

SPECIFICATION

Overview

The COSTO toolbox is an Eclipse platform that consists of:

- a core module with an ANTLR-based parser and an API to access the Kmelia (internal) model,
- several verification and exportation modules,
- a set of eclipse plugins.

Figure 1 shows a sample of the kind of errors (typing, observability, incompleteness of the mapping) that are detected. Besides standard completion, the editor supports smart completion in the case of assembly links.

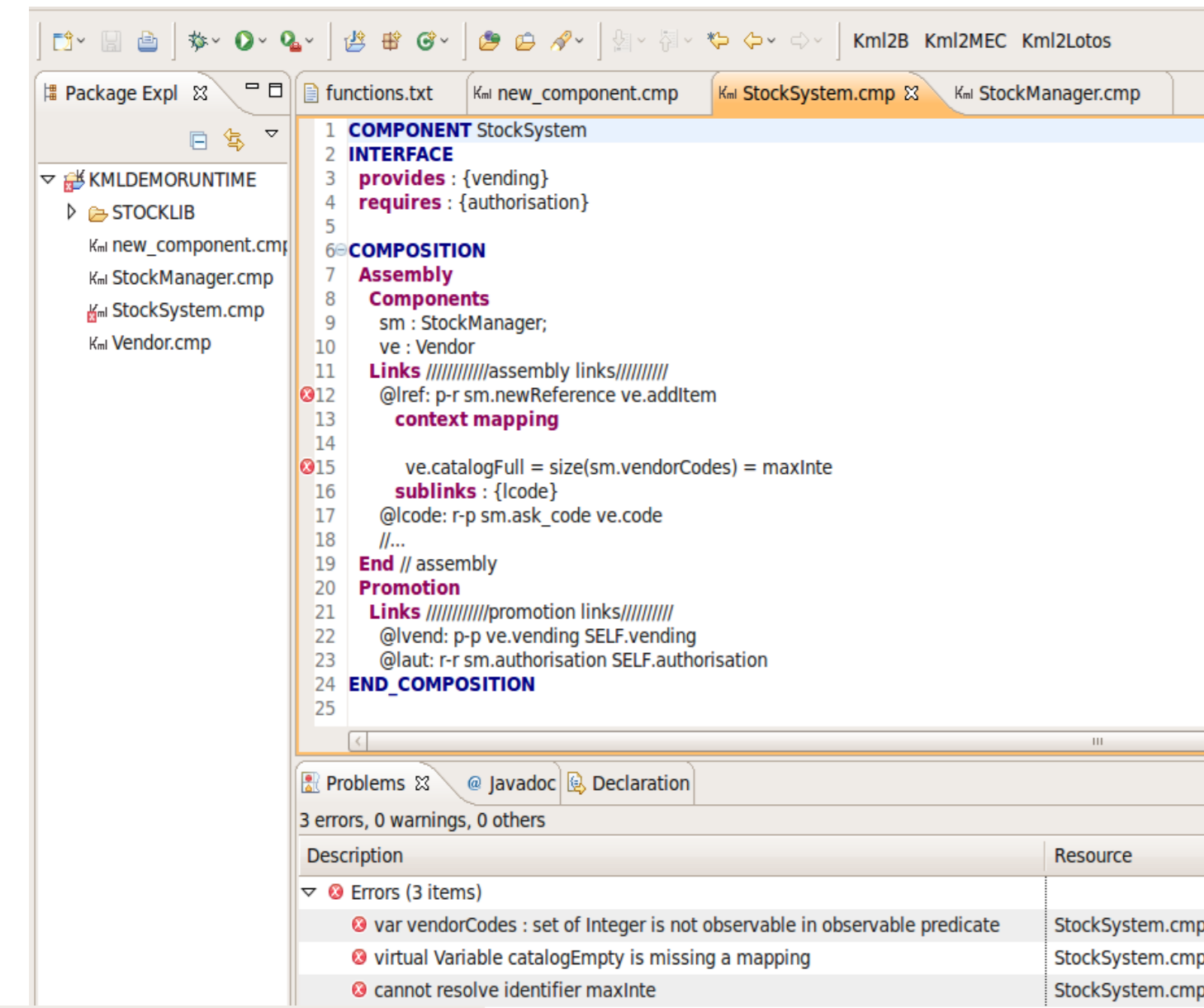
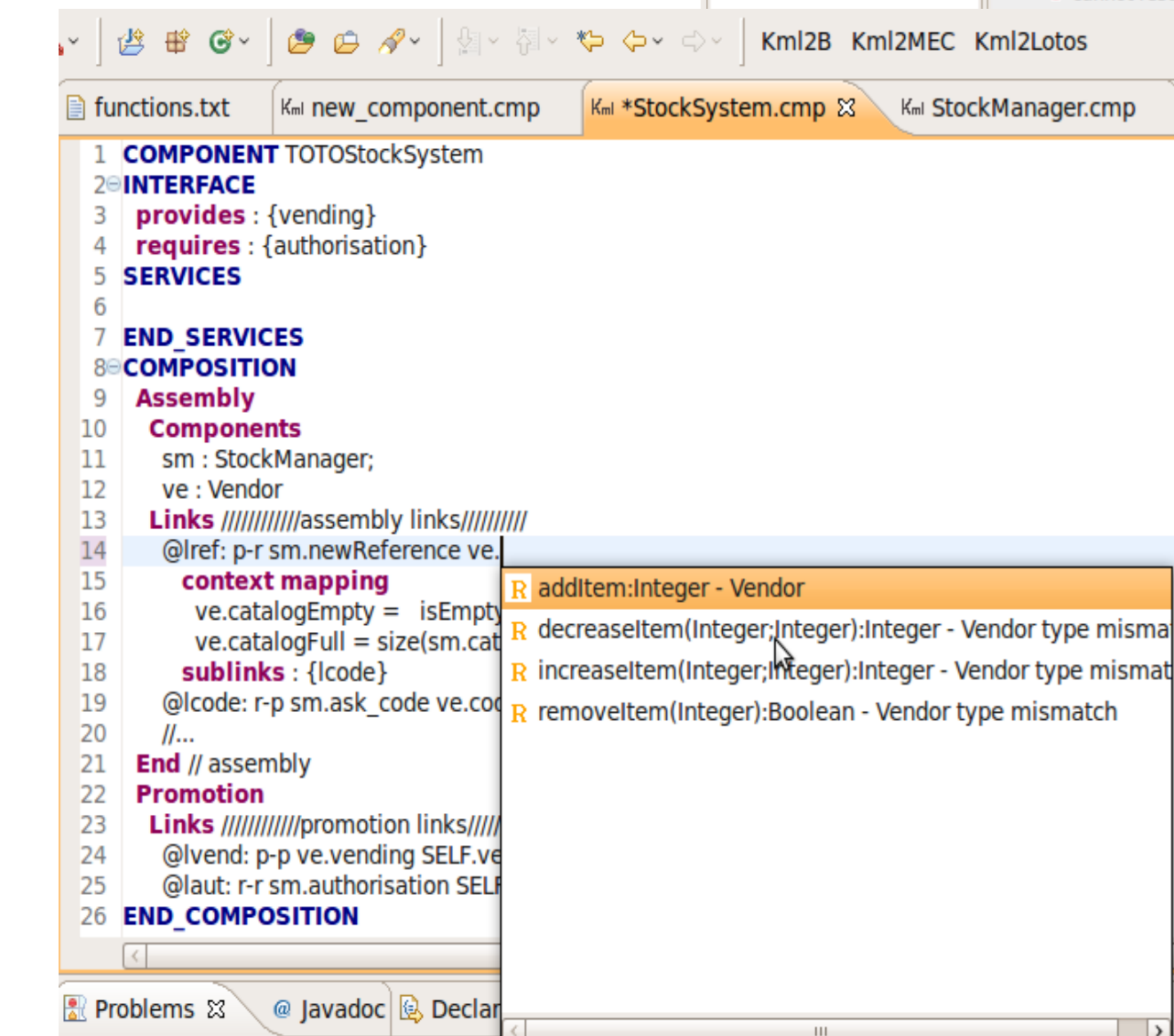


