



MBSE and Digital Thread

Exposing Capella Models to OSLC consumers

Nov 02, 2021

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Who am I?

What is this 'Capella' I'm talking about?

Systems Engineering Challenges

Publication for Capella

Demo

An OSLC Journey?

Q&A

Obeo | Visual Tools For Designing Innovations



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

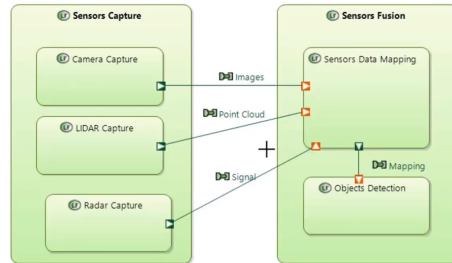


Modeling workbenches | Ready-to-use, or tailored to your needs

Systems Engineering



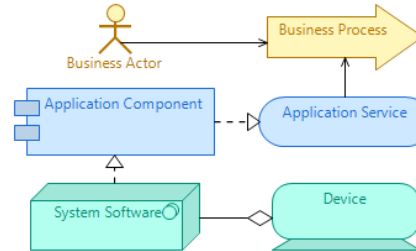
#MBSE #Arcadia



Enterprise Architecture



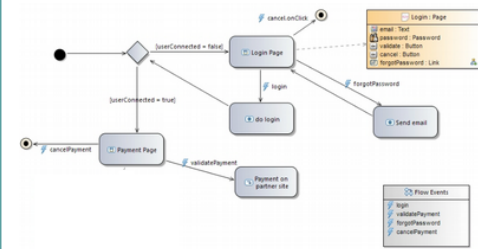
#ArchiMate #BPMN



Your Specific Engineering Domain



#DSL #MDE



<https://www.siriuscon.org/>

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Capella is a
comprehensive,
extensible,
field-proven
MBSE workbench

to successfully design System Architectures

Formalize specification and master architectural design



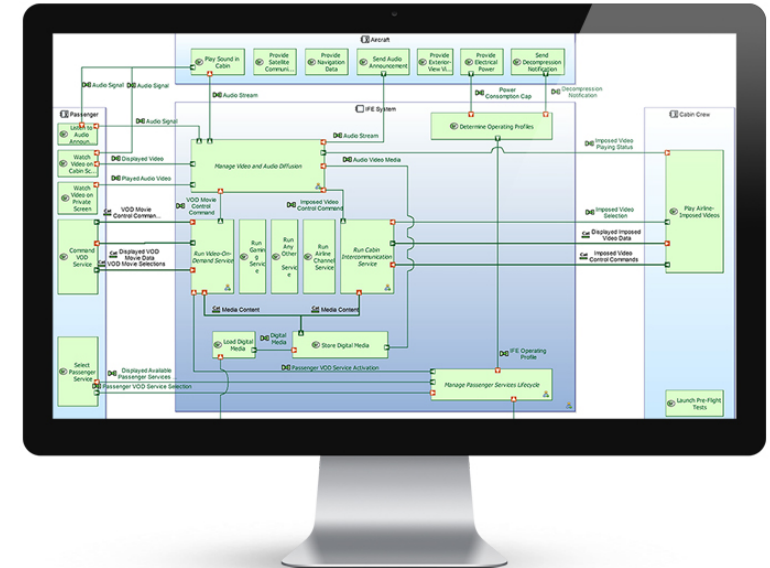
Better understand the customer need

Define and share the solution among stakeholders

Secure SYS/SW/HW engineering, prepare subcontracting

Evaluate and justify architectural design early

Prepare and master V&V



But Capella is not only a Tool.

