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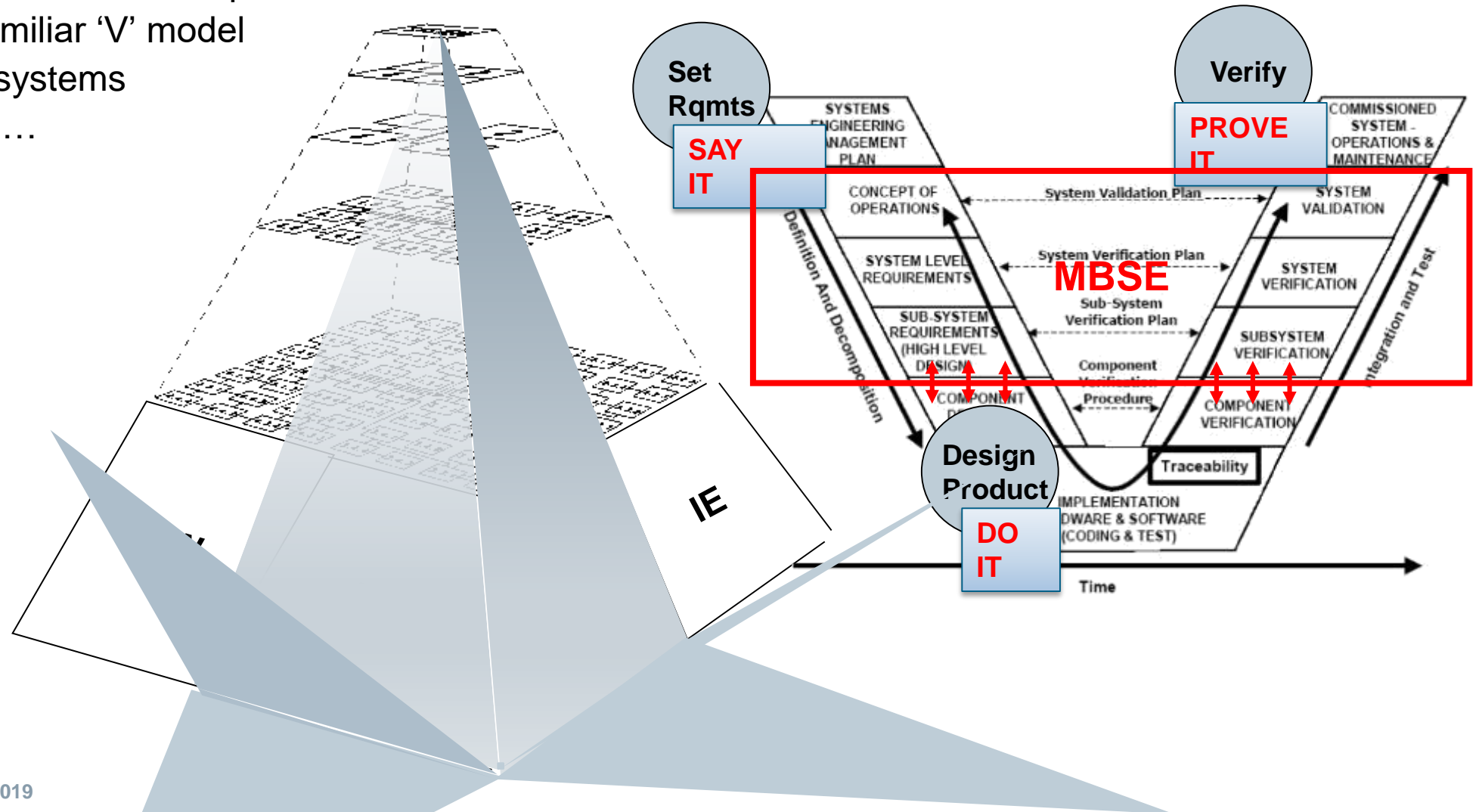
Model Based System Engineering

