

Beyond MBSE – Integrating Strategic, Model-Based and Collaborative Engineering

29.04.2026

REConf 2026

Zuken GmbH

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Dr.-Ing. David Allaverdi
Lead Strategy & Innovation

I. Experience & Perspectives

Engineering R&D (7yrs) ⇨ Management Consulting (8yrs) ⇨ Software & Services (1,5yrs)

II. Areas of Expertise

- Product Portfolio Management
- Product Configuration
- Complexity & Variety Management
- Modularization & Product Platforms
- Product Cost Optimization
- Uncertainty Management & Flexible Design

III. Industries & Project Focus



Large-scale Systems,
Oil & Gas, H2 Plants



Transportation
& Mobility



Aerospace



Solar & Renewable
Applications



Refrigeration
Systems

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- | | |
|------|---|
| I. | Motivation for Threefold Approach |
| II. | Enabling Connected Engineering with MBSE |
| III. | Making MBSE Accessible for Every Stakeholder |
| IV. | Accounting for Lifecycle Uncertainties with Strategic Engineering |
| V. | Summary & Conclusion |



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Engineering today requires a holistic approach to address complexity, uncertainty, and speed simultaneously

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Increasing Complexity

- **Converging technologies** and **evolving market demands**
- **Systems** become **highly interconnected** and difficult to manage



Navigating Uncertainty

- **Decisions** must be made **without full visibility**
- **Long lifecycles** and **high investments amplify risks**



Speed & Integration Challenges

- **Time-to-market** is **critical**
- **Sequential** approaches **no longer work**
- Early **cross-domain integration** becomes **essential**

Engineering today means making critical decisions
under complexity, uncertainty, and time pressure.
MBSE is only part of the answer.

MBSE Unleashes Its Power When Strategy, System Architecture, and Collaboration Work Together

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III

Strategic Engineering

- Define the **right system architecture** under **uncertainty**
- **Align product strategy** with **lifecycle value** and **business goals**
- **Design for flexibility** to enable **decisions across the lifecycle**

II

MBSE Collaboration

- Enable **company-wide access to system knowledge**
- Integrate **all stakeholders** into **engineering decisions**
- Break **silos** through **shared models** and **collaboration**

I

MBSE Backbone

- Ensure **consistency** across the **system model**
- Enable **traceability, validation, and simulation**
- Provide the **single source of truth**

Digital Thread - Connecting System Intent Across Models and Lifecycle

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II MBSE Collaboration

SIDEKICK

Management

*Horizontal
integration*

Sales

Sourcing

Product
Management

Engineering

Production

Service

...

III

Strategic Engineering

GENESYS™

System
Engineering

I

MBSE Backbone

Mechanical

M-CAD
DS SOLIDWORKS NX CATIA
creo®

Mechanical
Domain EDM

Electronics

E-CAD CR-8000™

Circuit/PCB
Domain EDM DS CR

Electrical

E-CAD
E series™

Wire Harness
Domain EDM DS E3

Software

Development
Environment Jira
Asana Service

Software
Domain EDM

Other

Development
Environment Ansys

Other
Domain EDM

Vertical integration

Enterprise PLM SAP
Corporate Infrastructure ERP SAP
windchill TEAMCENTER

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The Key to Connected Engineering: Connecting Data, Domains, and People Through Effective MBSE

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Different Role Perspectives Create a Gap in System Understanding and Limit Collaboration

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Example

Where can I find the **system definition**?