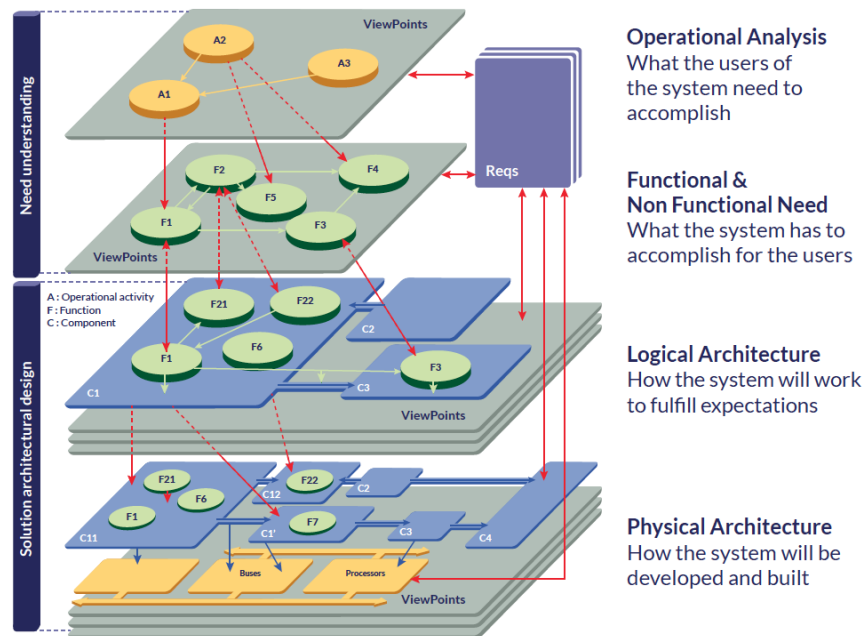
It comes with a Method:





Digital continuity from requirements to architecture

How Arcadia manages Requirements modeling and Traceability?



Architectural Design model elements are linked to **Requirements**

=> **Consistency, Verification & Justification**

Oh, and by the way...

Capella is Open-Source

Learn more about Capella and its Community



‘The spirit of Arcadia and Capella in 7 minutes’



youtube.com/watch?v=BtzhIZUaWA8

‘Catapult’ Tutorial



esd.sutd.edu.sg/40014-capella-tutorial/index.html

Website : eclipse.org/capella
Youtube : youtube.com/channel/UCfgwbb2h10V3tgJ59sbGBnQ/videos
Forum : forum.mbse-capella.org
Linkedin : linkedin.com/in/capella-mbse-tool/

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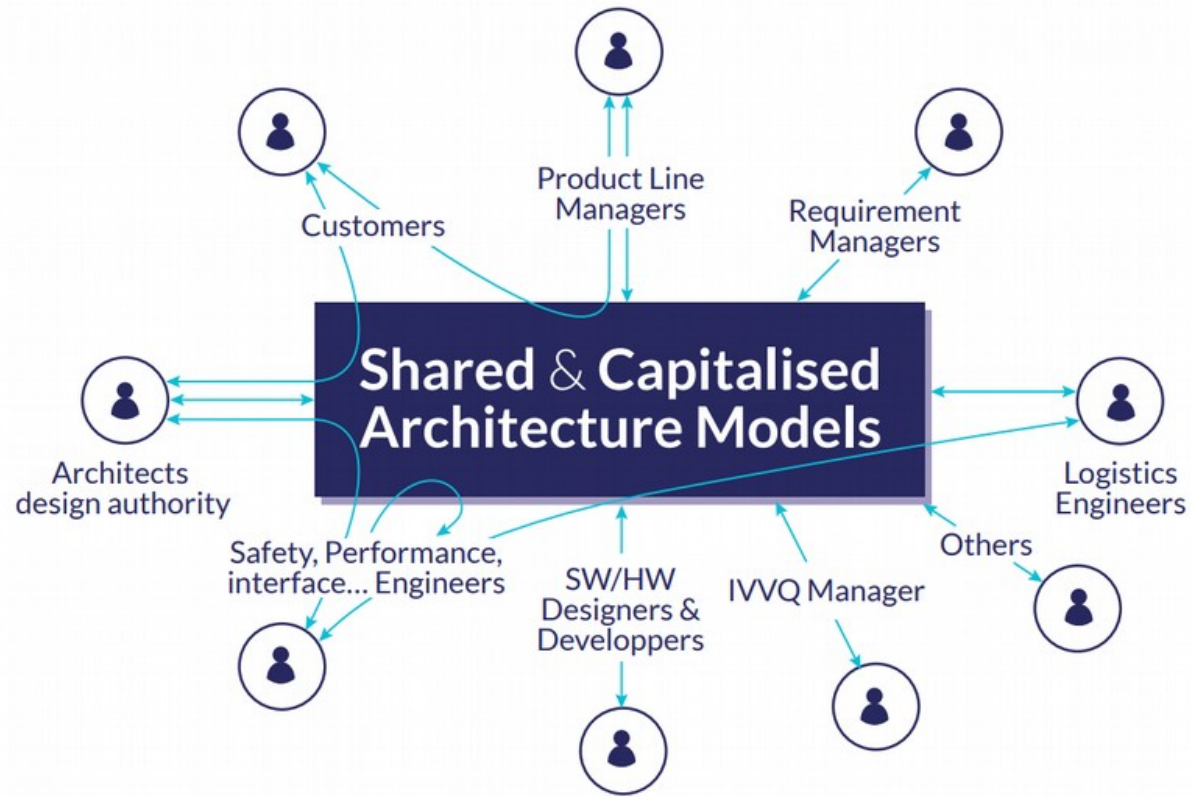
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MBSE | Enhancing communication between engineering stakeholders



