

TOPCASED-REQ on its way to support RMF (and beyond!)

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Agenda

- TOPCASED
- TOPCASED-Req
- TOPCASED-Req and RMF
- TOPCASED-Req and RMF and AGeSys

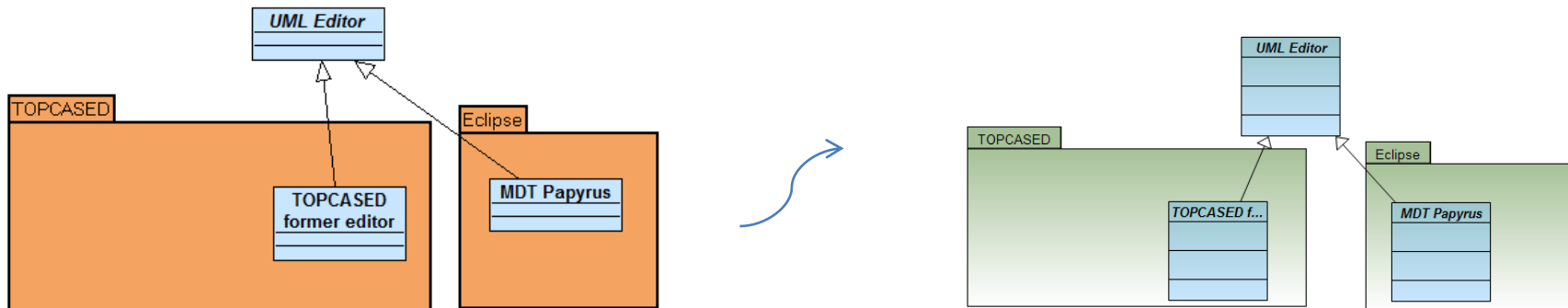


TOPCASED

- Toolkit in **OP**en-source for **C**ritical **A**pplications & **S**ystEms **D**evelopment
- French initiative with following goals
 - to reduce development costs for embedded by promoting usage of Model Based System Engineering (detect errors earlier in the cycle)
 - to ensure durability of the toolkit through an Open source approach (continued by Polarsys)
 - to integrate current academic research results in industrial development process

TOPCASED

- <http://www.topcased.org>
- UML/SysML editors
 - From custom GEF editors to MDT Papyrus



- Requirement traceability (see later)
- Documentation Generation (Docx/Odt)
- Model Simulation (interpretation)

TOPCASED

- Current version : TOPCASED 5.2.0
- Known Users



- 13 thesis as we known
- Around 6000 downloads/month (USA, Germany, France, Italy, Spain...)

TOPCASED-Req

- Requirement Traceability in models
- Works with open source specific requirement format (TOPCASED-Req metamodel)