Christoph Marhold Sen. Principal Key Expert MBSE

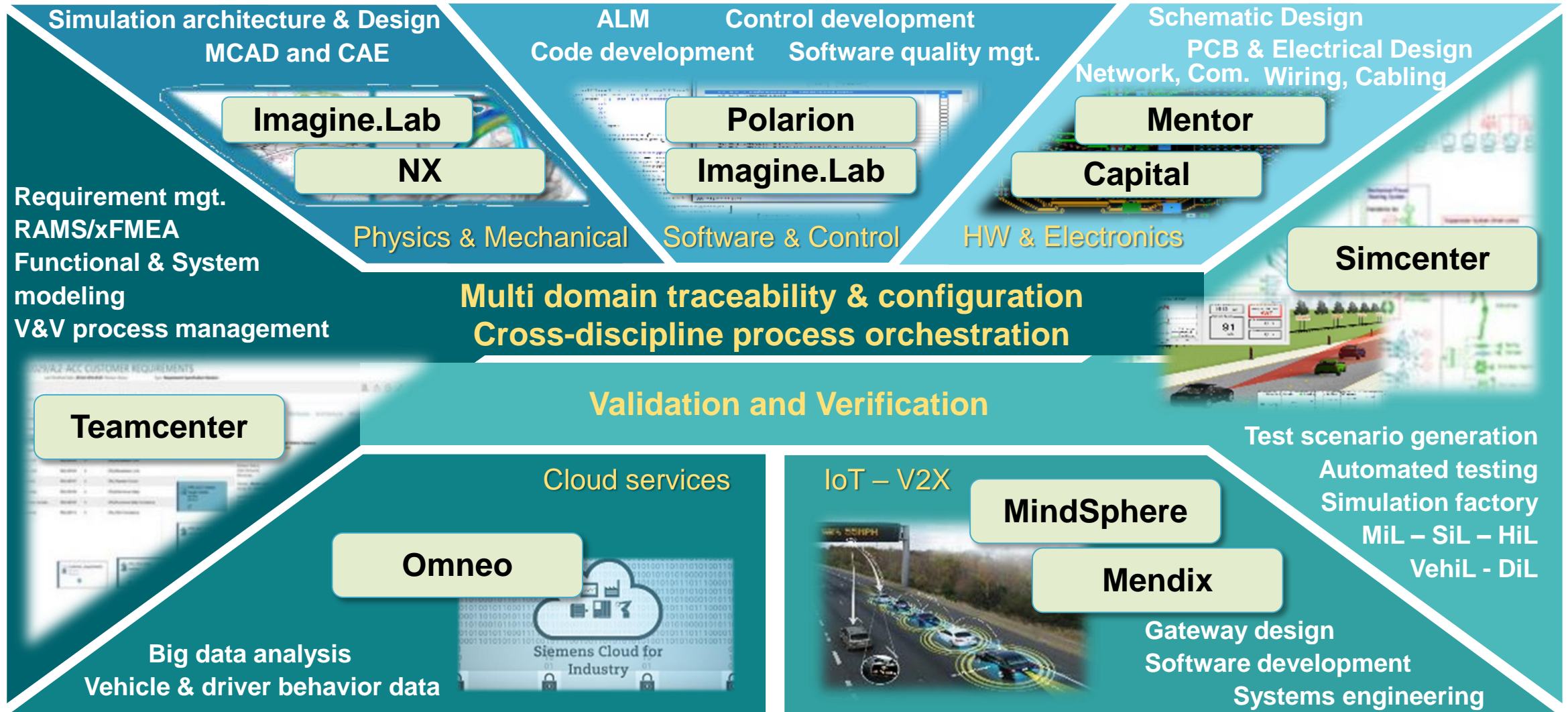
[siemens.com/plm/teamcenter](https://www.siemens.com/plm/teamcenter)

Integrated SE Process ...

'Flattening out' the top-down development pyramid shows the familiar 'V' model used to describe the systems development process...