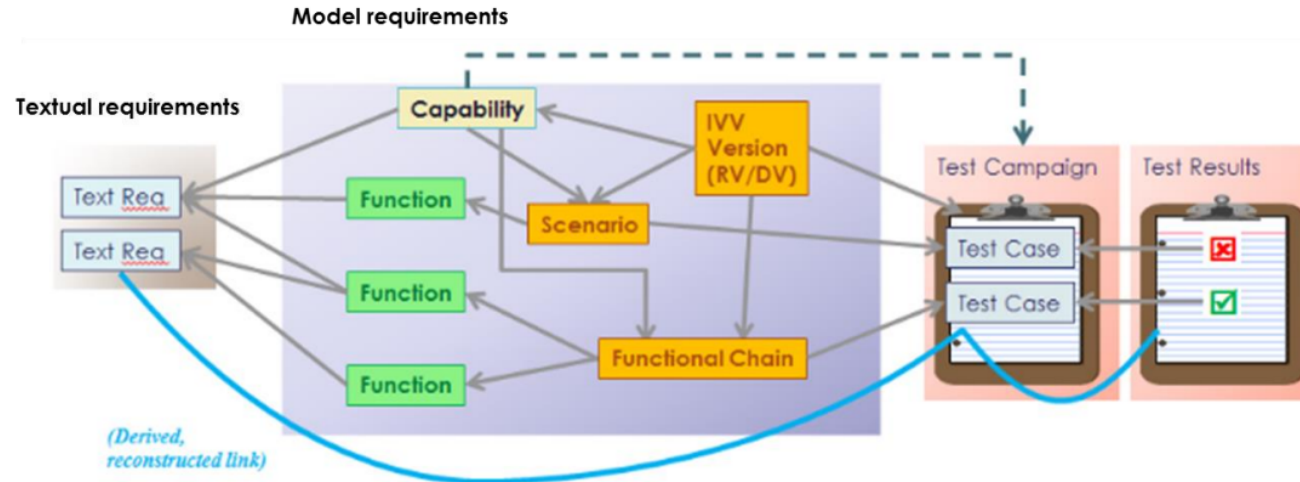
That's a
lot
of silos!

BEST PAPER AWARD

Augmenting requirements with models to improve
the articulation between system engineering levels
and optimize V&V practices



29th Annual **INCOSE**
International symposium
Orlando, FL, USA
July 20 - 25, 2019





Models as enablers of agility in complex systems engineering

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Abstract. Complex systems engineering programs not only deal with the inherent complexity of the systems they develop, they also face shorter time-to-market, increasing changes in environments and usages, and more sophisticated industrial schemes. The ability to adapt to new circumstances, or agility, becomes mandatory. In this paper we present how Model-Based Systems Engineering (MBSE) approaches can be enablers of the implementation of agility in complex systems engineering programs. Known to provide additional engineering rigor and quality, MBSE also brings key concepts favoring agility and co-engineering.