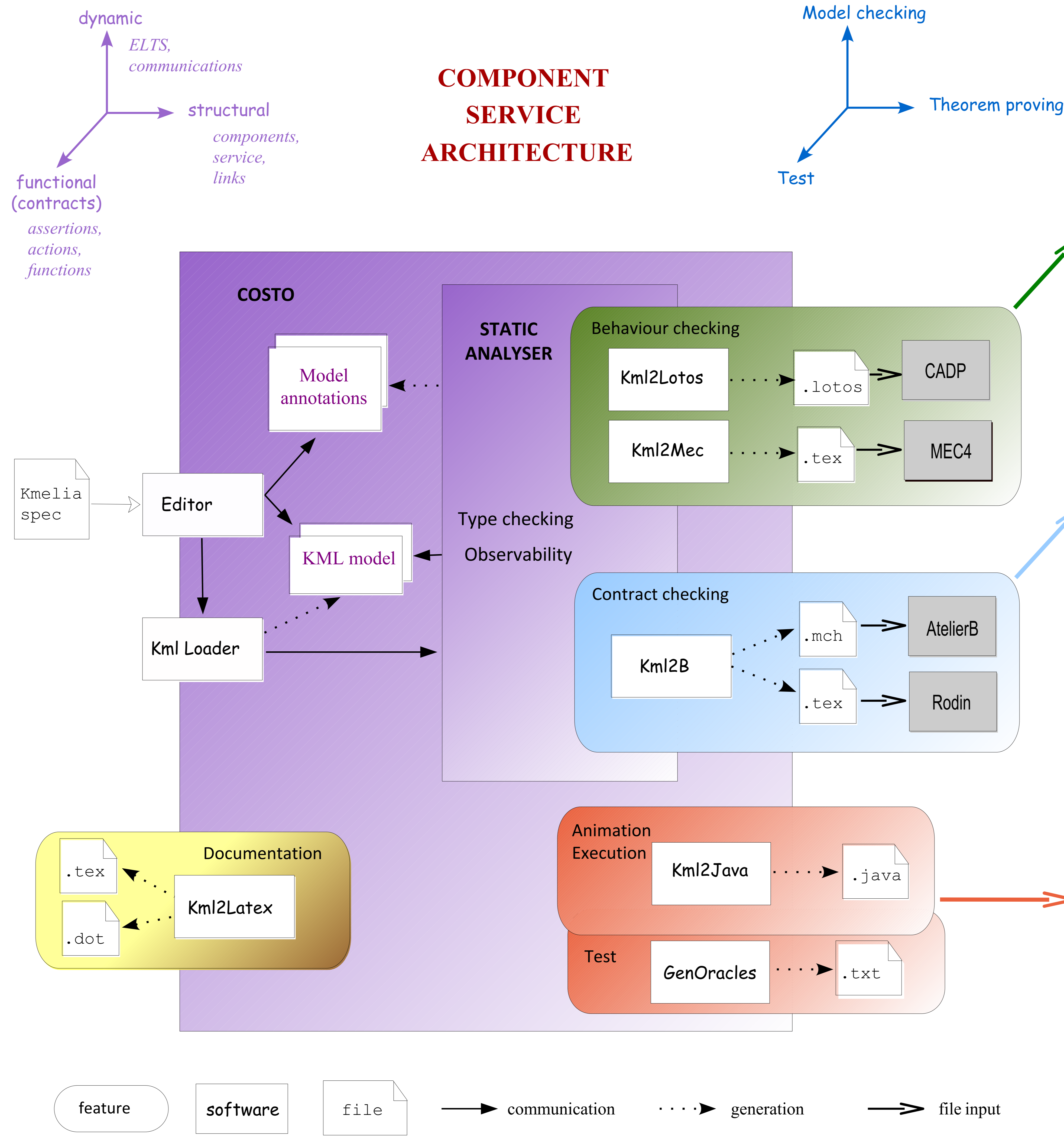