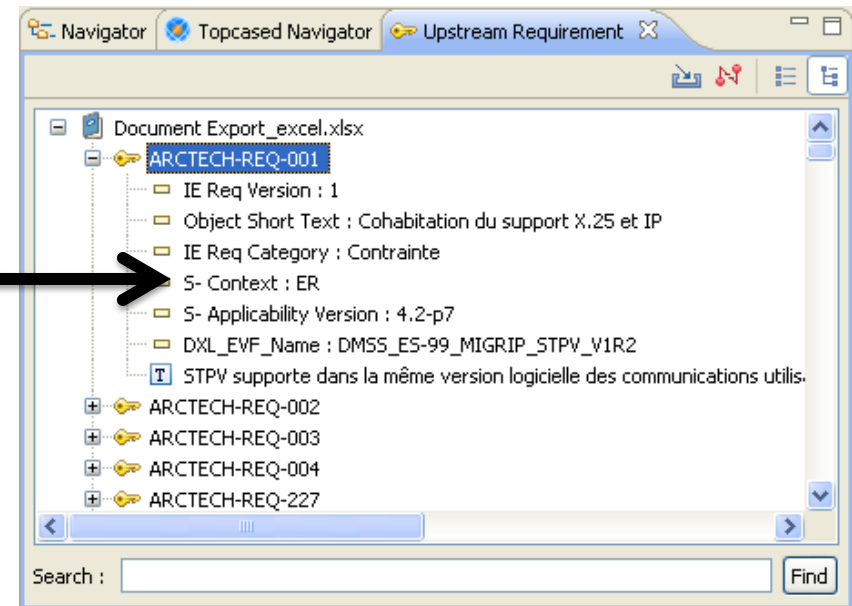
TOPCASED-Req

- Current key features :
 - Import Requirement from documents
 - Manage traceability between imported requirements and model elements
 - Analyse impacts linked to requirement update
 - Export Traceability in spreadsheet format

TOPCASED-Req

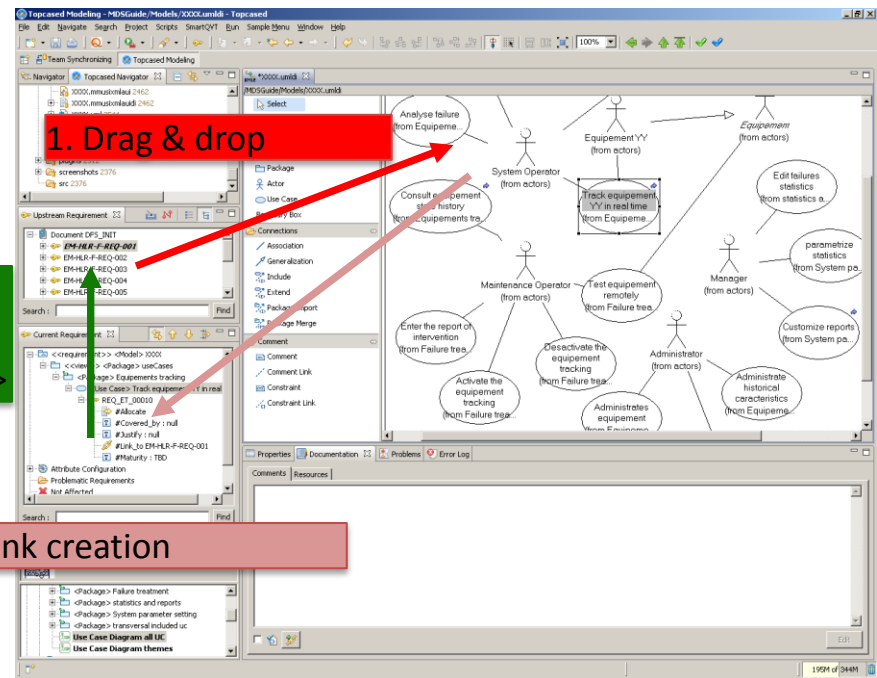
- Import Requirement from documents
 - Word/Excel/OO Writer/OO Calc

1	A	B	C	D	E	F	G	H	I	J	K
1	IE PUID	IE Req Versio	Object Short	Exigences In	IE Req Categ	S- Context	S- IVVQ Mett	S- Applicabilr	DXL_EVF_Name		
2		1		Sous-système STPV							
3	ARCTECH-RE	1	Cohabitation	STPV suppor	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
4	ARCTECH-RE	1	Utilisation de	STPV utilise	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
5	ARCTECH-RE	1	Utilisation de	STPV utilise	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
6	ARCTECH-RE	1	Utilisation de	STPV utilise	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
7	ARCTECH-RE	1	Utilisation du	Le STPV pou	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
8	ARCTECH-RE	1	Utilisation d'a	STPV emploi	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
9	ARCTECH-RE	1	Listes de con	STPV permet	Paramétrage	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
10		1		Essayer d'ouvrir une connexion sur un OL ayant une lis				4.2-p7			
11	ARCTECH-RE	1	Utilisation de	STPV permet	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
12		1		Les serveurs non radar des approches ne supportent p				4.2-p7			
13	ARCTECH-RE	1	Utilisation de	STPV permet	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
14		1		L'usage du port TCP se substitue à l'usage des "call us				4.2-p7			
15	ARCTECH-RE	1	Connexion AIDA-NG sous IP	Le STPV est	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
				La délimitation des messages AFTN s'effectue par l'indication de la longueur du message sur 4 octets (LW4)							
16	ARCTECH-RE	1	Transferts de		Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		
17	ARCTECH-RE	1	Surveillance c	Le STPV utili	Contrainte	ER		4.2-p7	DMSS_ES-99_MIGRIP_STPV_V1R2		



