



# What does it Take to Create the Digital Thread

**in Complex Systems Development?**

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# Introduction – Saab Aeronautics

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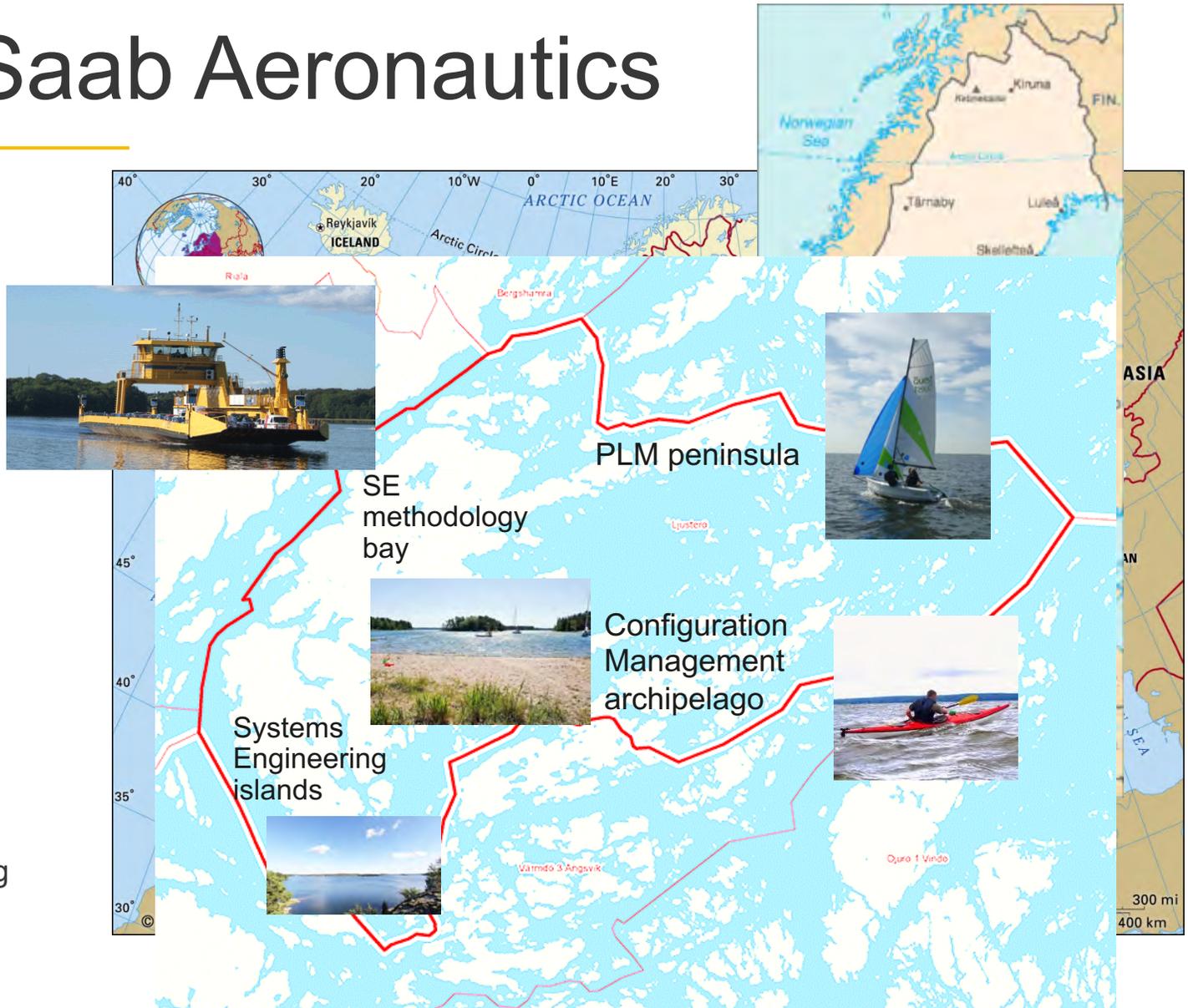


