Integrating Capella with your own Ecosystem of Tools
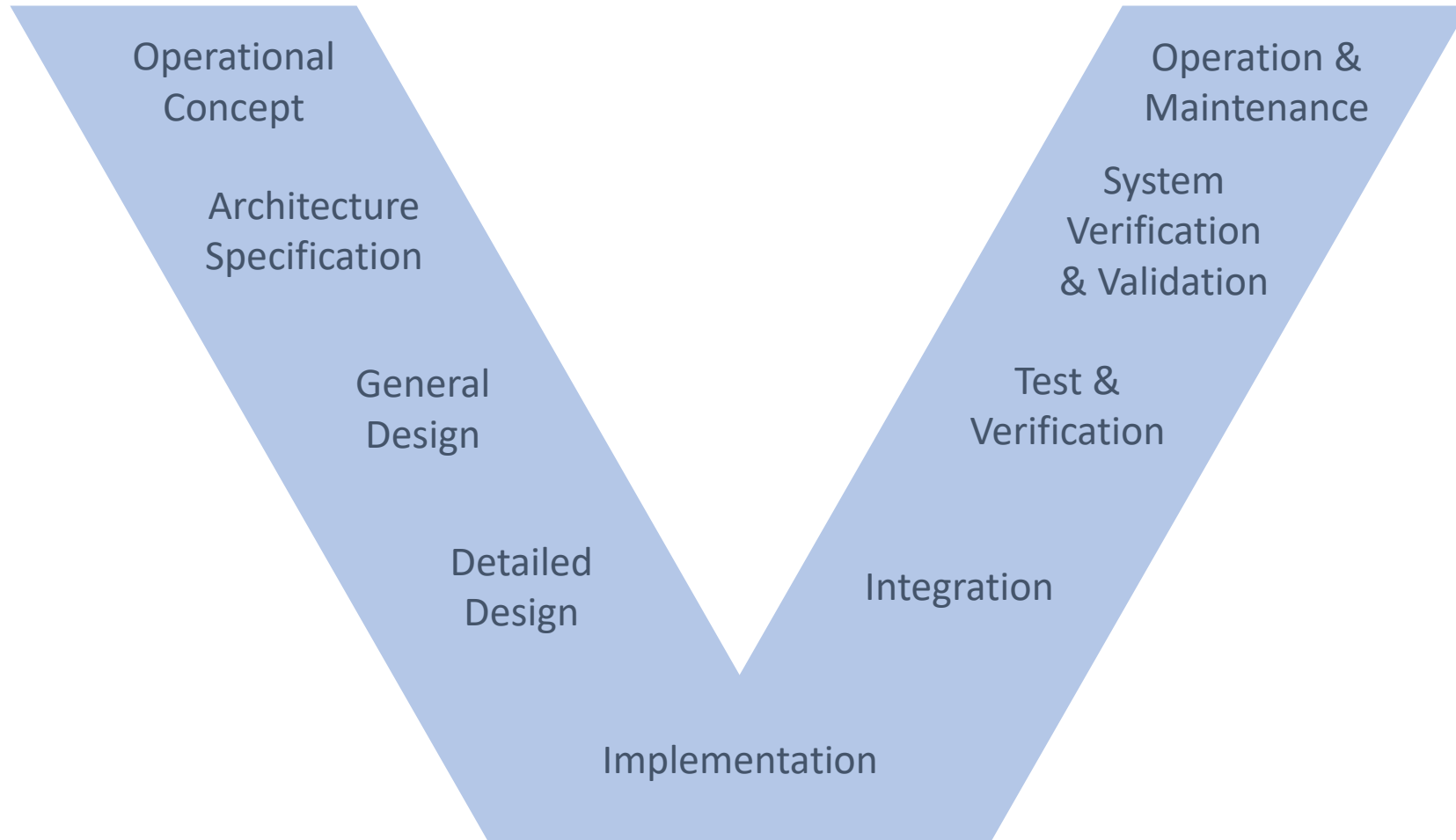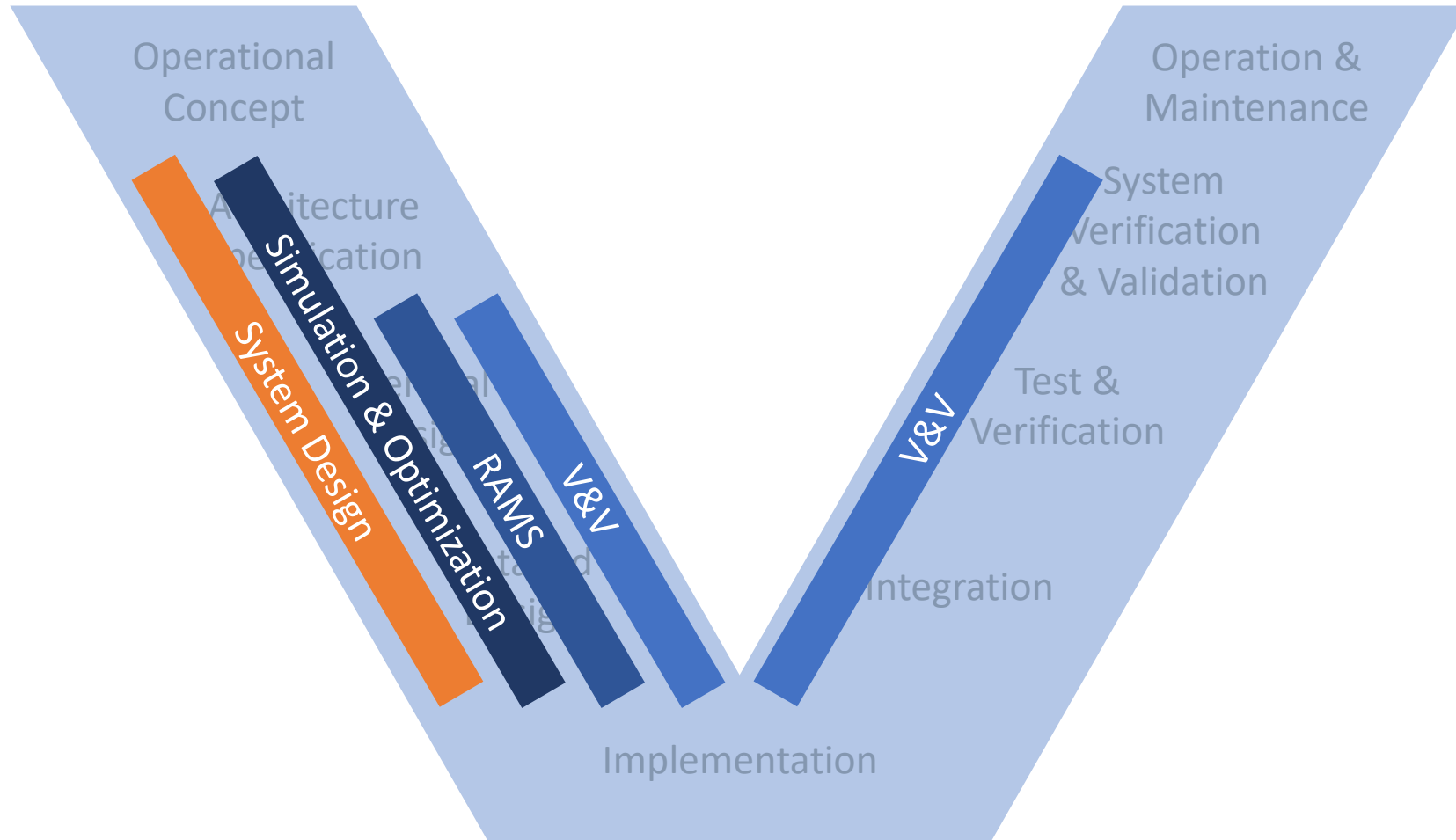
OBEO

