

Integration of Capella with Requirements Management Tools

2024-09-26 Laurent DELAIGUE



Obeo | Visual Tools for Designing Innovation



We create modeling tools for systems engineers, software engineers and domain modeling experts







Our Proposition : Publication for Capella

Features

Upcoming Features

Planned Features

Roadmap

Conclusion



Our Proposition : Publication for Capella

Features

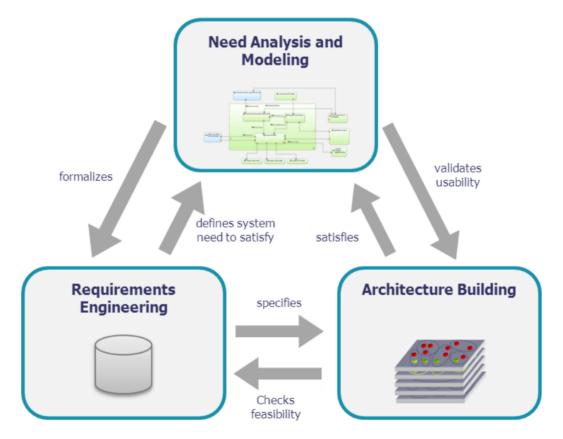
Upcoming Features

Planned Features

Roadmap

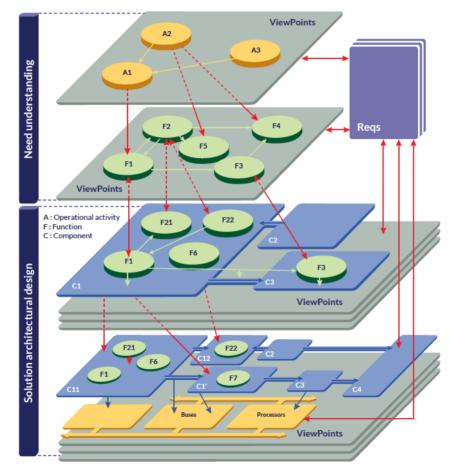
Conclusion

Arcadia promotes a viewpoint-driven approach (as described in ISO/IEC 42010) and emphasizes a clear distinction between need and solution.



COBEO

Source: https://mbse-capella.org/arcadia.html



Operational Analysis What the users of the system need to accomplish

Functional & Non Functional Need What the system has to accomplish for the users

Logical Architecture How the system will work to fulfill expectations

Physical Architecture How the system will be developed and built

Source: https://mbse-capella.org/arcadia.html







Source: https://mbse-capella.org/what_is_mbse.html

Challenges

- How do System Engineers easily trace their model concepts with incoming requirements?
- How do they share models and traceability data with different stakeholders?
- How do they verify the coverage of the requirements? The coverage of the Capella model?
- Can they go beyond Requirements and address more concerns, like V&V for instance?



Existing Solutions

• Open-Source Capella Requirements add-on

- Based on ReqIF file format imports.
- Traceability information only available in Capella.

• Ad-Hoc Integration with Specific Requirements Management Tools

- These often imply exposing Capella elements a first-class objects in the Requirements Repository.
- But third-party repositories are not made to display or edit Capella concepts.
- We have heavily invested on this approach with **SMW**.
 - But the scope of SMW goes far beyond than just integrating with Requirements.



Source: https://mbse-capella.org/what_is_mbse.html



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Publication for Capella

• We want to propose an alternative approach

- That doesn't suffer from Data Duplication
- Thats scales with the number of requirements, the complexity of models, and the number of stakeholders
- And mostly, that is easy to use!



Publication for Capella

Manage Traceability

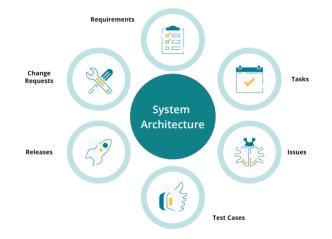
Systems engineers, working with Capella, can collaborate with other engineers working with connected ALM or RMS tools





Expose Models

Systems engineers can expose their Capella models by regularly publishing them on a server.





Digital Thread from requirements to architecture



Other OSLC Tools

Single and integrated sources of truth



Better communication and collaboration





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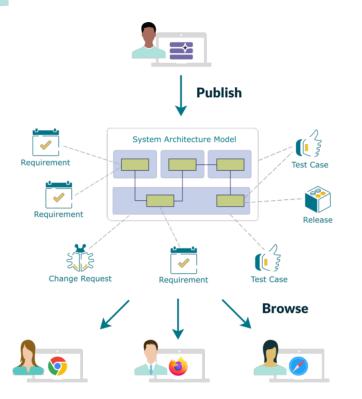
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Expose Models Online

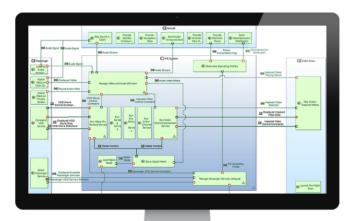


The **model elements**, with all the related **diagrams** and the **linked artifacts**, become **easily navigable** from a web browser to any **authorized** user.