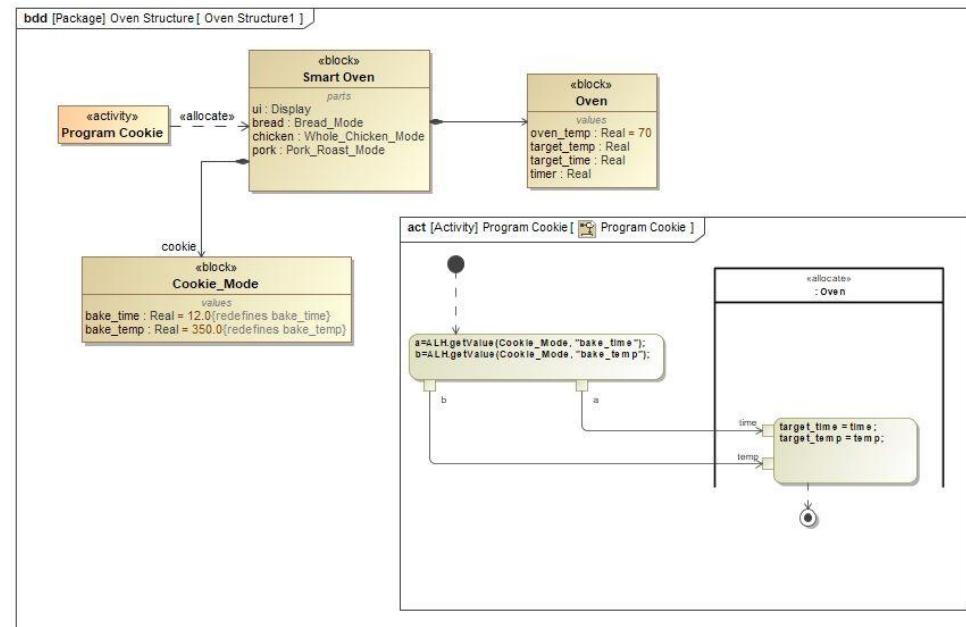
Hmmm....
I don't know. Maybe?

Let me look.

What do all the **lines** in the boxes mean?

Product Owner

What do the different line **dashes** and **arrow heads** mean?



Did I **capture** the system definition properly?



Systems Engineer



I. Role-Specific Views

- **Focused model slices** tailored to each role
- **Avoid overload** while keeping essential context visible



II. Traceable Communication

- **Comments and decisions anchored** directly to model elements
- **Auditability ensured** with author, timestamp, and status



III. Structured Task & Review Management

- **Clear task assignment** and visible responsibilities
- **Progress transparency** without email or Excel workarounds



IV. Low-Threshold Access

- **Web-based, intuitive use** without installation barriers
- **Inclusive participation** for non-modeling stakeholders