Restricted

Context

Scope of Capella

Scope of Capella

Operational Concept

Architecture Specification

General Design

Detailed Design

Implementation

Integration

Test & Verification

System Verification & Validation

Operation & Maintenance

Scope of Capella

Capella in its environment

- Capella must fit in a global environment
    - Tools,
    - Processes,
    - Other specificities

- Capella was designed to support this by customizability/extensibility
    - Adapt the workbench to practices and processes
    - Interconnect the workbench with other tools
        - Co-engineering,
        - Downstream engineering,
        - Any other concern

Quick Technical Overview

What is Capella made of, and why does it matter?

Overview of Technological Stack

Overview of Technological Stack

Capella

Kitalpha

Sirius

emf ECLIPSE MODELING FRAMEWORK

eclipse

Capabilities
- Menus, view, editors
- Validation, logging
- Unified user experience
- Extremely large and active community
- Very mature

Overview of Technological Stack

Capella

α Kitalpha

Sirius

emf — ECLIPSE MODELING FRAMEWORK

eclipse

Capabilities
- Create additional data models and editing mechanisms
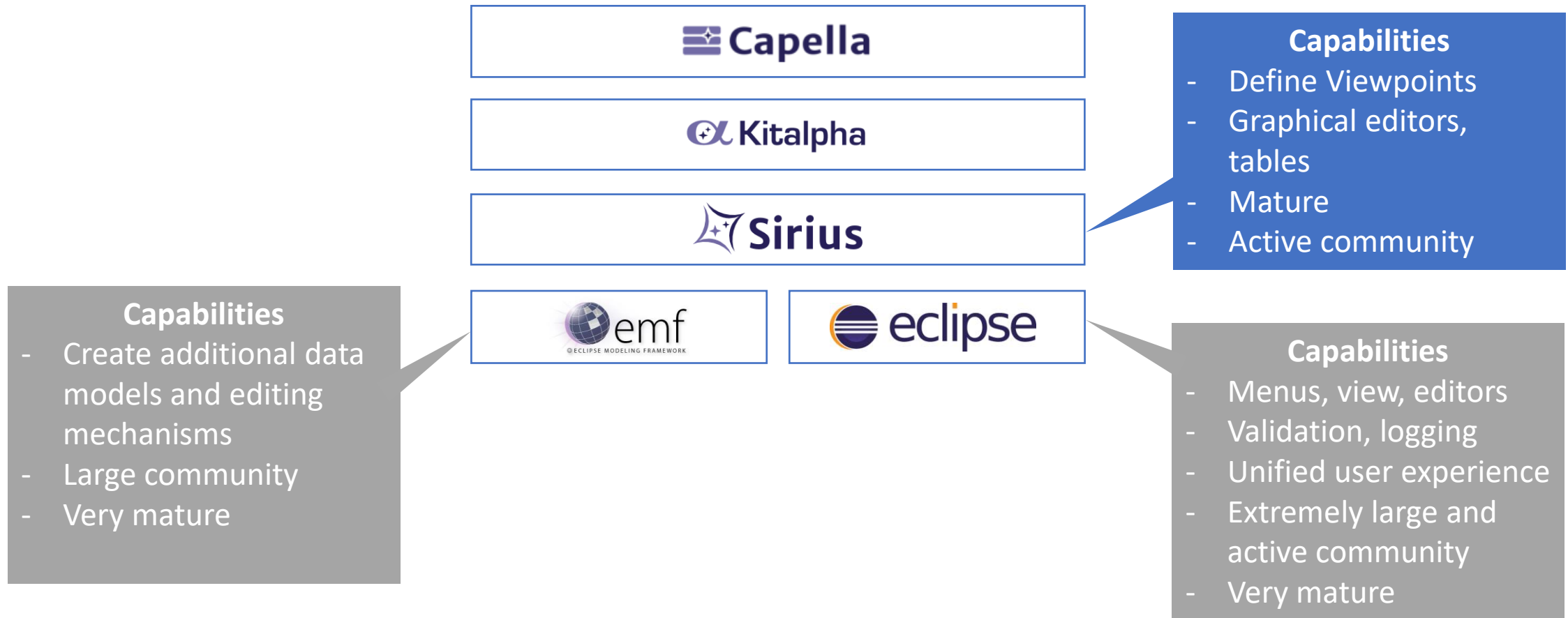- Large community
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Capabilities
- Define Viewpoints
- Graphical editors, tables
- Mature
- Active community

Capabilities
- Create additional data models and editing mechanisms
- Large community
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Capabilities
- Menus, view, editors
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Overview of Technological Stack

Capabilities
- Customize validation rules & quick fixes
- Easily enrich Capella data model
- ...