Expose Models Online

Much more than just a static HTML export!





Built-in access control

Manage authorizations to projects based on users' role



Advanced search

Users can locate model elements by using multi-criteria queries



Traceability support

Elements published on the server can be linked to external artifacts



Supported solution

A professionally maintained and developed product by Obeo



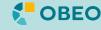
Demo 1

- Interested Stakeholder, Online
 - Access Control
 - Browse models online
 - Diagrams
 - Capella Objects
 - Simple and Advanced Search
 - Model History

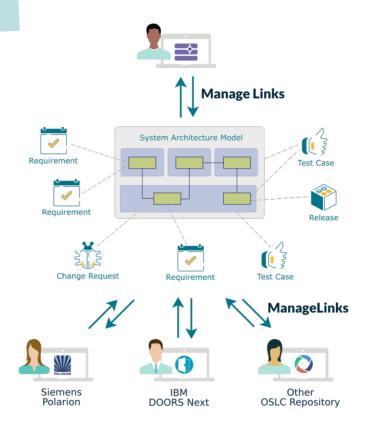


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Manage Traceability



Create and manage **synchronized traceability links** between architecture elements and artifacts such as **requirements**, **test cases**, **releases**, **change requests**, etc...



Demo 2

- System Engineer in Capella
 - Drag & drop
 - Palette tools
 - Different link types
 - Publish Model
 - Update from online changes

- Requirements Engineer in 3rd-party Tool
 - Create/Delete OSLC link
- Authorized Stakeholder online
 - Create/Delete OSLC link



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Make use of Traceability

• Online

- No dedicated tooling yet in Publication for Capella
- Specific Tooling in third-party repositories
 - Polarion Live Docs
 - IBM Jazz Team Server Reporting capabilities

- System Engineer in Capella
 - No dedicated tooling yet in Publication for Capella
 - Use **Python for Capella** to extract or manipulate model data, including traceability
 - Use M2Doc to produce MS Word reports



Demo 3

- System Engineer in Capella
 - Configure Reporting with Python for Capella
 - Generate Report

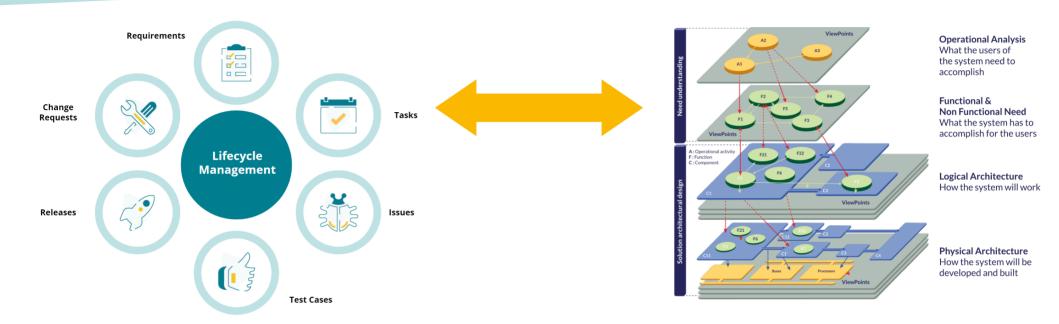


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Expose Models Online



Not limited to Requirements:

- V&V Links to Test Cases;
- Project Management Links to Releases, Change Requests...



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Deployment Modes



On-Premise

The server is deployed on your own infrastructure

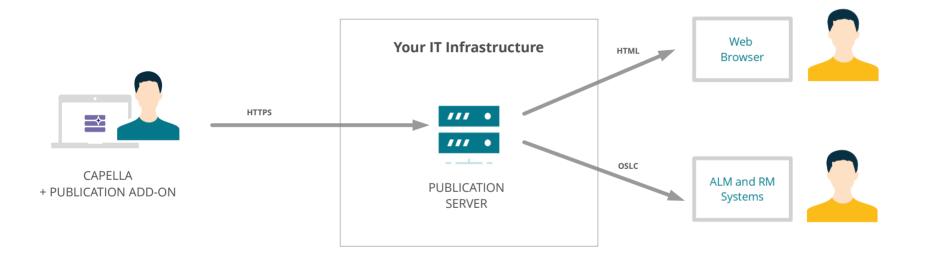


Cloud

The server is installed on a Cloud infrastructure managed by Obeo



On-Premises | Deployed on your own infrastructure





CONSUMERS



Cloud for Capella | Architecture of C4C Publication

Cloud Infrastructure HTML Web Browser HTTPS + Capella OSLC Publication client Publication server **SYSTEMS ENGINEERS** aws managed by Obeo ALM and RMS Tools