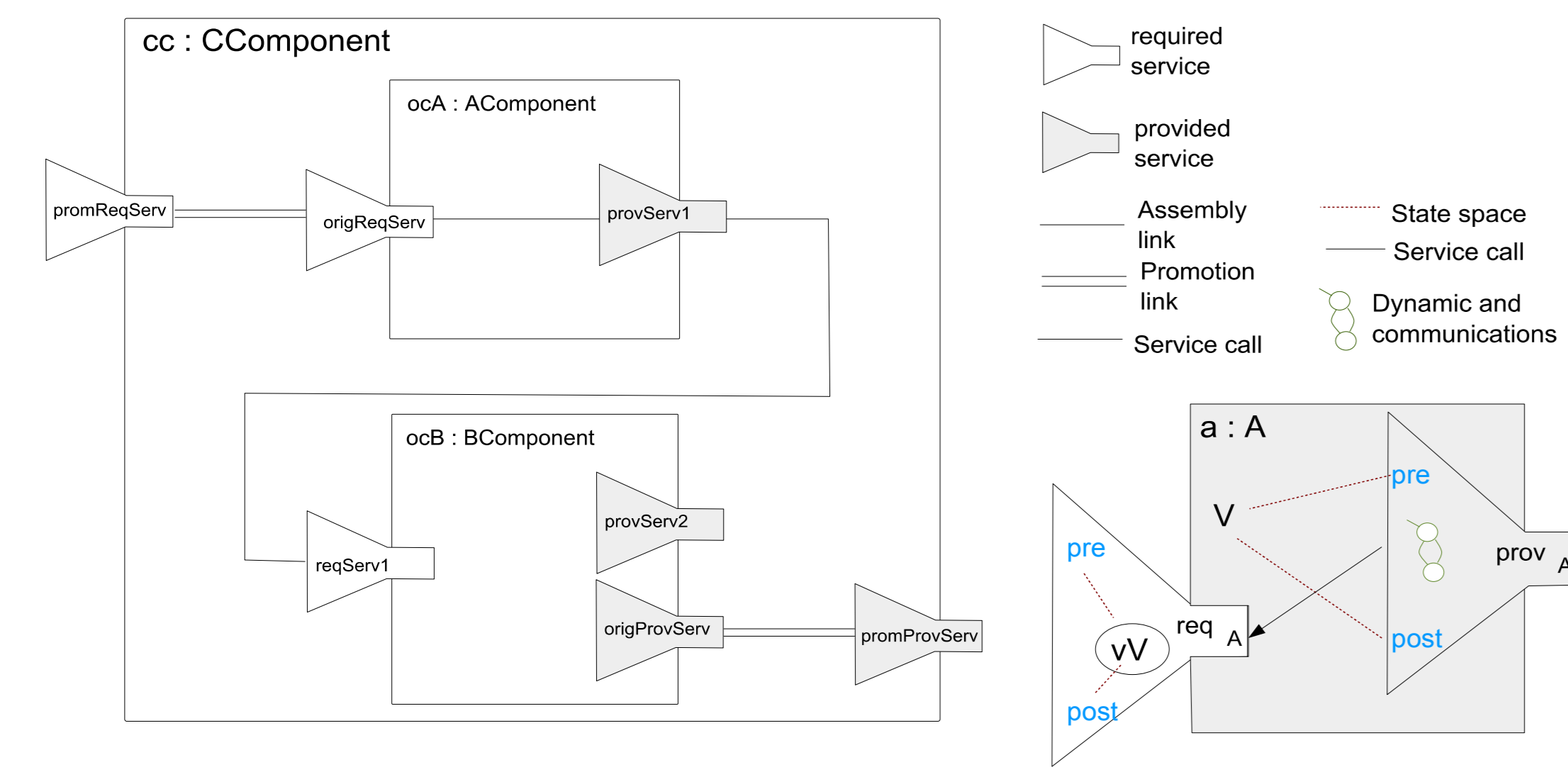
Figure 1. Kmelia editor in Eclipse