TOPCASED-Req

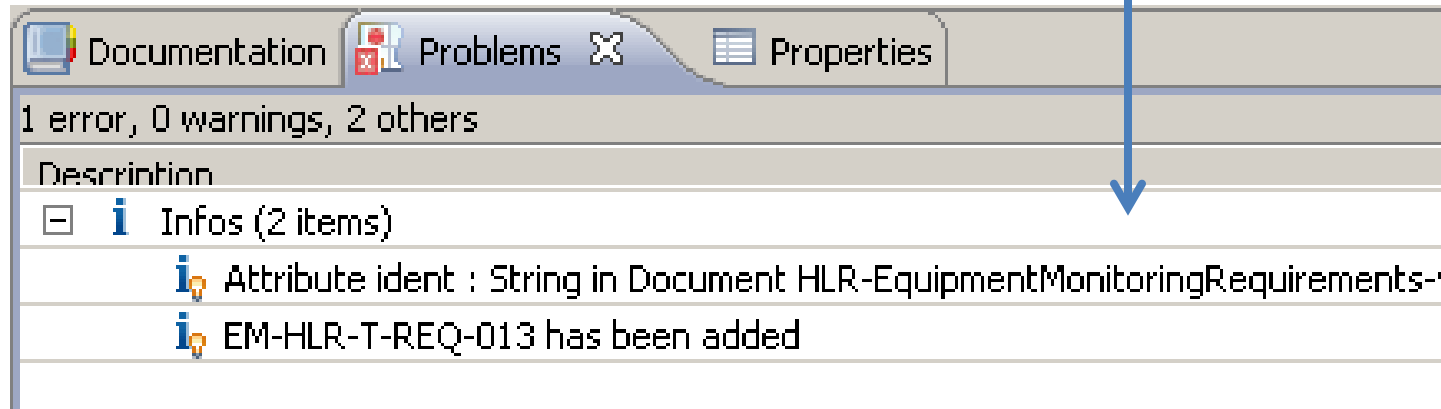
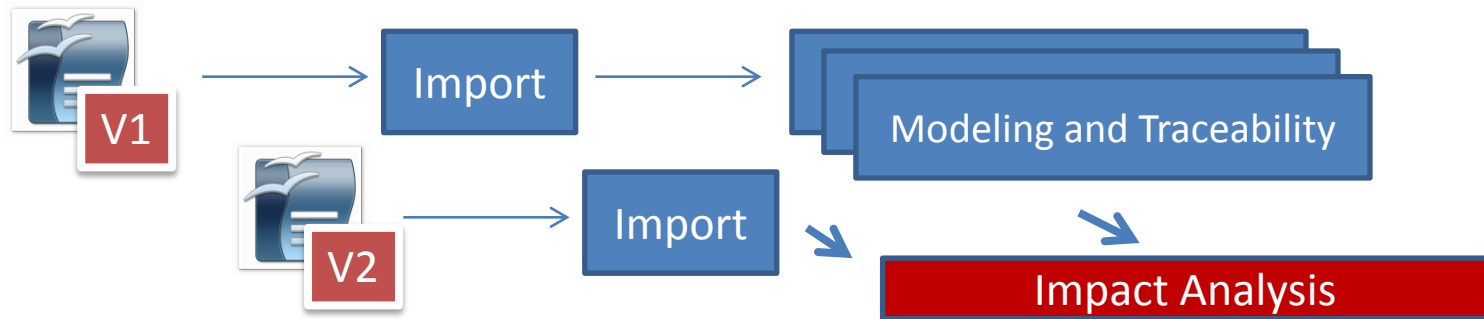
- Traceability between imported requirements and model elements
 - Ecore / UML / SysML



