-06-04**

Combitech Polarsys and Eclipse members

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Combitech announces its membership in Eclipse Foundation

2013-05-16

Combitech proudly announces its membership in Eclipse Foundation and the Polarsys Industrial Working Group.



For many years we have, bit by bit, started to adopt Eclipse based tools in various areas of systems and software development. Until recently mostly as users, but lately also as modifier's of different IDE's and developer of new ones.

More information

Eclipse

Polarsys

Contact Combitech



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Press release

For many years we have, bit by bit, started to adopt Eclipse based tools in various areas of systems and software development. Until recently mostly as users, but lately also as modifier's of different IDE's and developer of new ones.

A vision that has become clearer over the last years is the possibility to make open source tools a solution for the long term maintenance of products with long life cycles. This is a reality for many of our projects and partners who often face problems when a tool disappears from the market. **We believe that open data formats and open source tools gives a clue to a solution to achieve long term sustainability of tools and data.** It also gives the freedom to users to adapt the tools according to their needs in a suitable pace.

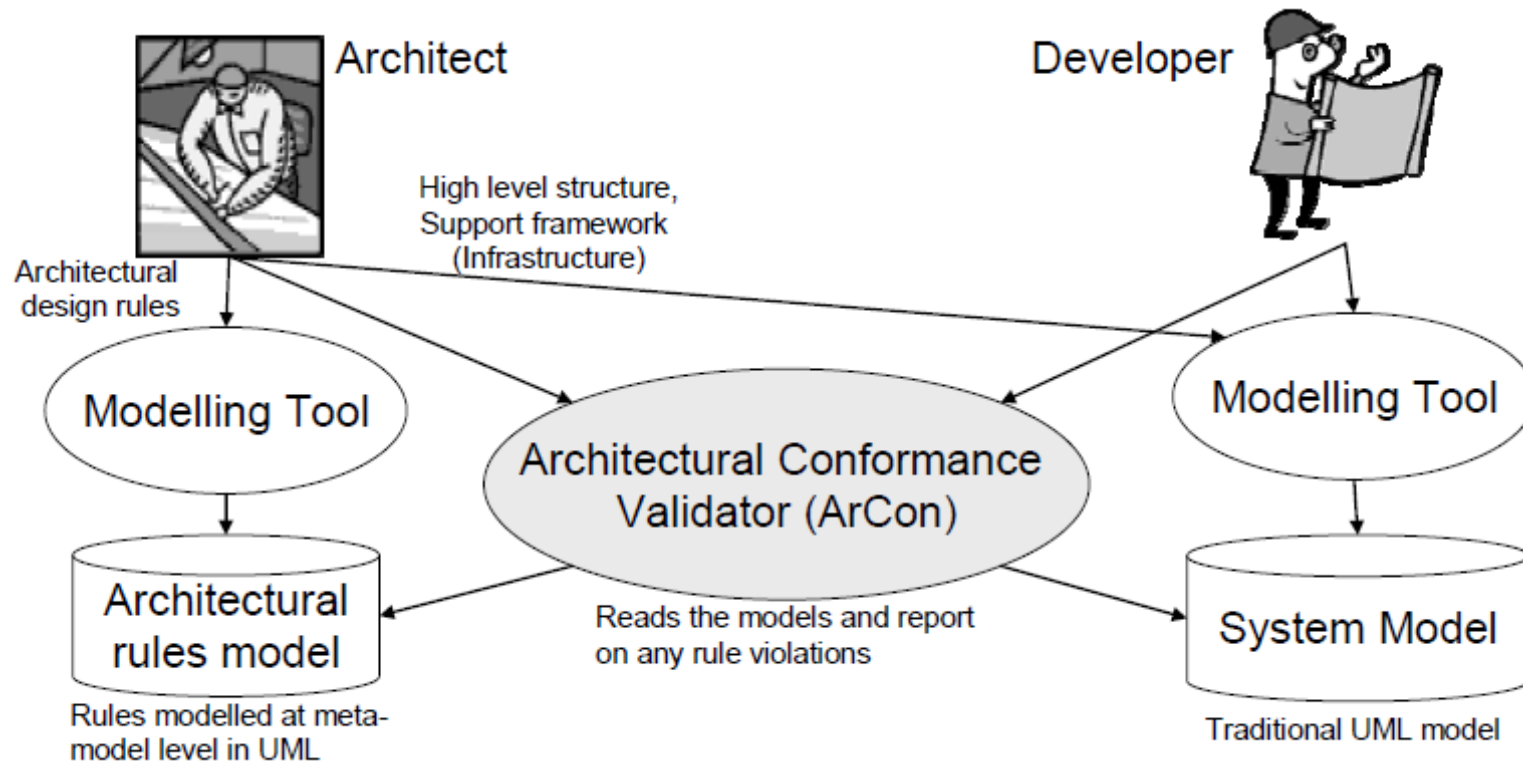
“As a consultancy company **we find the eco-system around open source and Eclipse very interesting** and we aim at being an important provider of different services around open source tools in general and Eclipse in particular, to benefit our customers”, says Gert Johansson, open source expert representing Combitech in Eclipse.