# Erik Herzog @ Saab Aeronautics

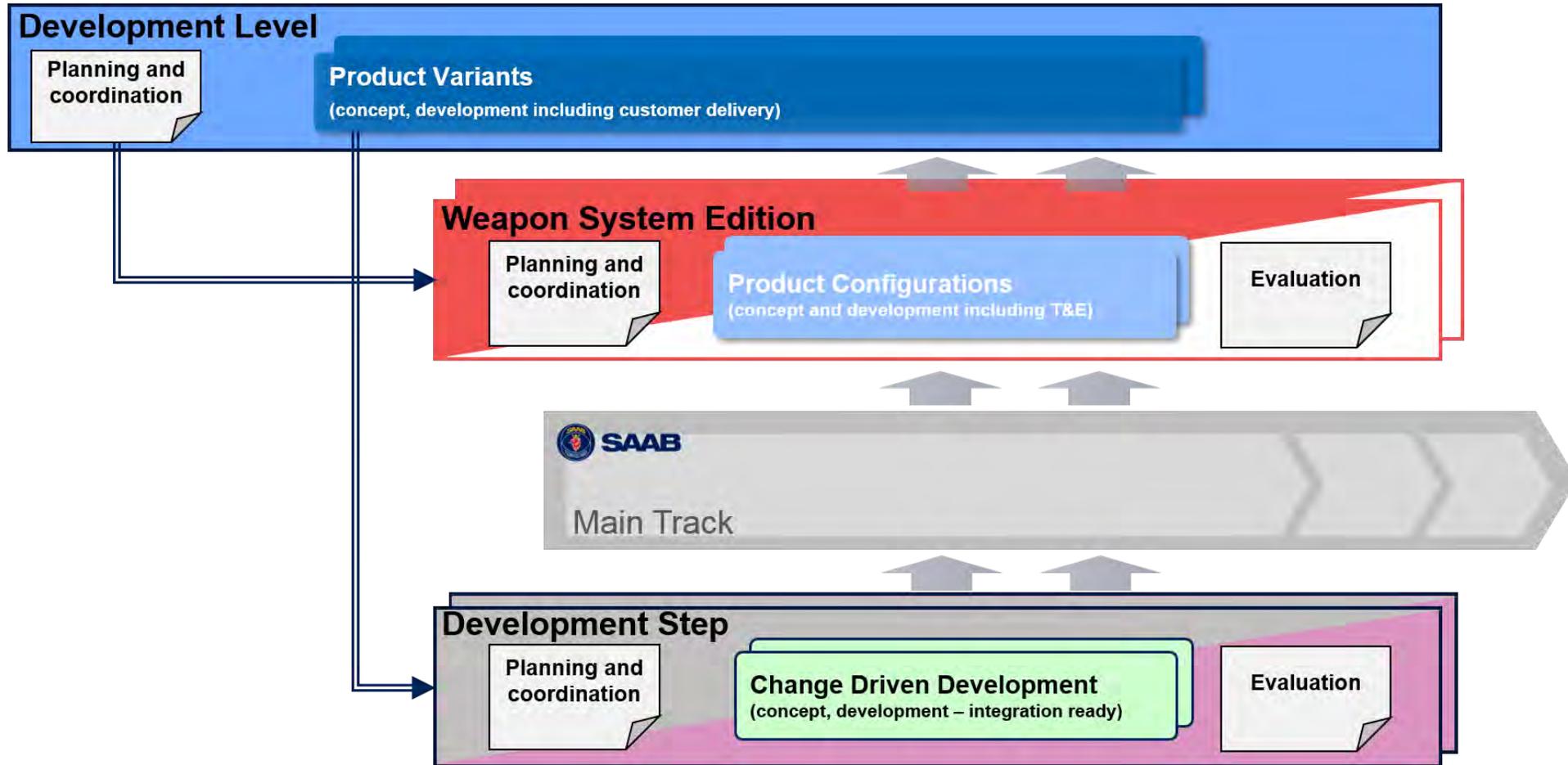


- Systems Engineering
  - Applied in product development
  - Methodology development & mentoring
- Change leadership