- Export Traceability in spreadsheet format

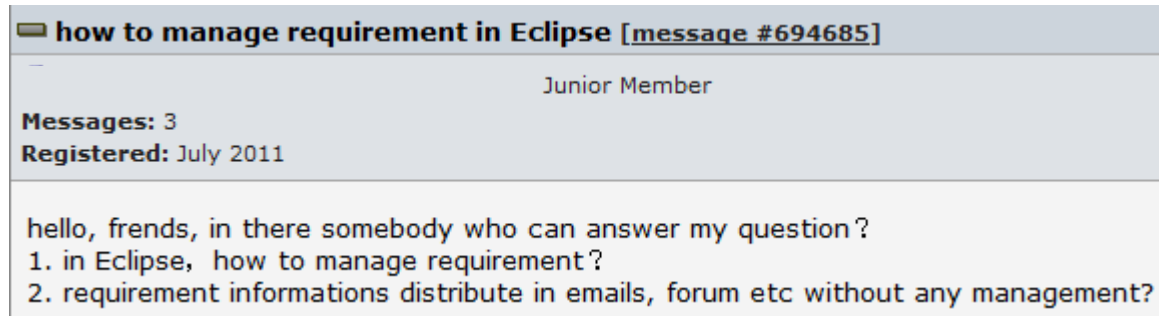
TOPCASED-Req

- Impact Analysis



TOPCASED-Req and RMF

- How to manage requirements in Eclipse ?



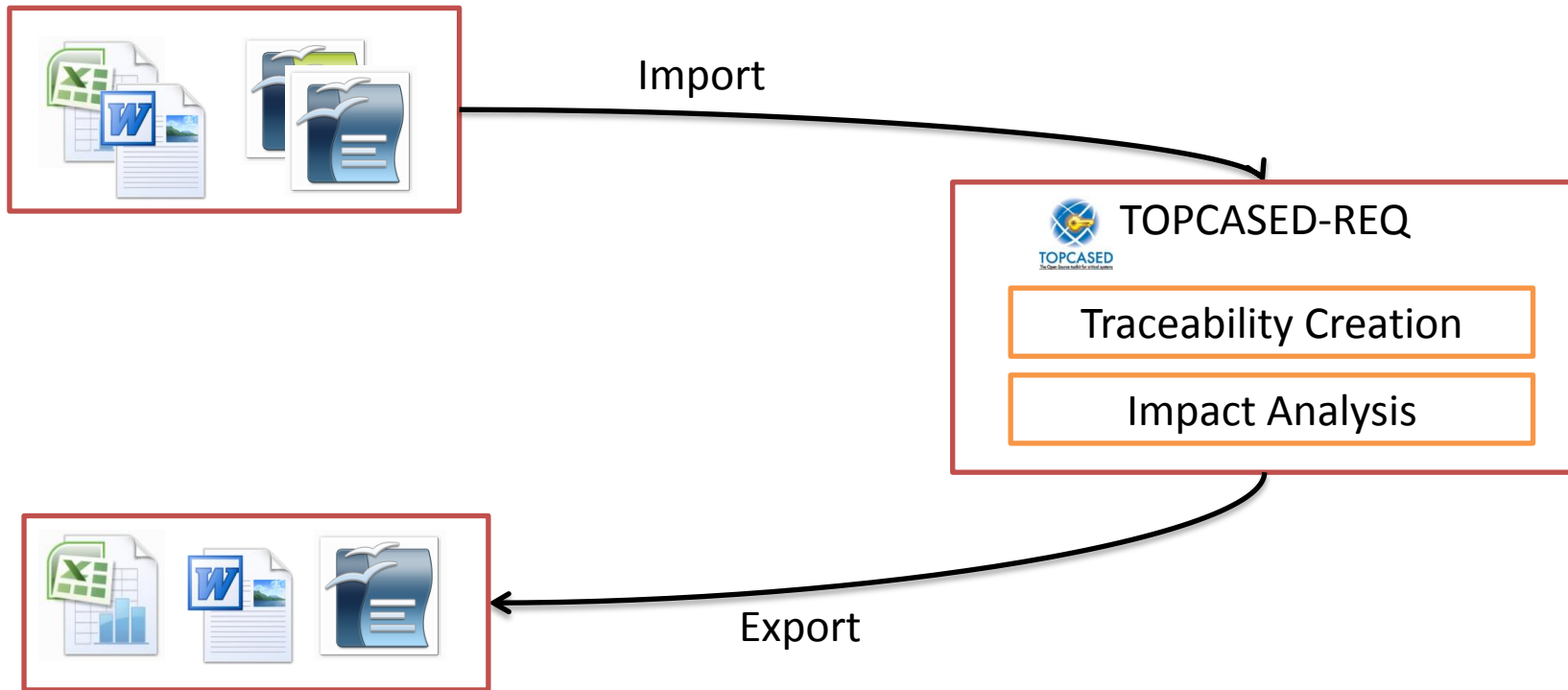
- Answer : RMF
 - Standard Implementation
 - GUI
- What about traceabililty ? Import ? Export ? ...
 - TOPCASED-Req is complementary to RMF