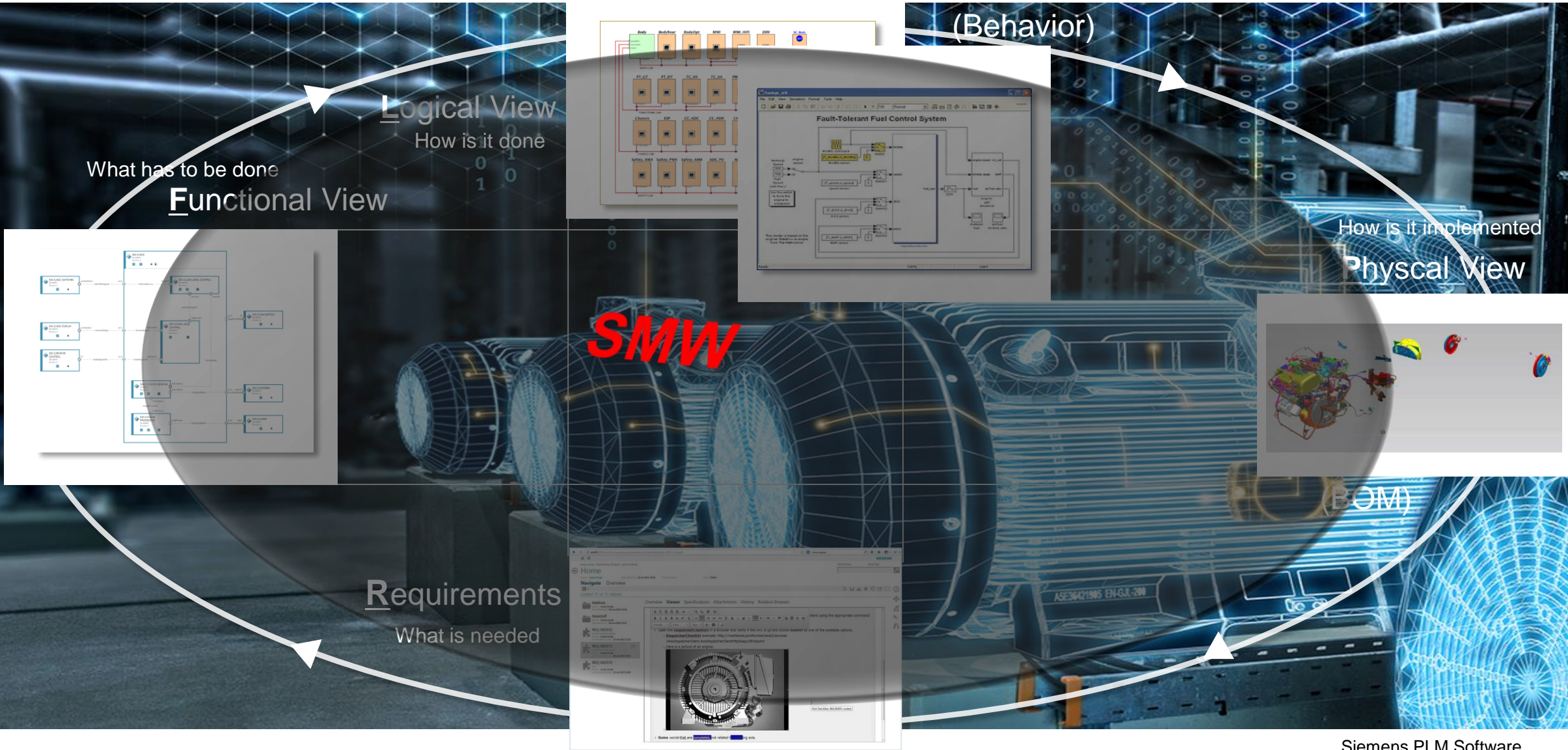
Integrated MBSE... Looking down on the pyramid...



...and a number of 3rd party integrations

MBSE helps to master Complexity and allows Collaboration between Teams (RFLP Method)

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System Modeling Product Strategy