In Figure 2, only required services defined in the Vendor component type are proposed and the user is warned that some of them do not match the exact signature of the provided service newReference which is defined in the StockManager component type.

Figure 2. Smart completion

A Kmelia architecture



VERIFICATION

Behaviour checking

Using the exportation buttons on the top of the editor while selecting an assembly link generate models in MEC, LOTOS to be verified in external tools.

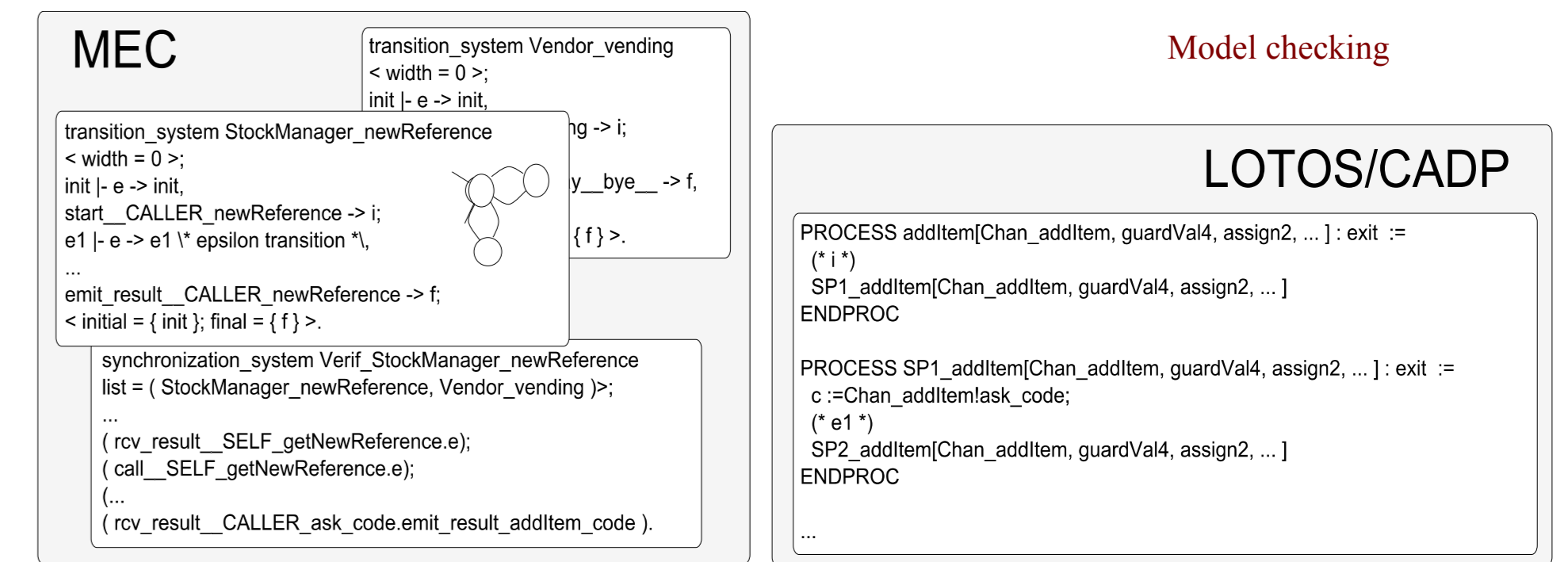
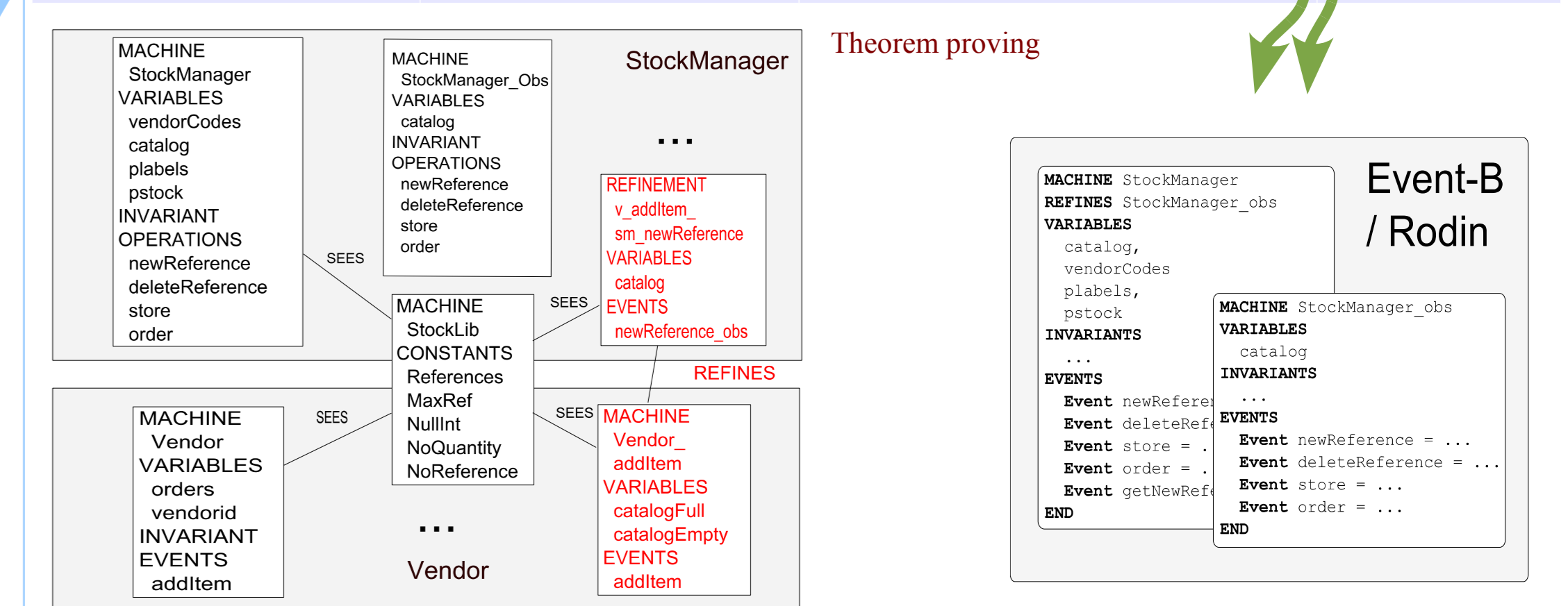