TOPCASED-Req and RMF

- Goal for TOPCASED-Req :
 - Conform to OMG standard (ReqIF)
 - Align with Eclipse Projects
- Today (to be published) :
 - Import a Req-IF model to do traceability with TOPCASED
 - Export requirements from TOPCASED-Req to Req-IF

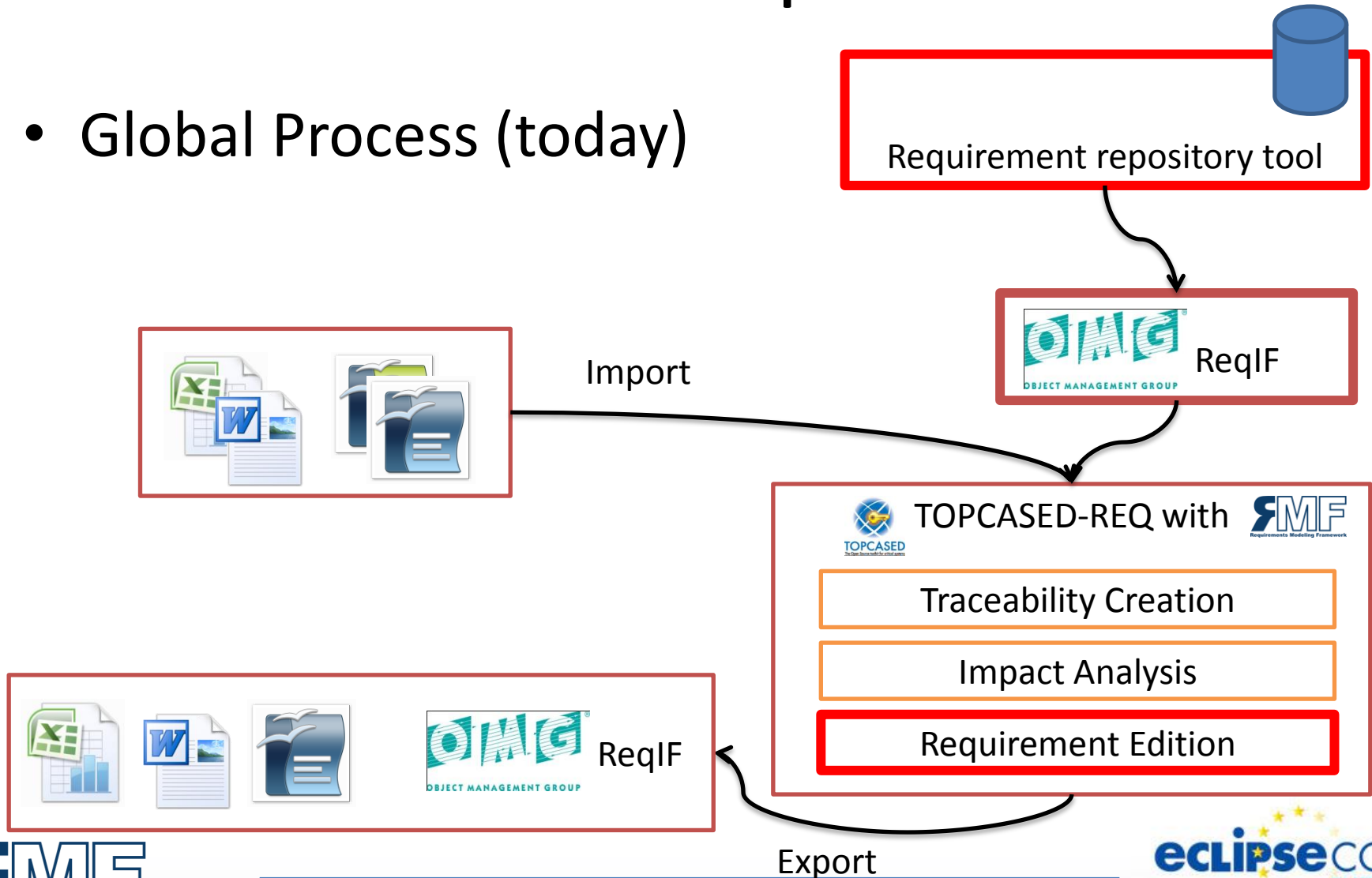
TOPCASED-Req and RMF

- Global Process (before)



TOPCASED-Req and RMF

- Global Process (today)

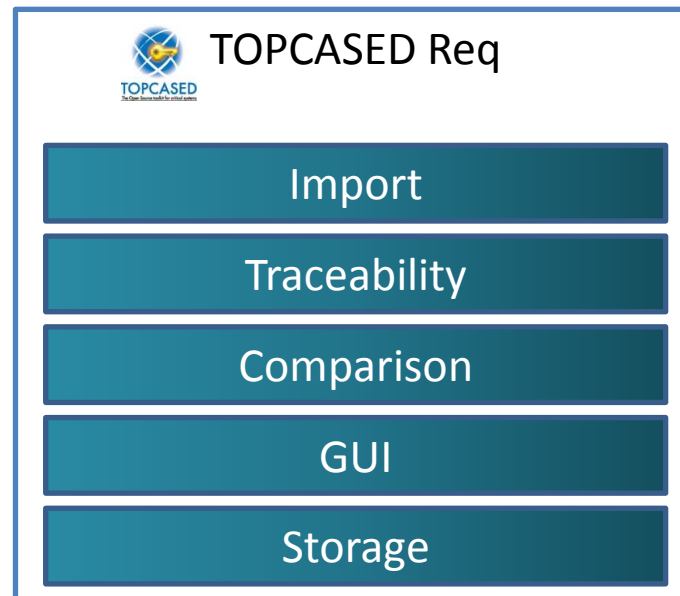


TOPCASED-Req and RMF and AGeSys

- AGeSys
 - « Atelier de Genie Système » (System Engineering Workshop)
 - 36 months french research project
 - Domains :
 - aerospace, automotive and railway.
 - Objectives :
 - development of a systems engineering workshop dedicated to embedded systems, for all industrial sectors without restriction
- Partners : CEA, ESTEREL TECHNOLOGIES, AIRBUS, ALSTOM, ATOS, CONTINENTAL, LMS IMAGINE, PSA, RENAULT, SAGEM, SCALEO CHIP, SCILAB, SNECMA, THALES, VALEO
- In this context → Major TOPCASED-Req Evolutions