Models as enablers of agility in complex systems engineering

INCOSE International
Symposium 2020

And many more of course...

But let's focus on these for now.

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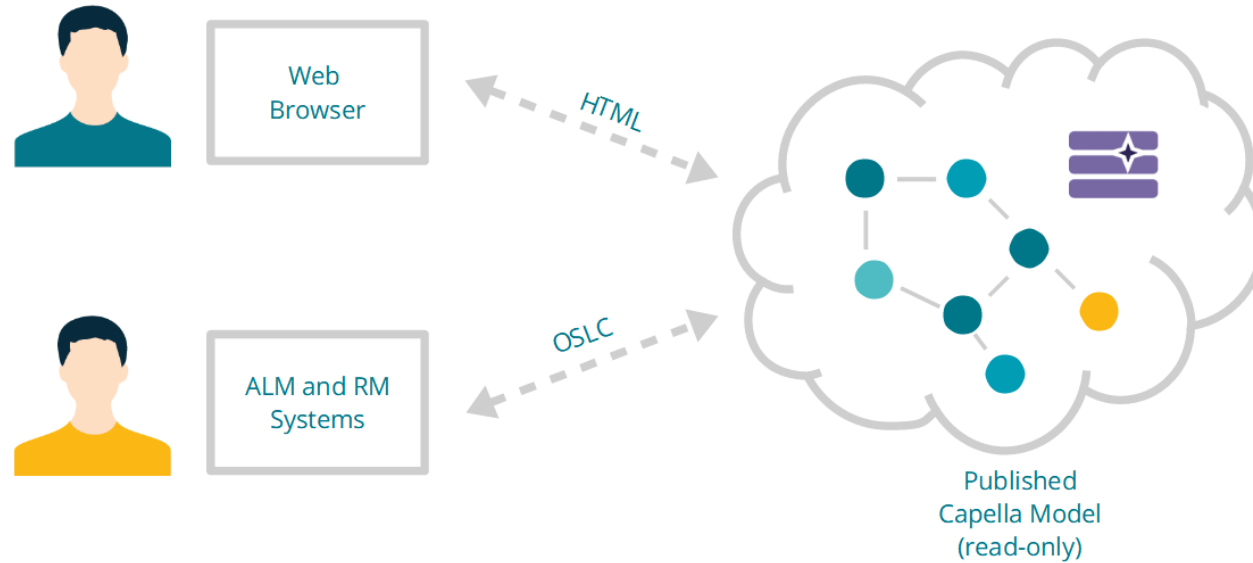
An OSLC Journey?

Q&A



Better communication and collaboration

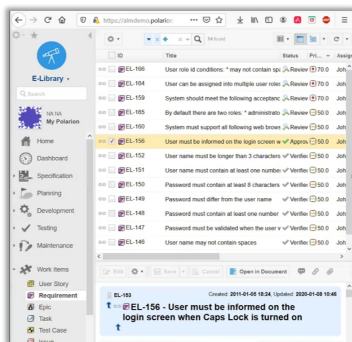
Break silos



System Architecture is becoming a central place for cross-engineering understanding

Publication for Capella

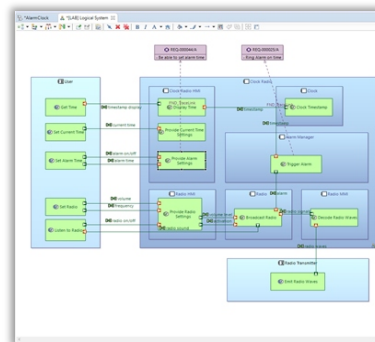
Connect Capella with any OSLC-compliant repository (Polarion, Doors Next, Jazz platform, ...)