INTERESTED STAKEHOLDERS

PROJECT ENGINEERS





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- Support for OpenID Connect
 - Improved Security
 - Single Sign-On

Log in to get started

Username*

Password *

LOGIN WITH PASSWORD

LOG IN WITH OAUTH

or



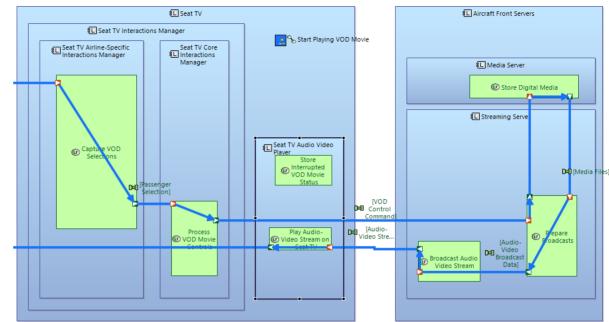
- Support for OpenID Connect
 - Improved Security
 - Single Sign-On
- Create Links using Copy/Paste
 - Makes it possible to create links on exchanges easily
 - Improves user experience in Cloud environments

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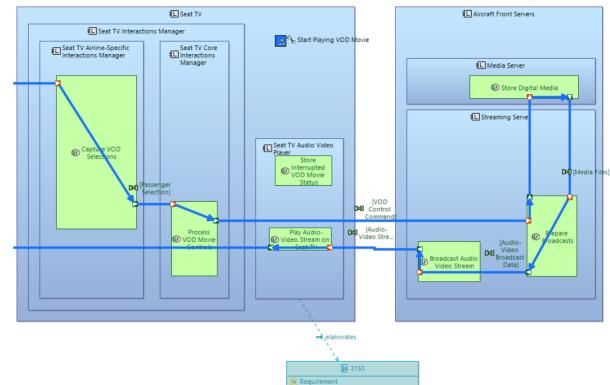


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The system shall provide video entertain...



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 - Miscellaneous Improvements
 - Diagrams in model tree like in Capella

- ✓ ▷ Structure
 - 🗸 🚛 IFE System
 - > 🖫 IFE Operating Modes
 - > 🗓 Aircraft Front Servers
 - 🔉 街 Seat TV
 - 汇 Cabin Screen
 - > 🗉 Cabin Terminal
 - 🔒 [LAB] IFE System All Components, CEs
 - & [LAB] [BUILD] All Components, Functions, CEs, FEs
 - & [LAB] [BUILD] Template



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 - Better Properties

Cabin Crew
Properties
Name 🕐
Cabin Crew
Summary (?)
Summary
Is Abstract ⑦
🔽 Is Human 🕜
☑ Is Actor ⑦
Generalized Components ⑦ None
Implemented Interfaces ⑦
None the list of functions allocated to this
Used Int block None [source: Capella study]
Allocated Functions ③
Command Airline-Imposed Video Broadcast
Iaunch Pre-Flight Tests and Analyze Results



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- And more!
 - Including new options on OSLC Associations



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By the way,

The development roadmap is driven by our customer's feedback.



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Problem Approach

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• OSLC Preview in the web UI

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PTV Movie Player Modes		
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🛍 Seat TV Audio Video Player		
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 EPBS architecture 		
Architecture Description		



COBEO

• OSLC Preview in the web UI

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- OSLC Preview in the web UI
- Improve the User Experience when Publishing from Capella
 - Groundwork to prepare live connection between Capella and Publication server
 - <u>Later</u>, will make it possible to notify System Engineers when links are created/deleted online, or when comments or questions are asked on some diagram online.



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 - By the way, do you have any in mind?



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Roadmap

- Licensing Model
- Version Control
 - Baselines, branches, ...
 - Comparison of objects or models online
- Global Configuration Management
 - Mostly for the IBM Jazz suite
- Model Review
 - Discuss about models online
 - Implement review workflows
 - Better Tooling to Analyze and Report on Traceability Links







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- Expand the audience of MBSE by exposing your Models online.
- Create and maintain Traceability Links easily, either in Capella or online.
- Extract links for reporting using *Python for Capella* or *M2Doc*.
- On Premises or Cloud Deployment
- Compatible with *Team for Capella*
- Contact Obeo to influence the product's roadmap.



Conclusion

https://obeosoft.com/p4c