TOPCASED-Req and RMF and AGeSys

- Current TOPCASED-Req Modules

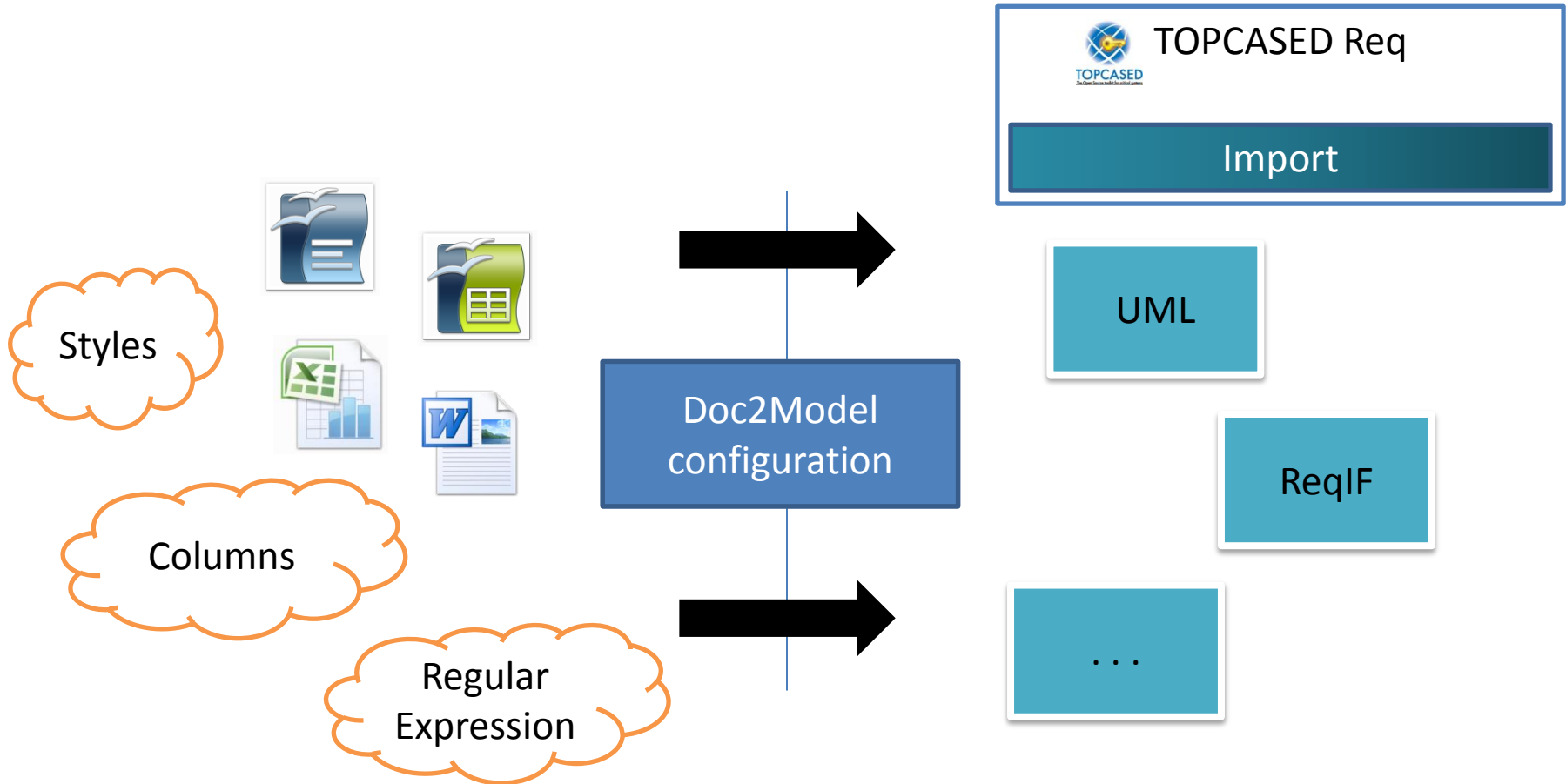


TOPCASED-Req and RMF and AGeSys

- Import module
 - Limitations
 - Only based on Doc2Model non eclipse versions
 - Intended Improvements
 - Plug import module to Eclipse doc2model
 - And also contribute new architecture to extend supported formats
 - Add mechanism to natively manage other requirements repositories
 - DOORS, RequisitePro



TOPCASED-Req and RMF and AGeSys



TOPCASED-Req and RMF and AGeSys

- Traceability module

- Limitations

- Trace Requirement to Model (EMF) elements
- Limited Traceability semantic
- Strongly connected to DO 178B process

- Intended Improvements

- Handle new requirements sources
 - ReqIF, SysML
- New Traceability relationships (satisfy, trace, verify...)
- Trace requirement to anything (code, etc ...)