ALM / RM



Requirements
Tasks
Issues
Change Requests
Test Cases
Releases



Capella



Digital continuity from
requirements to architecture



Better communication
and collaboration



Single and integrated
sources of truth

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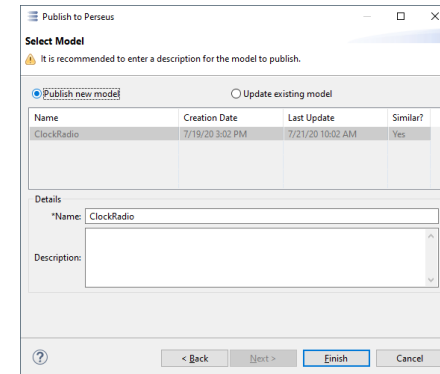
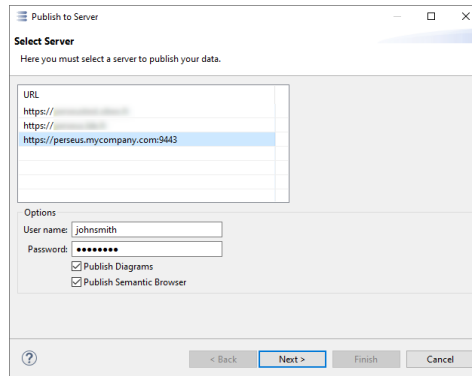
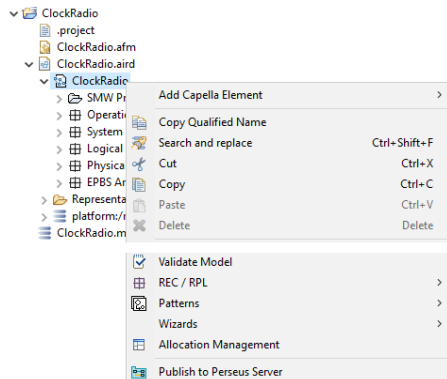
Publication for Capella

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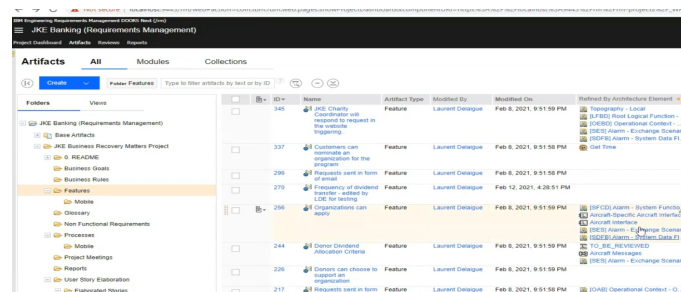
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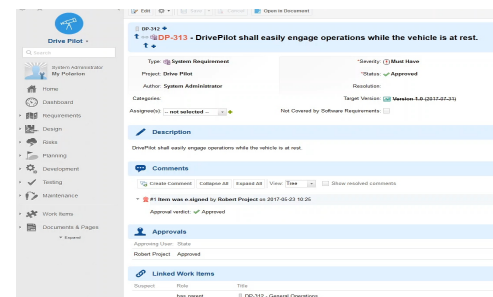
Demo: Create and Verify Traceability Links in your ALM