About Combitech

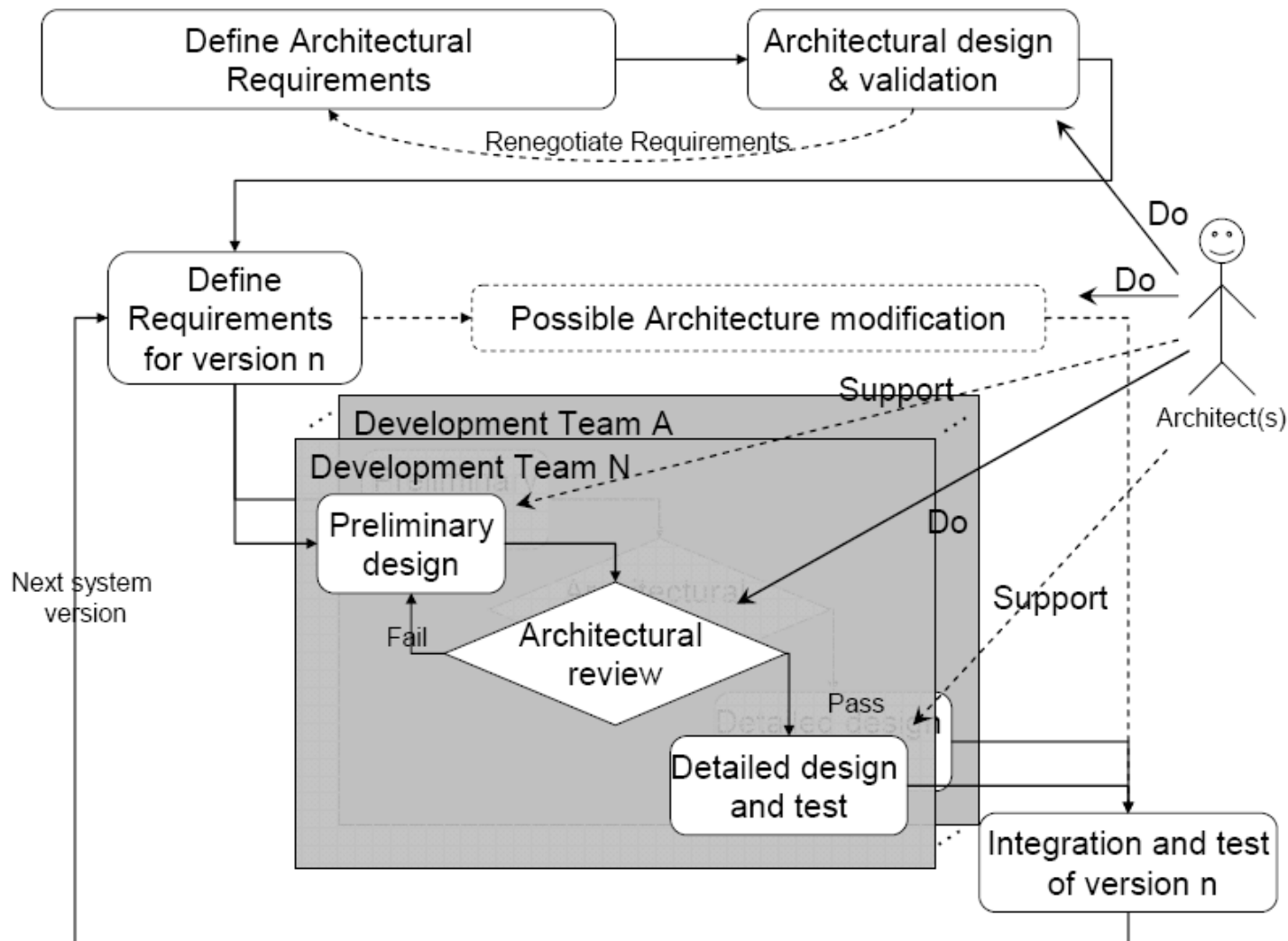
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- 1300 employees
- 20+ offices in Sweden and Norway
- from Mechanical engineering, Electrical engineering to Systems and Software
- Defence, Aerospace, Telecom, Automotive, Industry, Safety, Security