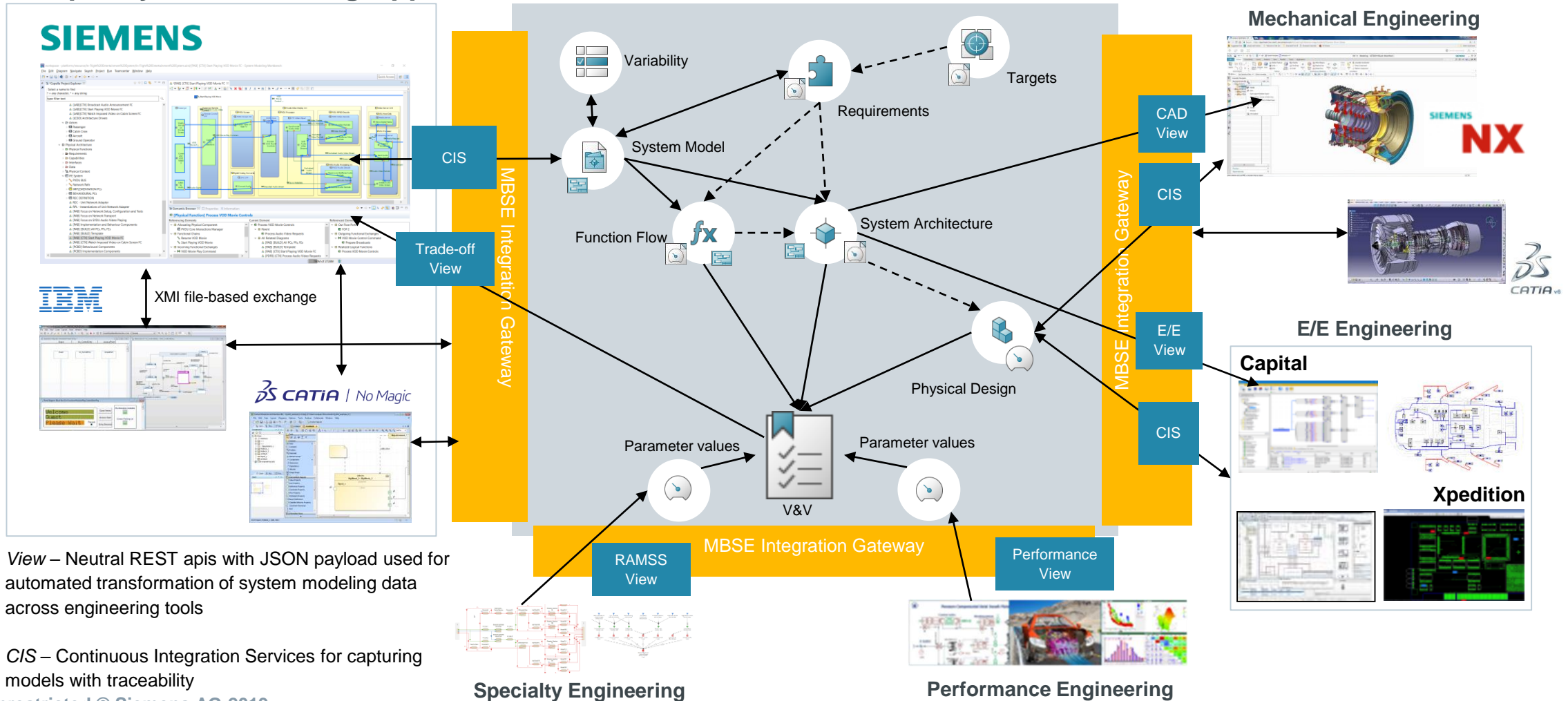


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Common Information Model and PLM Services

————> Flow - - - -> Traceability via Allocation or Realization

Multiple System Modeling Apps



View – Neutral REST apis with JSON payload used for automated transformation of system modeling data across engineering tools