P4C Server



Doors Next



Polarion

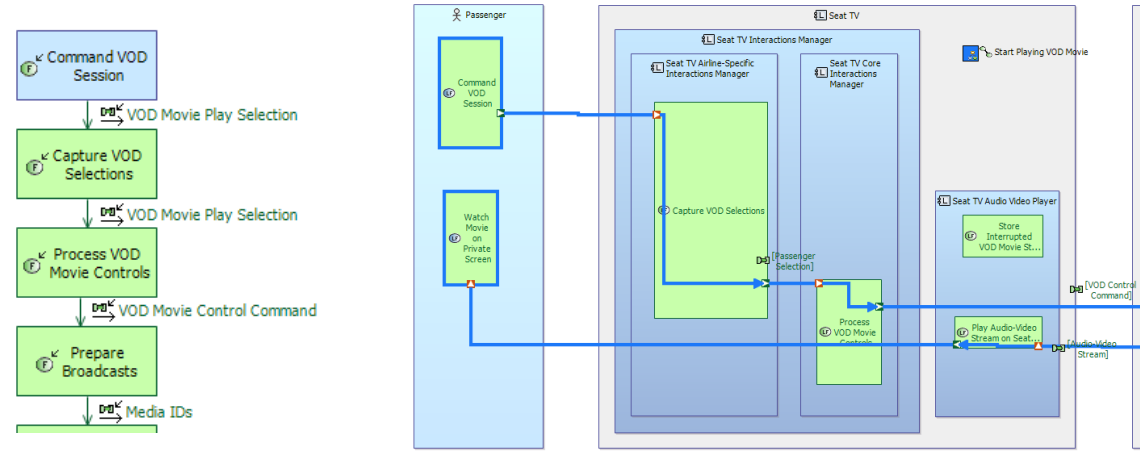
Connect people to your MBSE

Test & Quality Management | Drive your V&V with your architecture

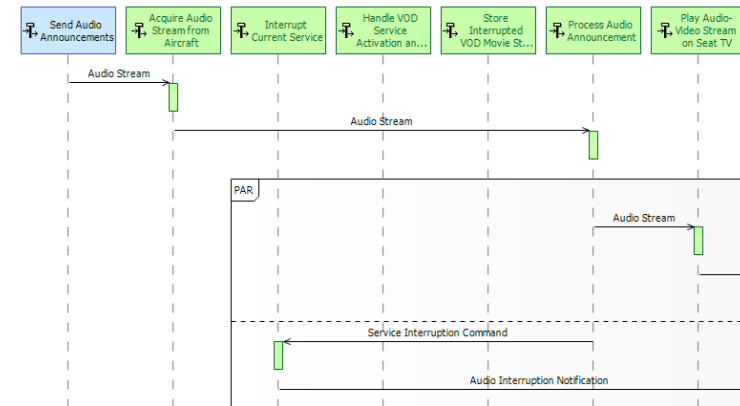


Test Case

Traceability example



Functional Chain with the list of Functions to test



Functional Exchange Scenario with the expected behavior

Connect people to your MBSE

Test & Quality Management | Drive your V&V with your architecture

BEST PAPER AWARD

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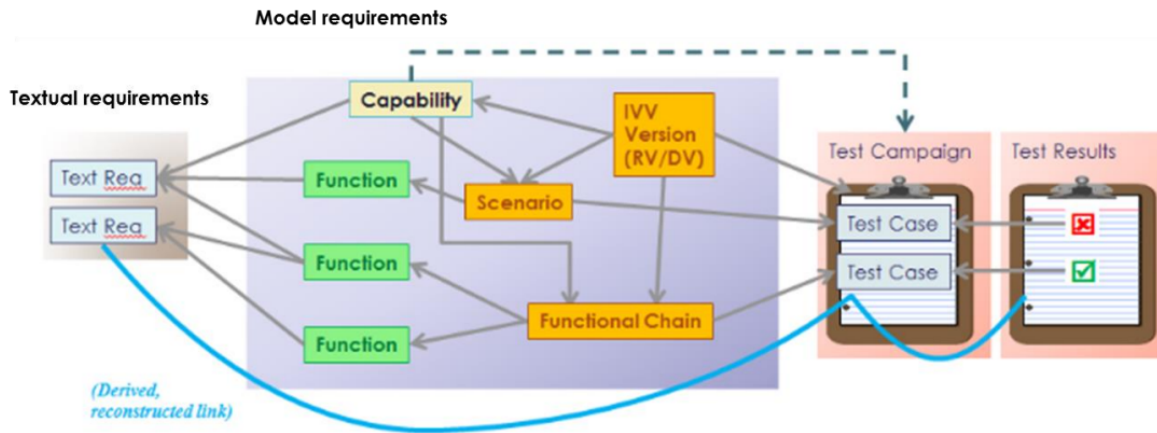
Test Case