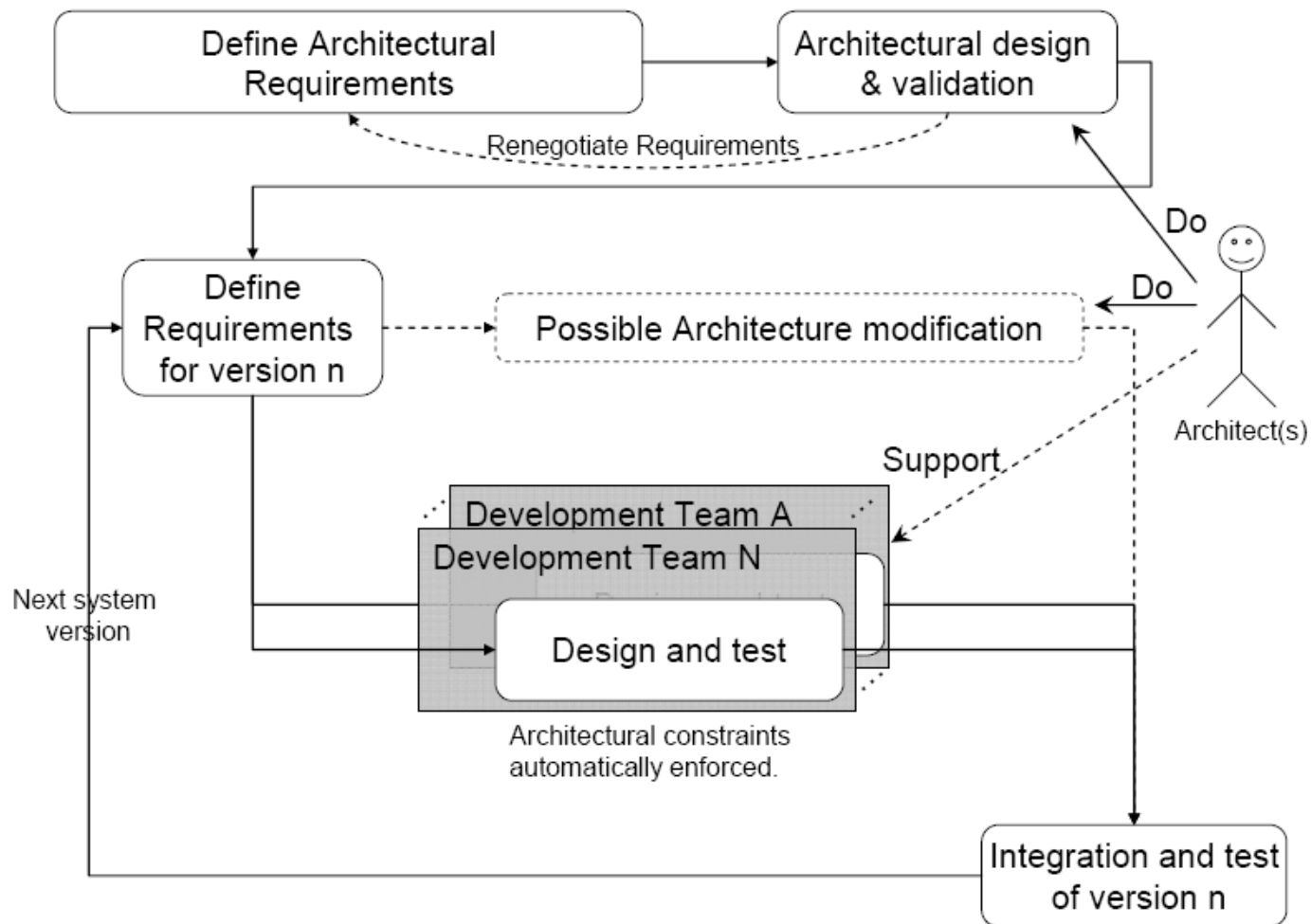
ArCon (Architecture Conformance Validation Tool)