Figure 3. Exportations to MEC/LOTOS

Contract checking

service	component	assembly	composite
behavioural consistency	component consistency	service signature compatibility (ssic)	ssic
functional correctness	protocol correctness	service structure consistency	sssc
	service accessibility	service compliance	sco
		behavioural compatibility	bhc



Some Publications

- Christian Attiogbé, Pascal André, and Gilles Ardourel. Checking Component Composability. In 5th International Symposium on Software Composition, SC'06, volume 4089 of LNCS. Springer, 2006.
- Pascal André, Gilles Ardourel, and Christian Attiogbé. Denying Component Protocols with Service Composition: Illustration with the Kmelia Model. In 6th International Symposium on Software Composition, SC'07, volume 4829 of LNCS. Springer, 2007.
- Pascal André, Gilles Ardourel, Christian Attiogbé, and Arnaud Lanoix. Using assertions to enhance the correctness of kmelia components and their assemblies. Electronic Notes in Theoretical Computer Science, 263:5 – 30, 2010. Proceedings of the 6th International Workshop on Formal Aspects of Component Software (FACS 2009).

- P. André, G. Ardourel, C. Attiogbé, and A. Lanoix. Contract-based Verification of KmeliaComponent Assemblies using Event-B. In Proceedings of the Formal Foundations of Embedded Software and Component-Based Software Architectures (FESCA 2010), 2010.
- M. Messabihi, P. André, C. Attiogbé. Multi-levels Use of Contracts for Trusted Components. In Workshop on Component and Service Interoperability, 2010. (WCSI 2010) – EPTCS <http://arxiv.org/pdf/1010.2827>.
- P. André, G. Ardourel, M. Messabihi. Component Service Promotion: Contracts, Mechanisms and Safety. Proceedings of the 7th International Workshop on Formal Aspects of Component Software (FACS 2010) – LNCS Springer.

Key features

- Component and Service
- Required service context
- Contract and Protocols
- Assembly and mappings
- Composite and promotion
- Syntax and type checking
- Model-checking
- Theorem proving
- Test and mutation

For further information

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More information on this and related projects can be obtained at http://www.lina.sciences.univ-nantes.fr/coloss/index_en.php.

A PDF-version of the poster is available at <http://www.lina.sciences.univ-nantes.fr/coloss/download/posterCosto.pdf>