Traceability example

 **Capella**
Open Source MBSE Solution



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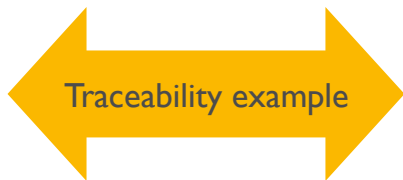


Connect people to your MBSE

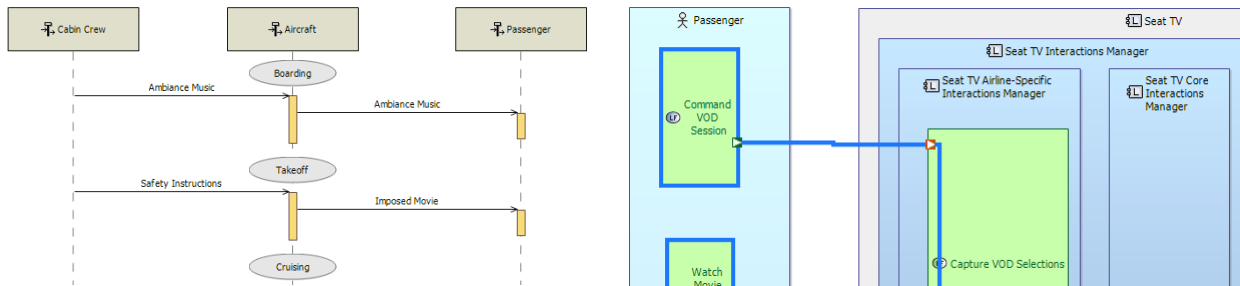
Issue Management | Drive your quality with your architecture



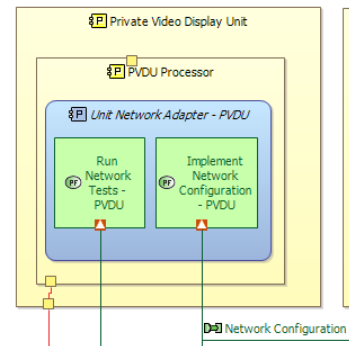
Issue



Traceability example



Operational Scenario causing the defect & Involvement of each Component



Component or Function to be fixed by HW/SW teams

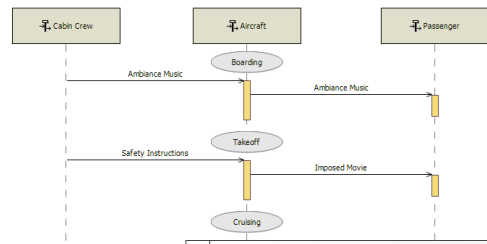
Connect people to your MBSE

Change Management | Drive your modifications with your architecture

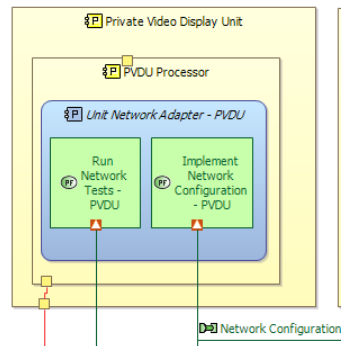


Change Request

Traceability example



Context about the request to justify the need for change



Impact on the existing system architecture

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Oh god, there's a whole new community to discover!

Nice to meet you everyone :-)





The AM vocabulary is very abstract and simple

It's OK for now to cover the need we had: Traceability





OAuth-1 still seems very much in use

However, it's deprecated. We'd like to move away from it.

What's the general trend among OSLC-compliant repositories?



Multiple implementation differences in tools



We've been able to successfully connect our implementation to several third-party tools



A few minor tweaks were sometimes needed, especially on corner cases, not on main working scenarios



The OSLC promise holds!

Well, mostly.

Some areas don't seem as well supported as the 'basic' use-case we needed :



- Reporting seems to be tool-specific, support for links to/from third-party repositories not so well supported
- Lifecycle of links when linked objects are modified on any side

OSLC | What we need to learn

OSLC Tracked Resource Set

*Seems great !
How widespread
and well supported ?*

Configuration Management

*Seems great !
How widespread
and well supported ?*

What is supported by which tool?