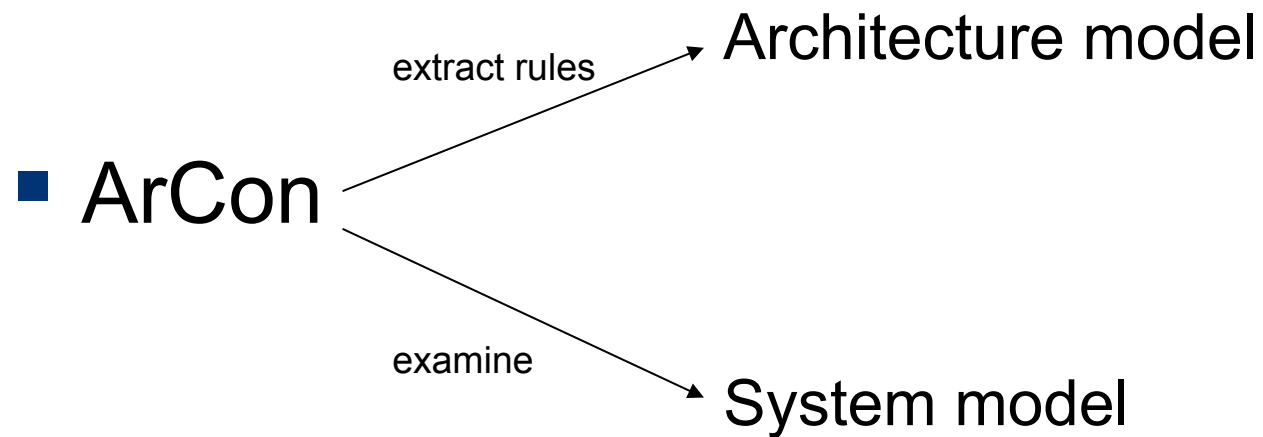
Traditional architect role for ADD



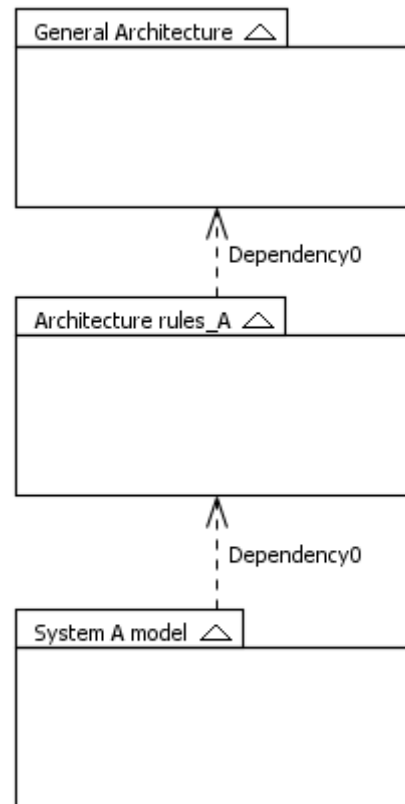
Architect role with automatic architecture conformance validation



ArCon Principles of Operation



Specification of ArCon rules models



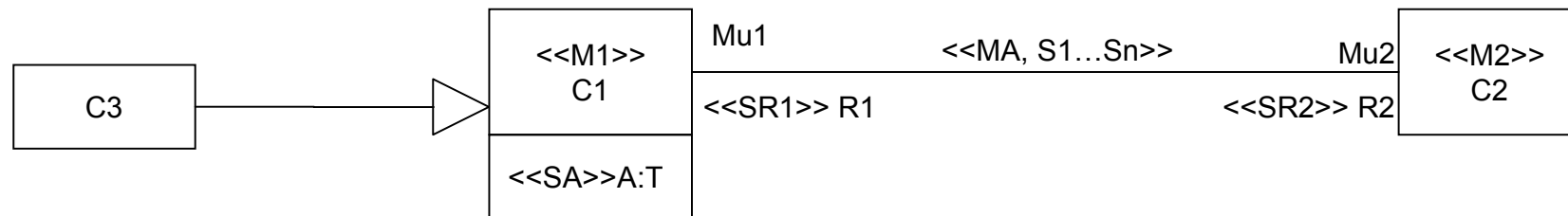
ArCon integrated with Papyrus/Topcased

The screenshot displays the Papyrus IDE interface with the following components:

- Project Explorer:** Shows the project structure under 'testing' > 'CompleteTest' > 'CompleteTest_Arch'.
- Model Explorer:** Shows the SysML model structure, including packages like '«System_Model» System_Model' and '«Association_Pkg» Association_Pkg_impl', and various classes and relationships.
- Diagram:** A SysML diagram titled '«association_pkg» Association_Pkg_impl' showing classes: Rea_From, Dep_From, Ass_To, Gen_To, Rea_To, Dep_To, Ass_From, Gen_From, and «back_To_Me» Back_to_me2. Relationships include inheritance (solid arrows), dependencies (dashed arrows), and associations (dashed lines with multiplicity [1]).
- ArCon Error View:** Located at the bottom, it displays search results for ArCon errors and warnings. The search bar is empty. The table below shows several error messages:

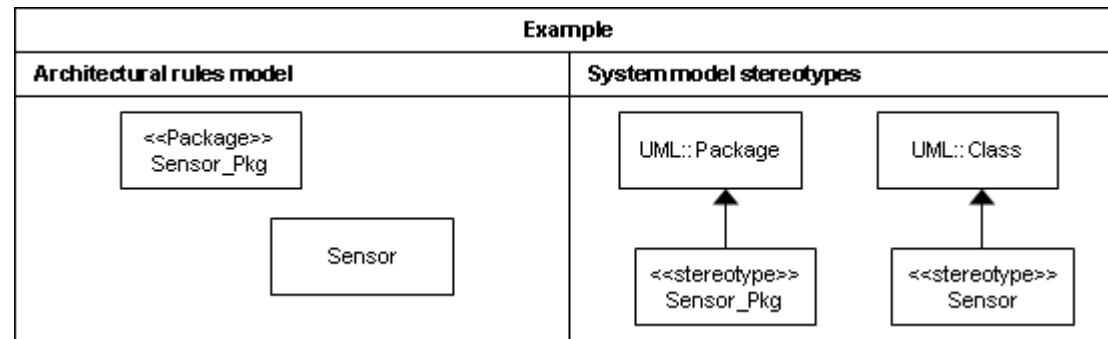
...	ArCon message description
⚠	System_Model::Constrained_Pkg_impl@_wsTrcPjIEeG9sL5yFX9fOw
⚠	System_Model::Constrained_Pkg_impl::Random_impl@_U1I5kPzSEeGLAIVG9bEVUw
⚠	MissingRelationship@_Dz1NkPj0EeG9sL5yFX9fOw
⚠	MissingRelationship@_lu_gAPj0EeG9sL5yFX9fOw
⚠	back_to_me@_PUsoSPj0EeG9sL5yFX9fOw
⚠	MissingRelationship@_TE6K8Pj0EeG9sL5yFX9fOw
⚠	MissingRelationship@_TE6K8Pj0EeG9sL5yFX9fOw

ArCon Architectural Rules



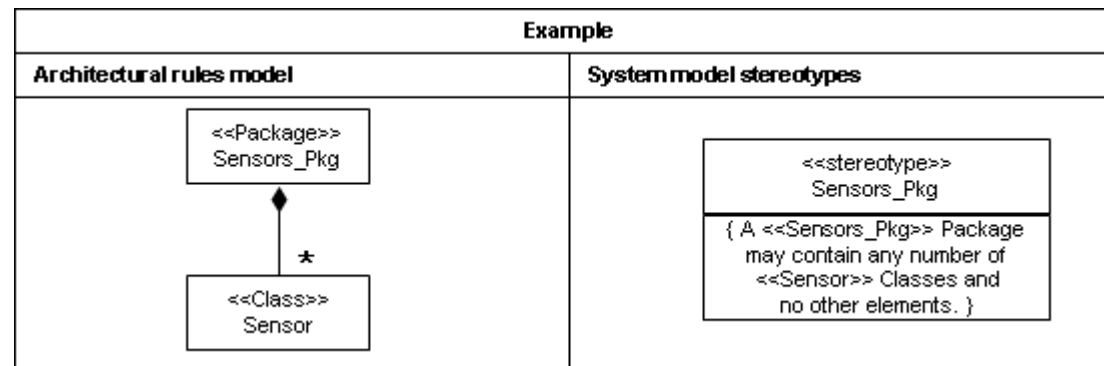
Generic reference model for definition of specific rules

Transformation T1



T1: A class named *C1* with the stereotype *M1* is transformed into a stereotype named *C1* extending the meta-class *M1* unless transformation number T3 below applies. If *M1* is undefined then “Class” is assumed