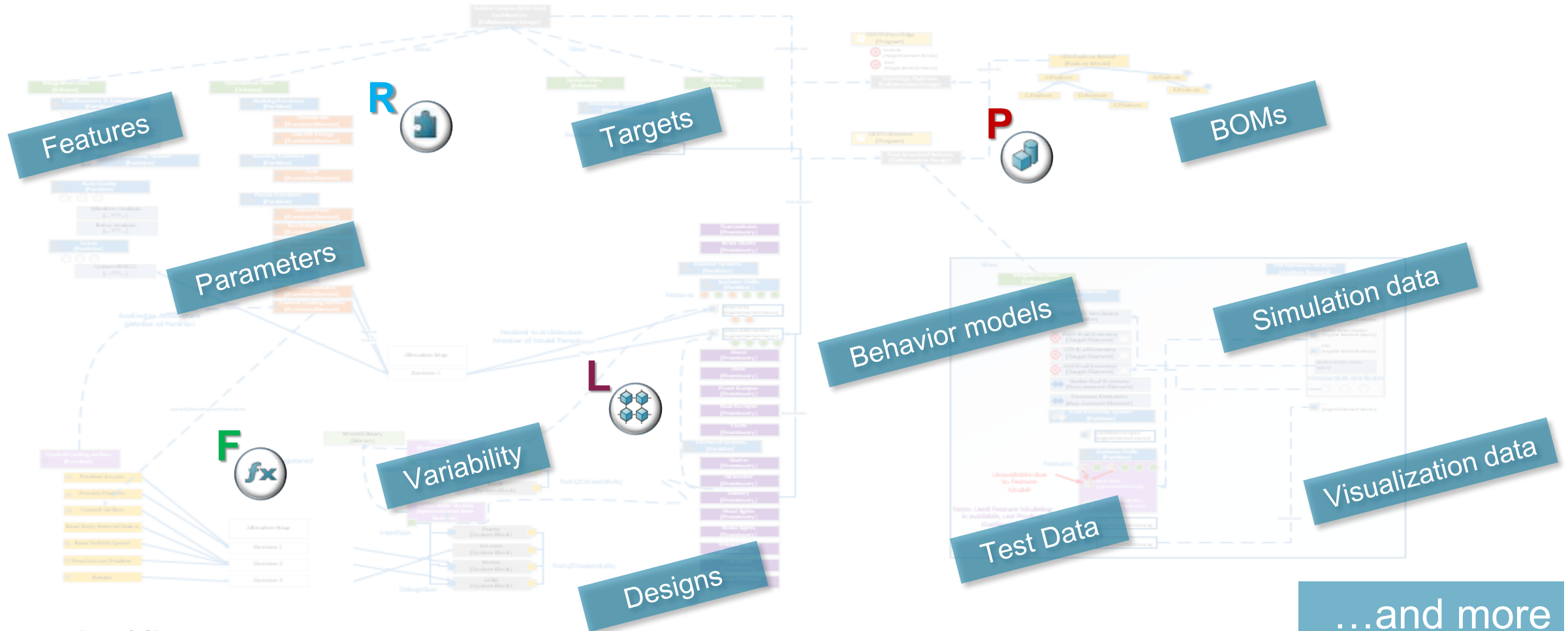
CIS – Continuous Integration Services for capturing models with traceability

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Integrated Model Based Systems Engineering

OOTB multi-domain information meta-model

Complex and very large scale....Leverage years of Teamcenter industry presence



Integrating/connecting requirements with the lifecycle enables complete, closed-loop, cross-domain traceability

Requirements included in with the product lifecycle enables cross-domain traceability subject to change, workflow, variation, configuration,...