Publication for Capella | Roadmap in 2022

Technical rationalization with Obeo Cloud Platform

Pre-requisite for everything else, in progress

Improve User Experience

Improve navigation, search, delegated UI, ...

Support Model Reviews

Other topics to prioritize

Support bi-directional link authoring

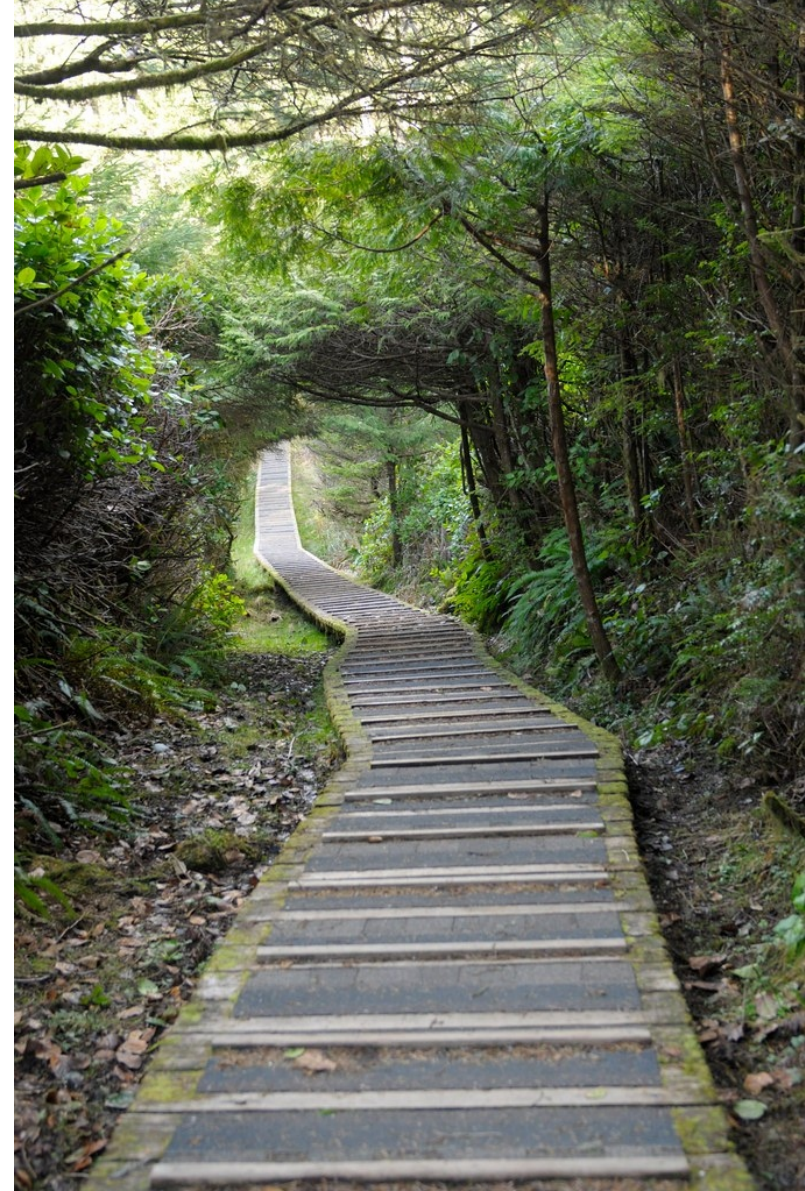
Support IBM's Global Configuration

Support Tracked Resource Set

We're beginning what looks like a promising **journey**...

We know where we want to go.

Now let's see what more OSLC
can do for us,
and maybe what we can do for OSLC
via its community?



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Capella YouTube channel: <https://www.youtube.com/channel/UCfgwbb2h10V3tgJ59sbGBnQ>

Capella adopters: <http://www.eclipse.org/capella/adopters.html>

Obeo products: <https://www.obeosoft.com/en/products>



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