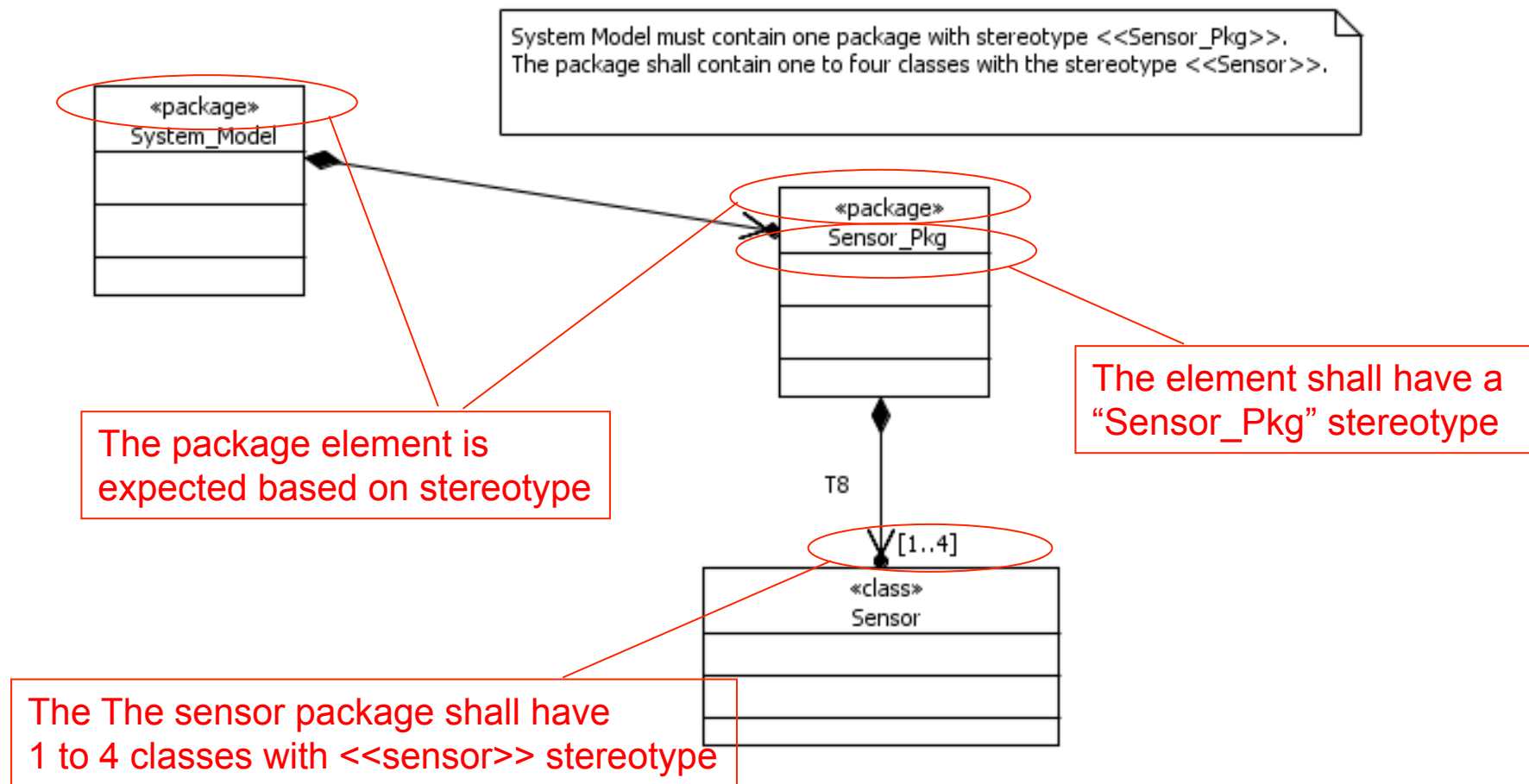
Transformation T8



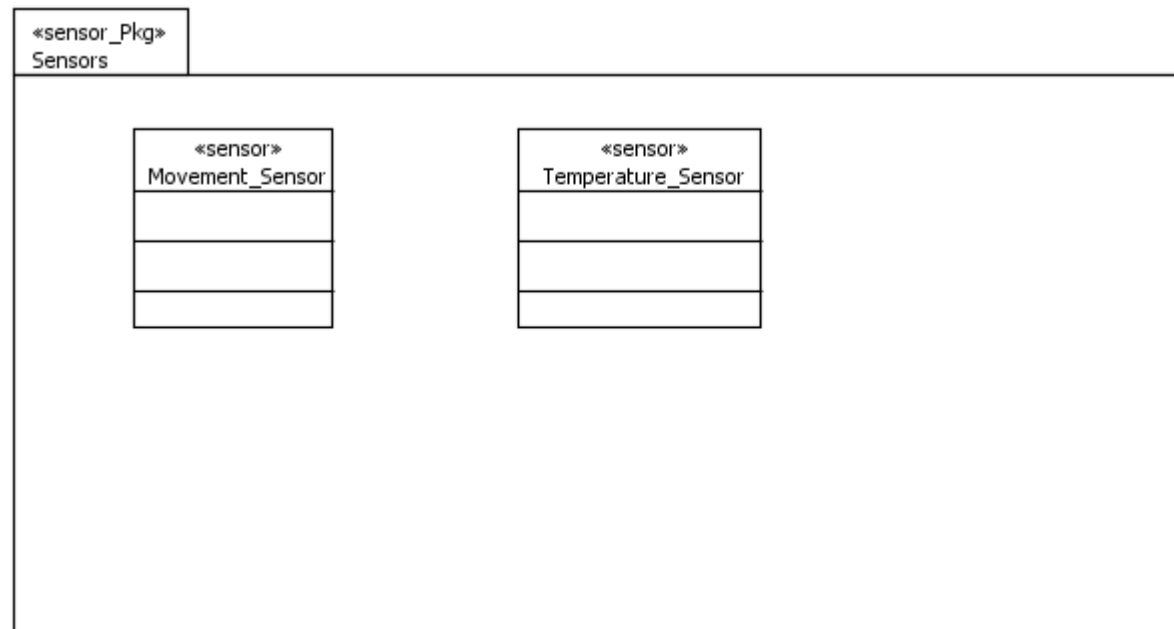
T8: If M1 equals “Package” and the aggregation of R1 is “composite”:
A <<C1>> Package is constrained to have Mu2 number of <<C2>> elements as packagedElements. The visibility of these elements shall be the visibility of Mu2.

Also, a <<C1>> package is not allowed to have any packagedElements unless explicitly allowed in the model.