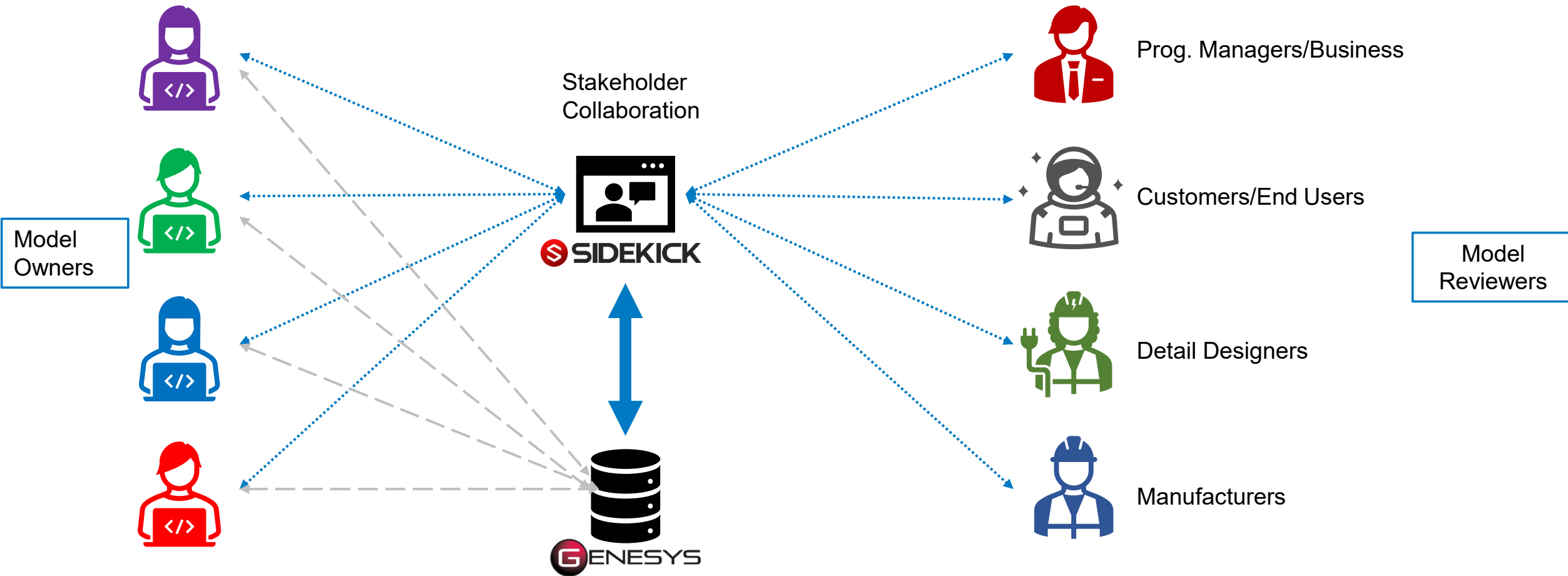
V. Context Preservation

- **Model slices always linked back** to the full model
- **Deeper dives possible** without losing context

SIDEKICK Translates MBSE Complexity Into Role-specific Clarity Giving Model Reviewers Exactly the Info They Need

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Engineering must shift from certainty-driven design to value-driven decisions under uncertainty

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Shift **mindset** by “getting the forecast right” to **acknowledging uncertainty & risks early**



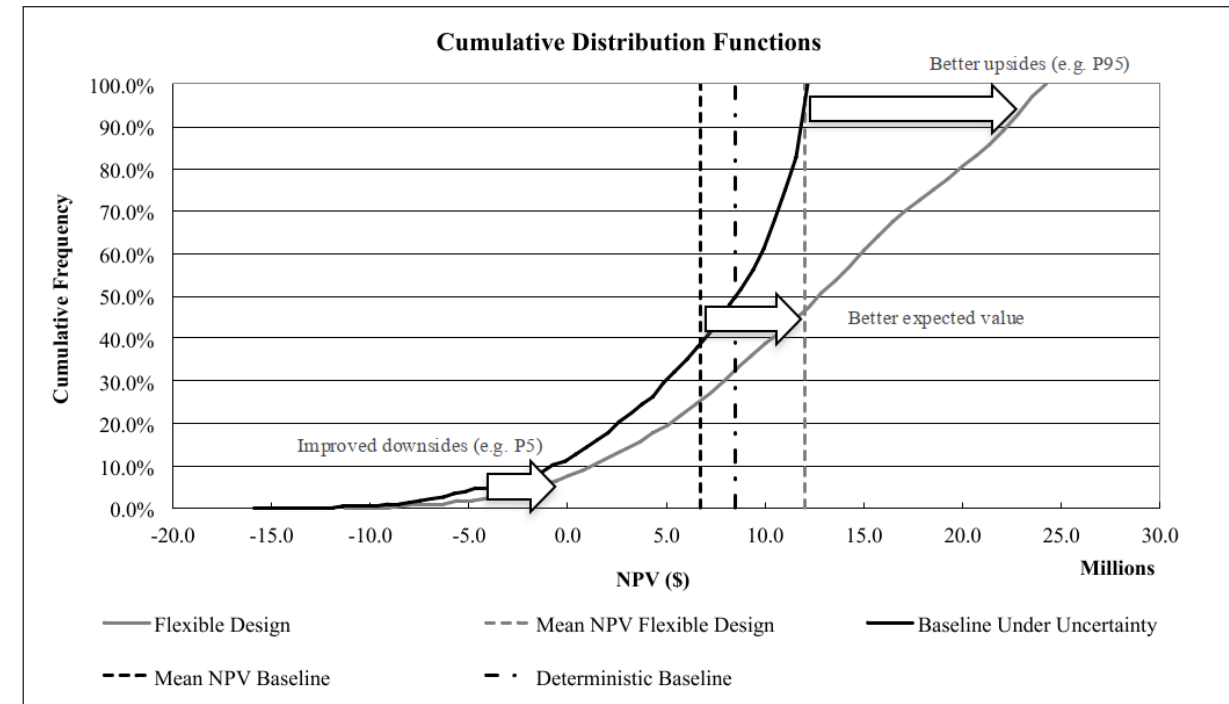
Move **beyond single-point optimization** to multiple viable solutions