Closing the loop back to customer needs

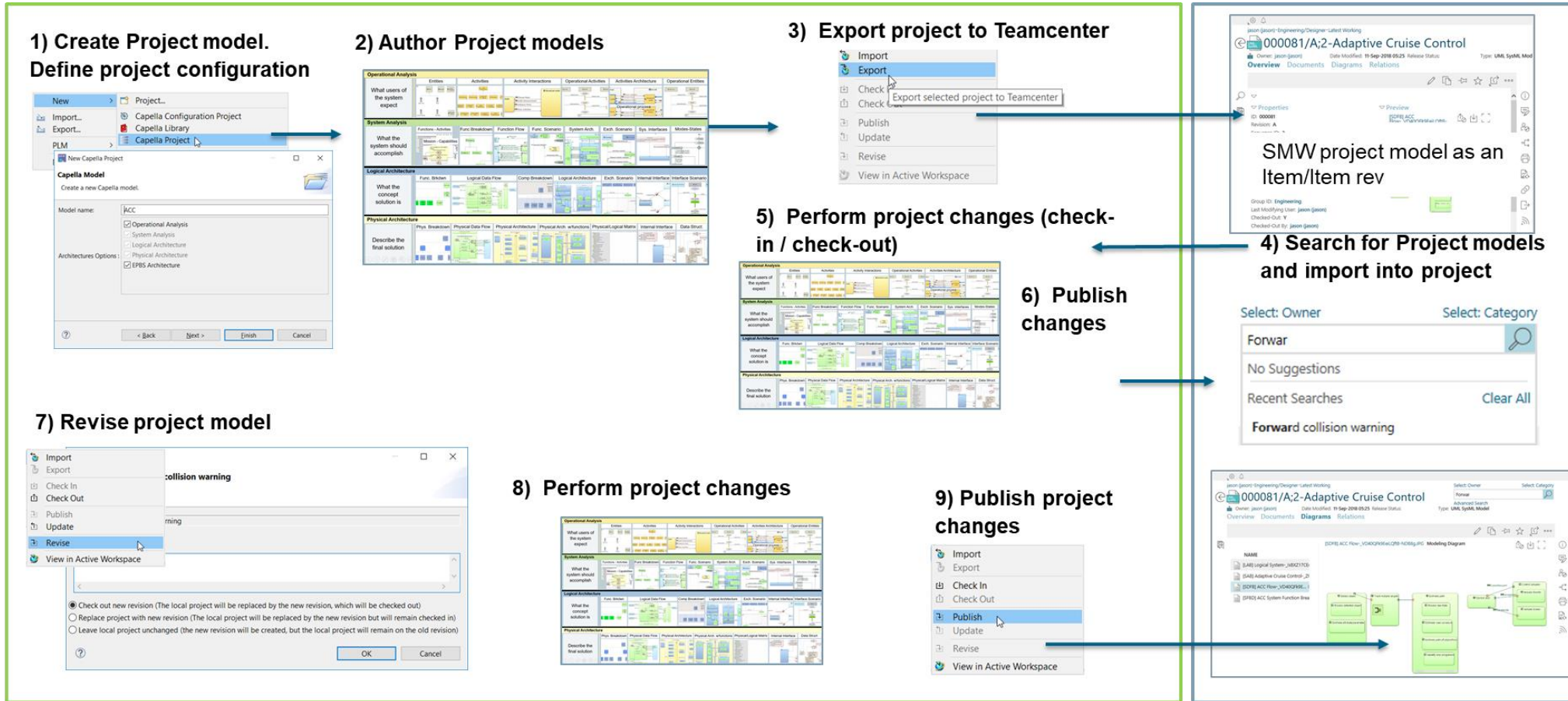


What Exists Today

Teamcenter Model Management Gateway Integration

Manage system modeling lifecycle

System Modeling Workbench



What Exists Today

Teamcenter Requirements Integration

Elicit, refine and organize requirements for product development

The screenshot displays the Siemens Teamcenter software interface for requirements integration. It is divided into several main sections:

- Project Explorer (Left):** Shows a hierarchical tree of project elements. The requirement "REQ-004078 - ACC brake engagement" is highlighted with a red circle.
- System Function Diagram (Center):** A block diagram of the Adaptive Cruise Control system. It includes components like "Service ACC", "Control ACC", and "Control Actuator". Requirements are linked to these components, with "REQ-004078" specifically linked to the "Decelerate" function.
- Requirements Table (Right):** A table listing various requirements. The entry for "ACC brake engagement" (REQ-004078) is highlighted with a red circle. A text box next to it states: "REQ-004078 - ACC brake engagement. ACC systems shall be capable of engaging the vehicle's service brakes".
- Requirement Detail View (Bottom):** A detailed view of the selected requirement. It shows "Referencing Elements" (including "All Related Tables" and "New Requirements - System Functions") and "Referenced Elements" (including "Requirements" and "Decelerate").

Integrated Model-Based Systems Engineering System Modeling Workbench for Teamcenter Demonstration

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The screenshot displays the Siemens Teamcenter System Modeling Workbench (SMW) interface. The main workspace shows a hierarchical system model for a solar charger. The model is organized into several levels: a top-level 'Solar USB Charger' component, followed by 'Operational Capabilities' and 'Solar USB Charger' sub-components. These sub-components are further decomposed into functional blocks such as 'Charge Controller', 'Power Management', and 'USB Interface'. The diagram uses color-coded boxes and lines to represent the relationships and data flow between these components. On the left, the 'Capella Project Explorer' shows a tree view of the project files, including various .spg (System Project Graph) files and image files like 'battery.png'. On the right, the 'Properties' panel is open for a selected component, '000086/A;1-ESP8266 Serial WIFI Wire...'. This panel displays metadata such as the component ID, name, description, and owner information.





Additional Questions?

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