T8 Sample architecture model

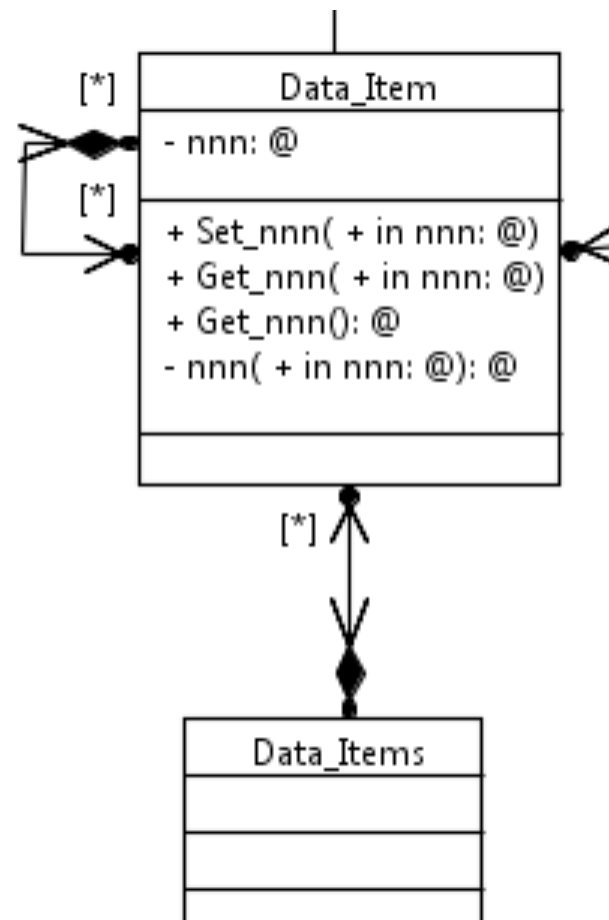


T8 Sample system model

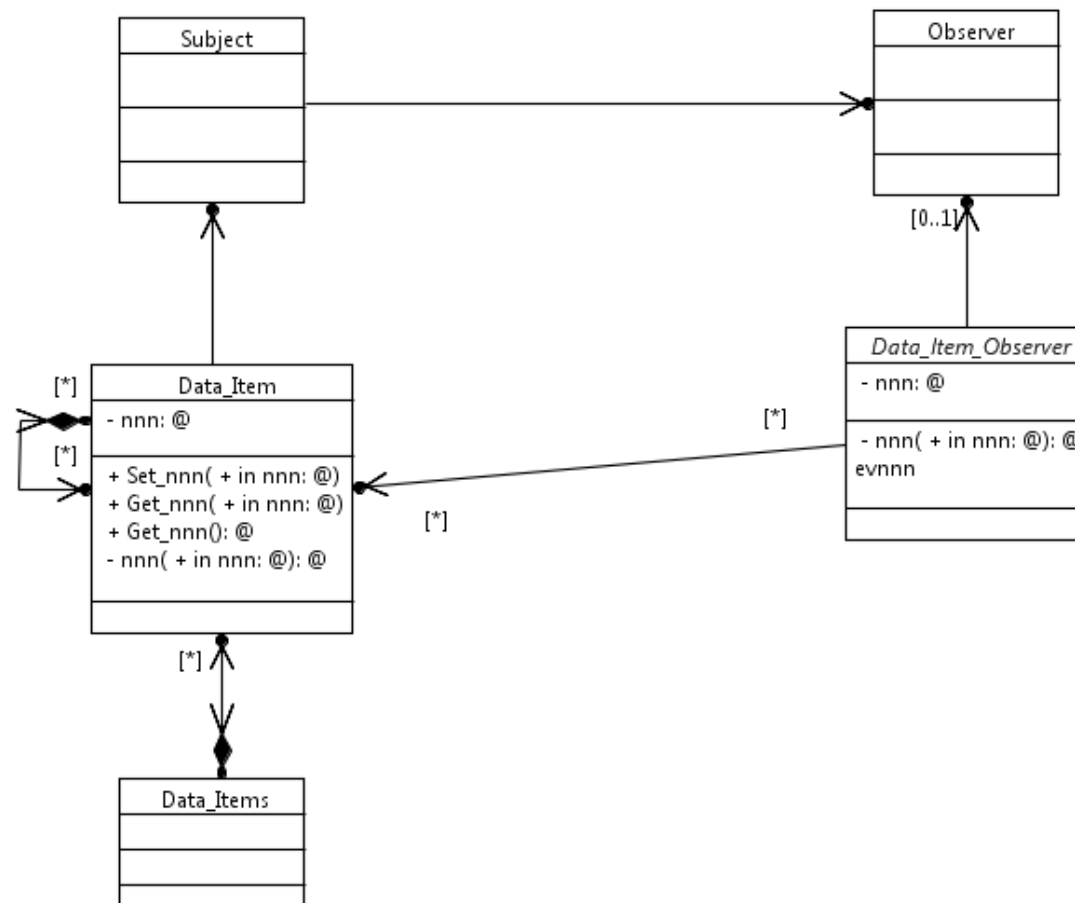


Modeling Operations and aggregations

ArCon



Architectural modeling for ArCon



ArCon - Eclipsepedia - Windows Internet Explorer provided by Saab AB

http://wiki.eclipse.org/ArCon

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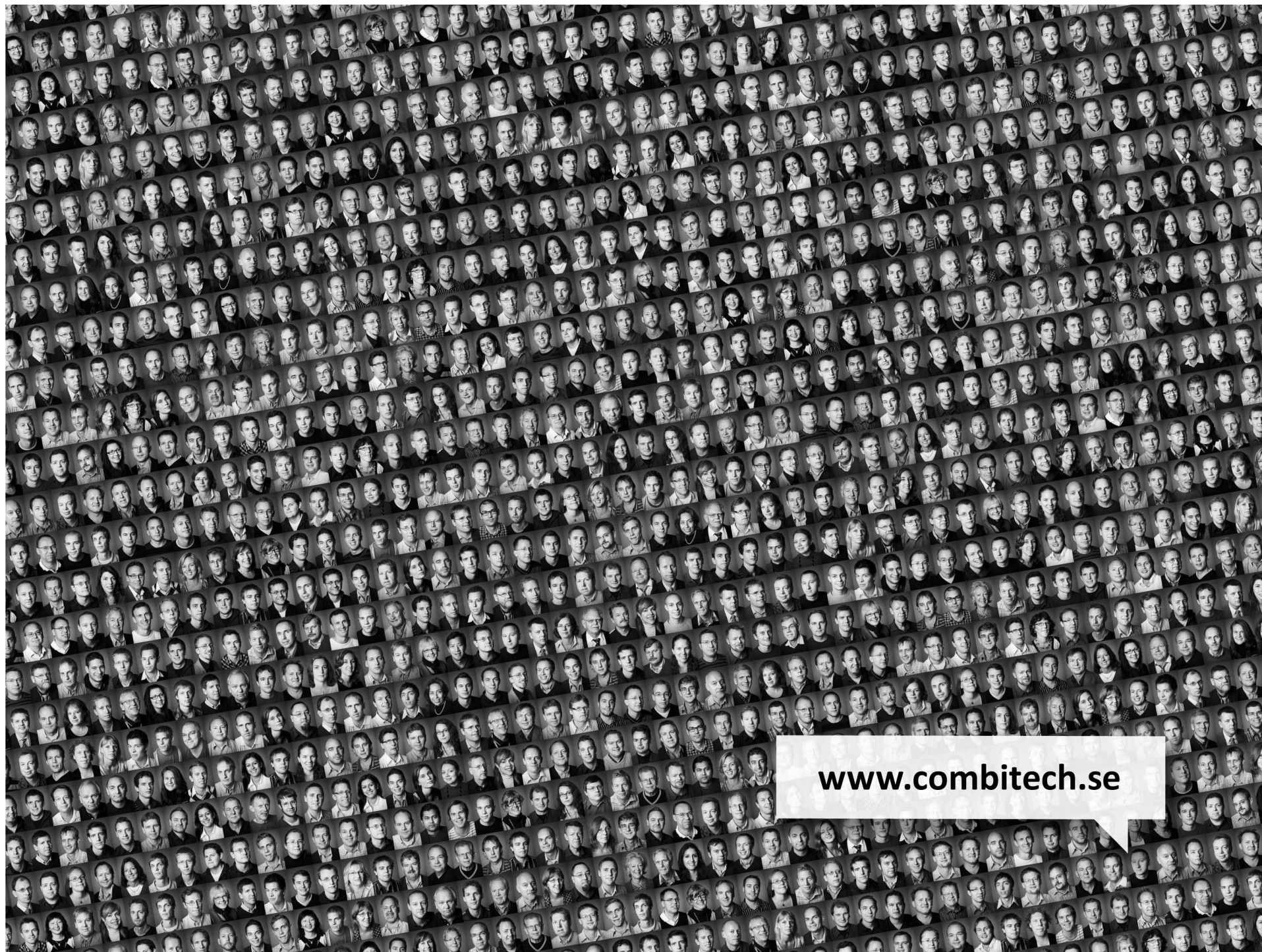
ArCon

The ArCon project proposal is under review

The proposed improvements below will be done before the end of 2013 and are for Ericsson in the context of Polarsys.

ArCon shall:

1. Be able to read combined architecture models
2. Enable selection of model scope for analysis
3. Enable command line start
4. Perform proactive online check
5. Provide domain specific modeling support based on the architecture (meta) model
6. Enable generation of architecture documentation
7. Be able to create profile from architecture model
8. Be able to handle one or more stereotypes for rule activation
9. Be able to follow dependency to active architecture model
10. Handle different severity levels
11. Be able to filter warnings
12. Be integrated with Kepler
13. Provide infrastructure to express arbitrary rules (e.g. not possible to express with ArCon static analysis)
14. Display warning markers in model browser



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