Capella

Kitalpha

Sirius

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© ECLIPSE MODELING FRAMEWORK

eclipse

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Direct Integration Approach

Bridging Capella with other Tools

Overview of Customization Capabilities

Basic Customizations
- Defining Properties & Property Values
- Preferences and Configuration Projects
- Customize validation rule sets
- Requirement labels

Standard Customizations
- Configure Property Values with PVMT
- Install compatible add-ons
- Write document template for document generation (M2Doc)

Advanced Customizations
- Create viewpoints (data model + views)
- Enrich existing viewpoints or add-ons
- Connect with other tools (import/export, bridge)
- Create additional validation rules

Different Kinds of integrations

- Viewpoints
  - Enrich Capella data model with your own semantics (Domain-Specific language)
  - Can also interoperate with other tools

Requirements Viewpoint
Contact: Thales | License: EPL

Basic Mass Viewpoint
Contact: Thales | License: EPL

Basic Price Viewpoint
Contact: Thales | License: EPL

Basic Performance Viewpoint
Contact: Thales | License: EPL

Safety Viewpoint & MBSE-MBSA bridge for Safety Architect
Contact: All4tec | License: Commercial

Different Kinds of integrations

- Viewpoints
  - Enrich Capella data model with your own semantics (Domain-Specific language)
  - Can also interoperate with other tools

- Bridges
  - Import from/Export to other formats and tools
  - Incremental or one-shot

System to Subsystem Transition
Contact: Thales | License: EPL

Filtering
Contact: Thales | License: EPL

SYSML Import/Export

Different Kinds of integrations

- Viewpoints
  - Enrich Capella data model with your own semantics (Domain-Specific language)
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- Bridges
  - Import from/Export to other formats and tools
  - Incremental or one-shot

- Automation and tooling
  - Documentation/code generation, …

Property Values Management Tools (PVMT)
Contact: Thales | License: EPL

M2Doc
Contact: Obeo | License: EPL

XHTML Documentation Generation
Contact: Thales | License: EPL

Different Kinds of integrations

- Viewpoints
  - Enrich Capella data model with your own semantics (Domain-Specific language)
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- Bridges
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- Automation and tooling
  - Documentation/code generation, …

- Transversal Enrichment
  - Anything you can imagine

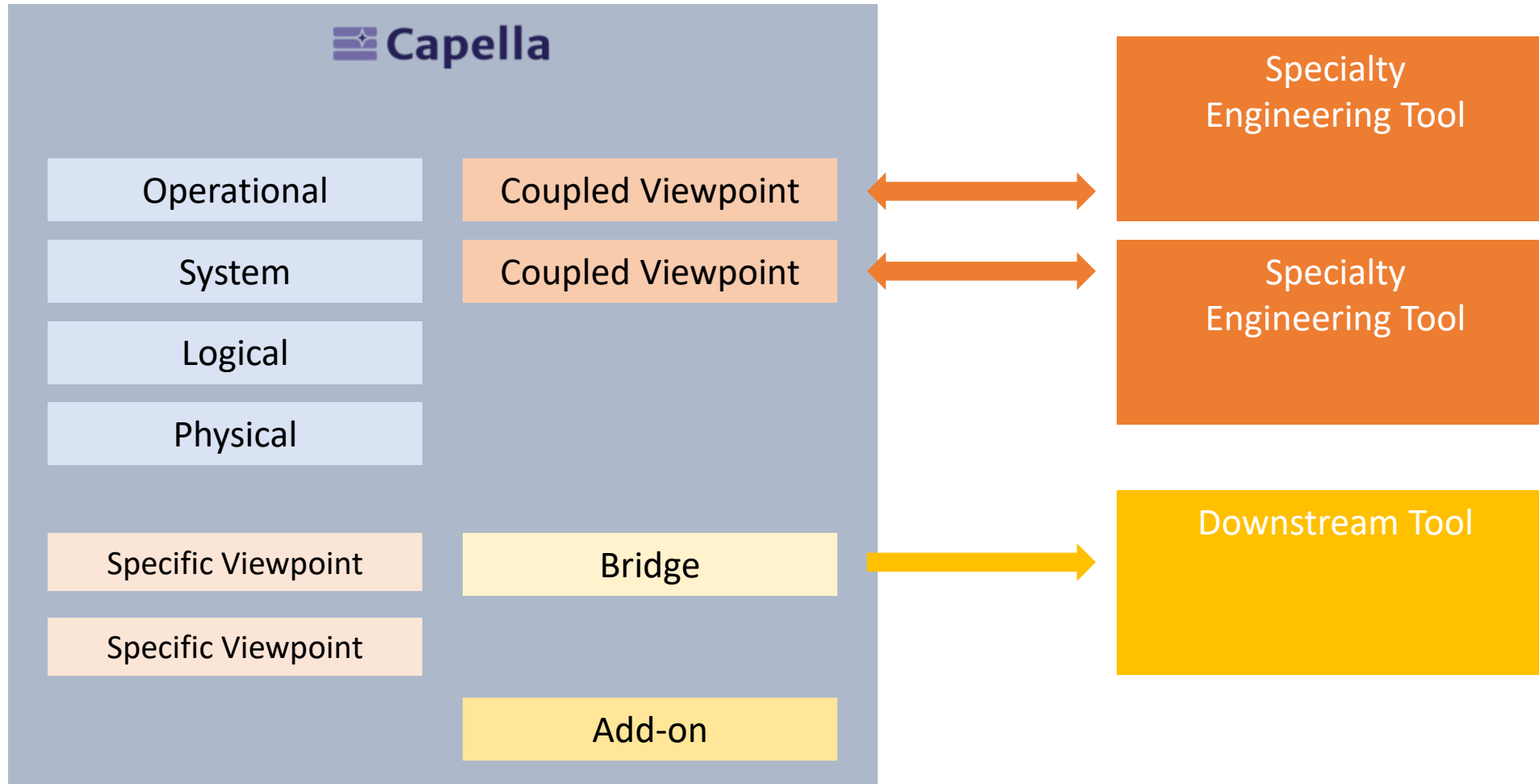**Team for Capella**
Contact: Thales & Obeo | License: Commercial