TOPCASED-Req and RMF and AGeSys

- GUI module
 - Limitations
 - Eclipse 3.X
 - Intended Improvements
 - Migrate to E4 😊



TOPCASED-Req and RMF and AGeSys

- Comparison module

- Limitations

- Plugged to EMF Compare 1.X

- Intended Improvements

- Migrate to EMF Compare 2.0 and EMF Diff merge



TOPCASED-Req and RMF and AGeSys

- Storage module

- Limitations

- Only File System
- Collaborative work only possible by VCS

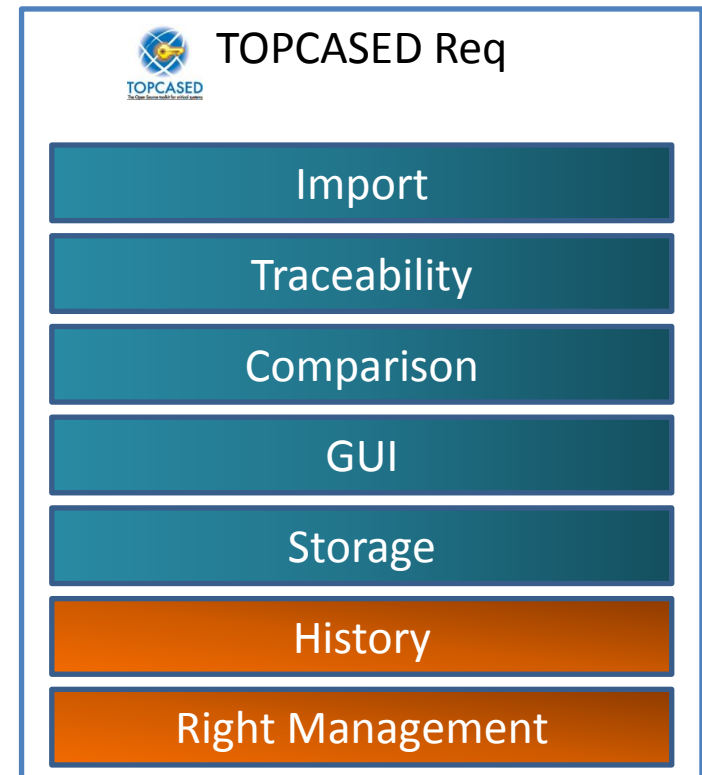
- Intended Improvements

- CDO
- EMF Store



TOPCASED-Req and RMF and AGeSys

- New TOPCASED-Req Modules
 - History management
 - Save history of requirement traceability
 - Right Management
 - Access and roles for Traceability creation



TOPCASED-Req and RMF and AGeSys

- Summary
 - TOPCASED-Req will integrate more Eclipse technologies in the AGeSys context
 - The scope of TOPCASED-Req would be to manage Requirements Life Cycle
- So
 - **TOPCASED-Req becomes ReqCycle**
 - **Requirement LifeCycle**

TOPCASED-Req and RMF and AGeSys

- ReqCycle Planning
 - End of 2012
 - Specification and Architecture of ReqCycle
 - 2013
 - 2 releases (June, December)
 - Feedbacks from French Industry
 - 2014
 - Industrialization and transition to Eclipse Foundation

Conclusion

- **TOPCASED** includes **TOPCASED-Req**, a solution to manage requirement traceability in models
- Thanks to **RMF**, TOPCASED is now able to import, export and edit **ReqIF** files
- Thanks to **AGeSys** Project **TOPCASED-Req** will be more focused on the whole **Requirement Lifecycle** and becomes
- **ReqCycle**

Thank you

- Questions ?
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