Design systems that **shift outcomes toward higher value under uncertainty**



Enable **long-term societal value — sustainable & resilient systems**

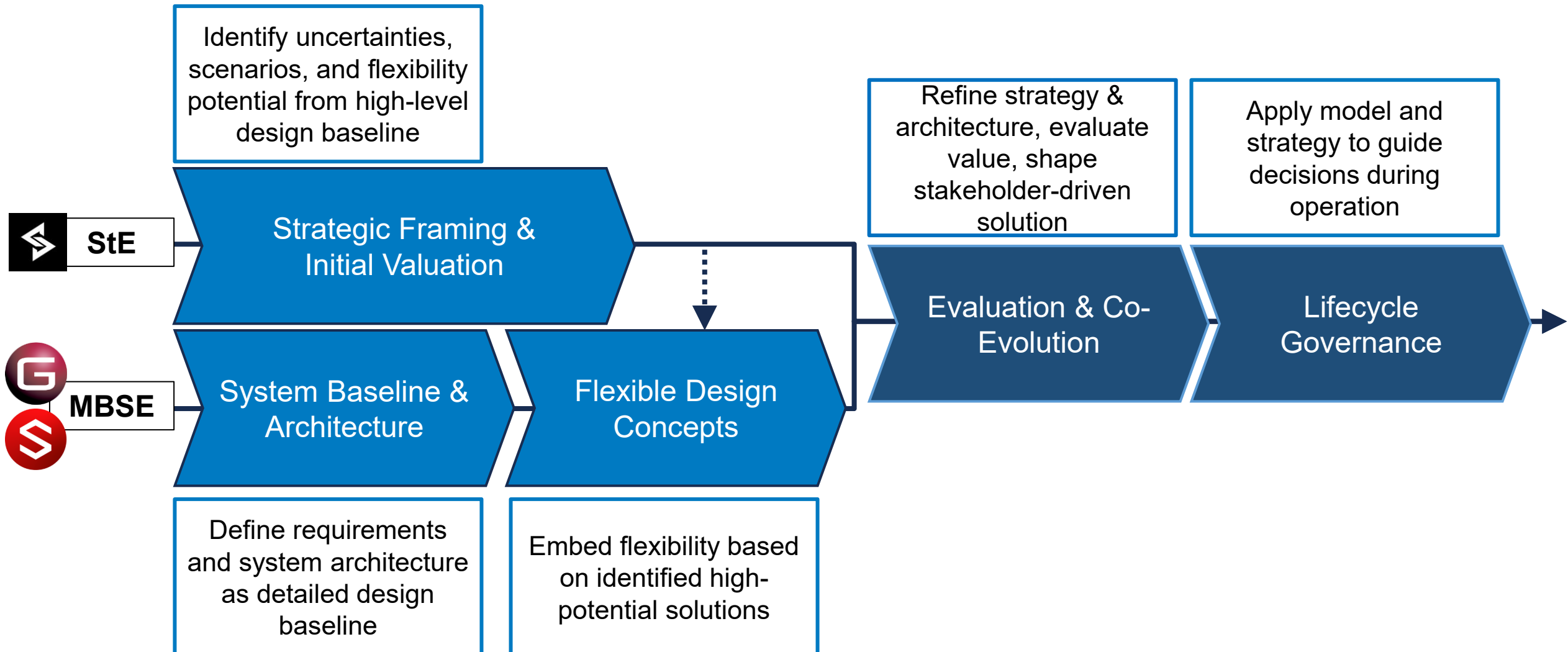


<https://strategic-engineering.co/>

From Static Design to Value-Driven Evolution: Integrating Strategic Engineering & MBSE

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III

Strategic Engineering

Extends the scope **to the full lifecycle**—from business decisions to long-term system evolution.



II

MBSE Collaboration

Opens MBSE to all stakeholders—enabling collaboration **across the entire value chain**.



I

MBSE Backbone

Defines requirements and system architecture—providing a **validated system model** as the **central reference**.



Connecting **stakeholders** and **lifecycle** on a **shared system model**—turning MBSE into the **backbone** for **value-driven engineering**.

Thank you for your attention
& let's discuss!

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The Partner For Success



Dr.-Ing. David Allaverdi
Lead Strategy and Innovation