System Modeling Workbench (SMW) for Teamcenter
Contact: Siemens PLM Software & Obeo | License: Commercial

Yuzu for Capella
Contact: Artal | License: Commercial

Summary of Direct integration Approach

Capella

Operational	Coupled Viewpoint	⟷	Specialty Engineering Tool
System	Coupled Viewpoint	⟷	Specialty Engineering Tool
Logical			
Physical			

Specific Viewpoint	Bridge	→	Downstream Tool
Specific Viewpoint			
	Add-on		

Attention Points

- Developing advanced customizations
  - Requires advanced Software Engineering knowledge
  - Requires advanced knowledge on the specialty being addressed

- Maintenance
  - Capella has 2 releases a year
  - Active community, several new add-ons each year

- Interaction with the Capella Community
  - Be aware of what's going on around Capella
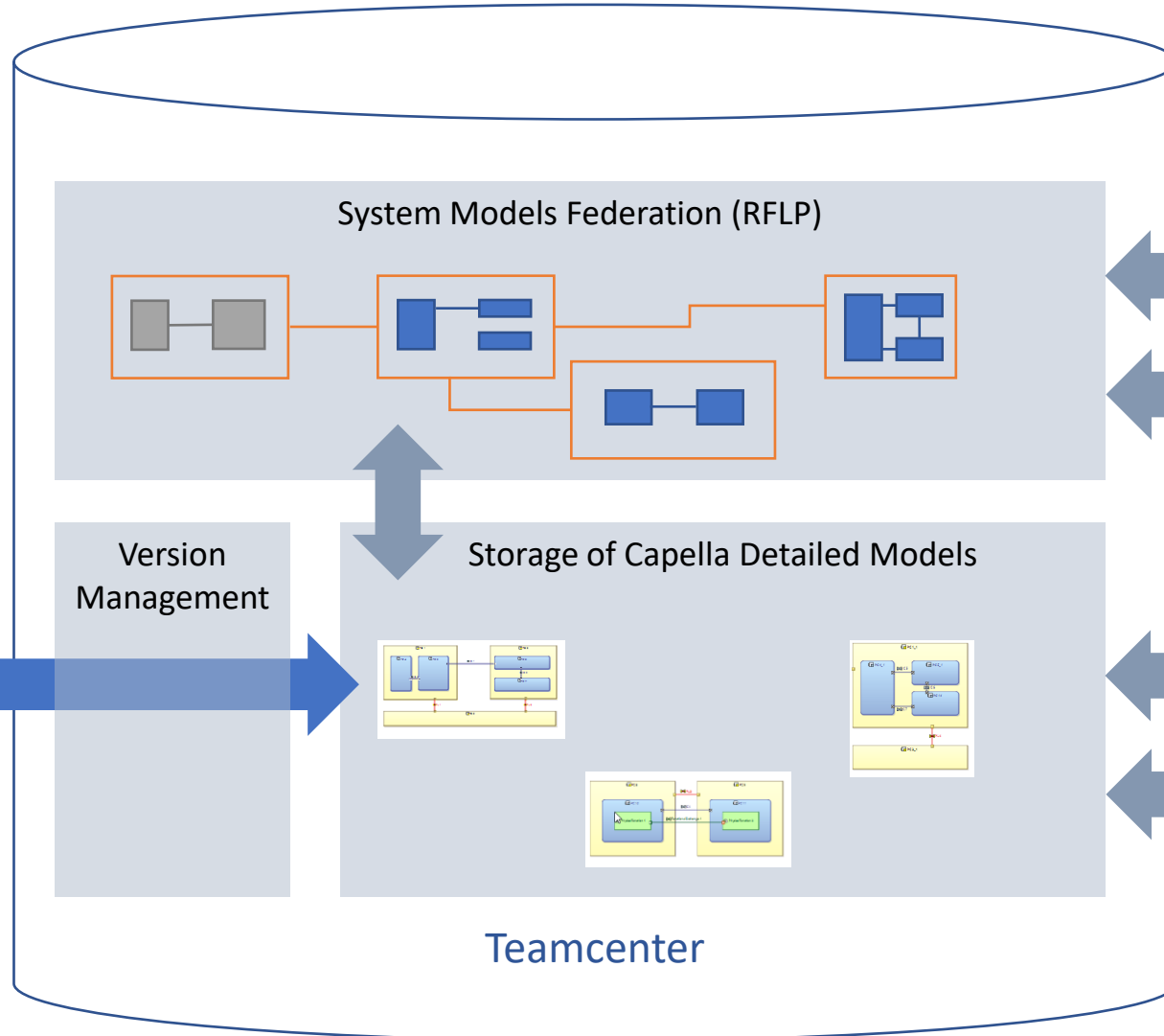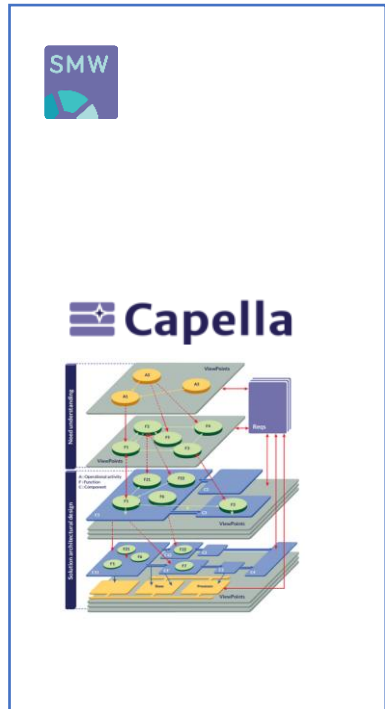 - Opportunities to mutualize costs

SMW Case-Study

Taking advantage of Teamcenter to federate models

Known Limitations of standalone integration

- Integration of MBSE with overall process
  - E.g. Impact analysis
    - In our model assets base, which system designs depend on this component?
    - What are the impacts of replacing this component with this one?
  - E.g. Traceability
    - Trace requirements, choices, … all along the cycle
- Downstream consumption of models
  - E.g. Tools need to aggregate data from several models
  - E.g. Sub-contractors need to consume subsets of models

Federating Models in Teamcenter

Takeaways

What you should remember

What have we learned?

- You will have to customize and integrate Capella
  - Capella by itself is not sufficient
  - Variety of add-ons to choose from
  - Need integration work

- You will need to extend Capella
  - To take into account what makes your business value

- Customizing and Developing extensions is for specialists
  - That's what we do at Obeo, feel free to contact us ☺

Thank you!

Any question?