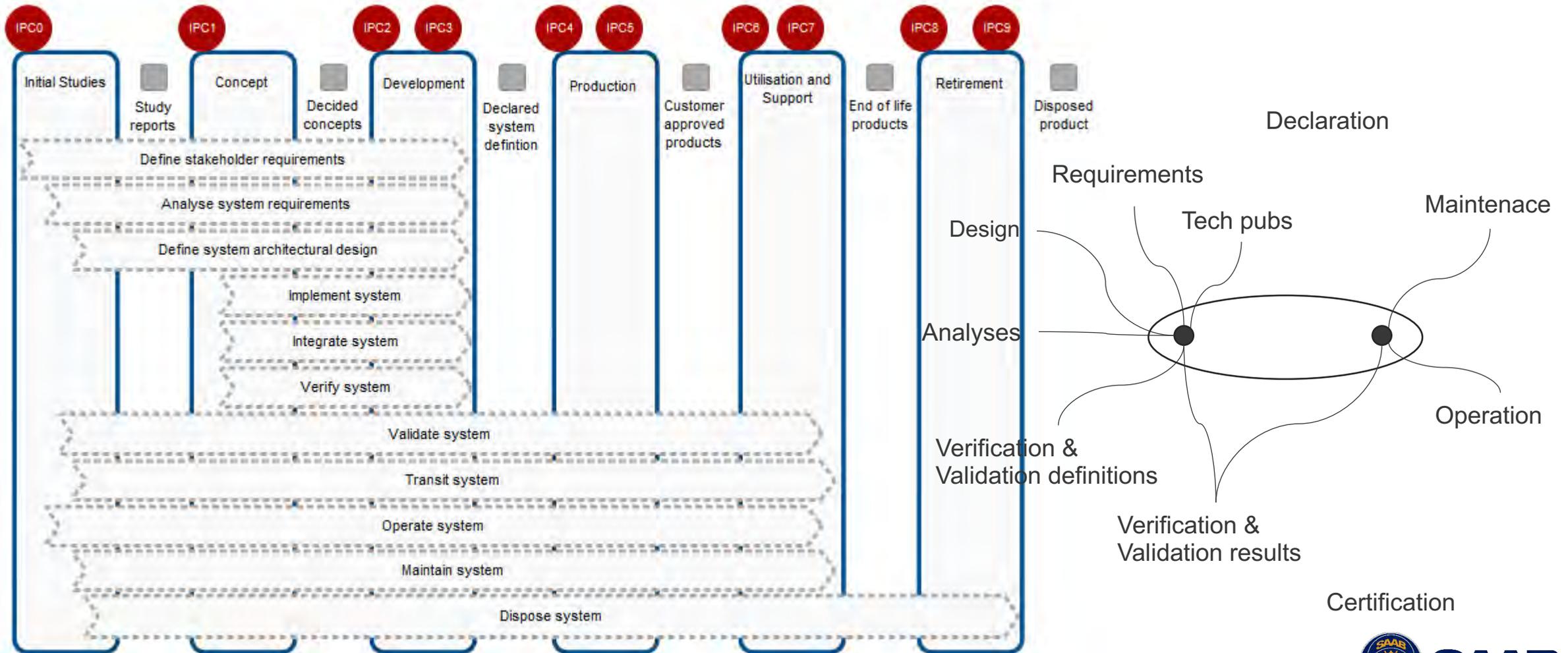
President INCOSE Sweden chapter



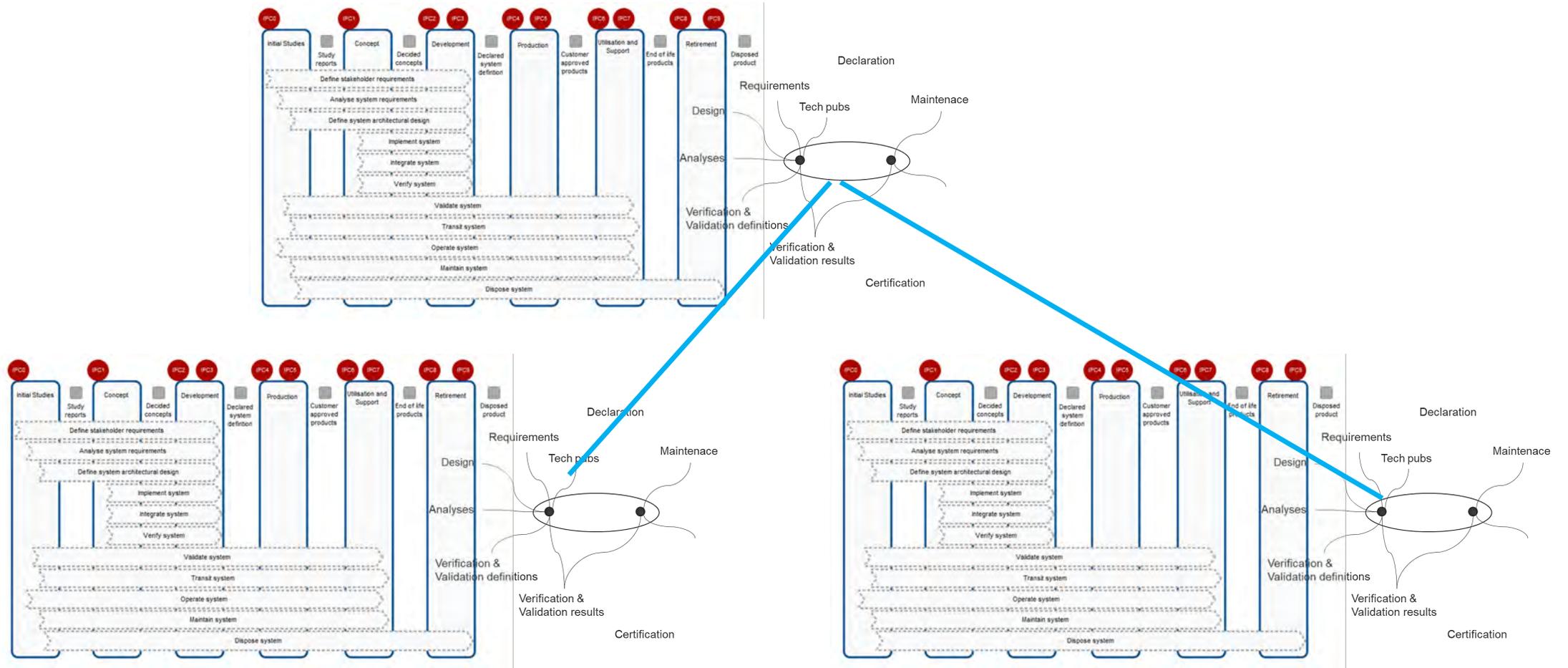
# Systems Development @ Saab Aeronautics



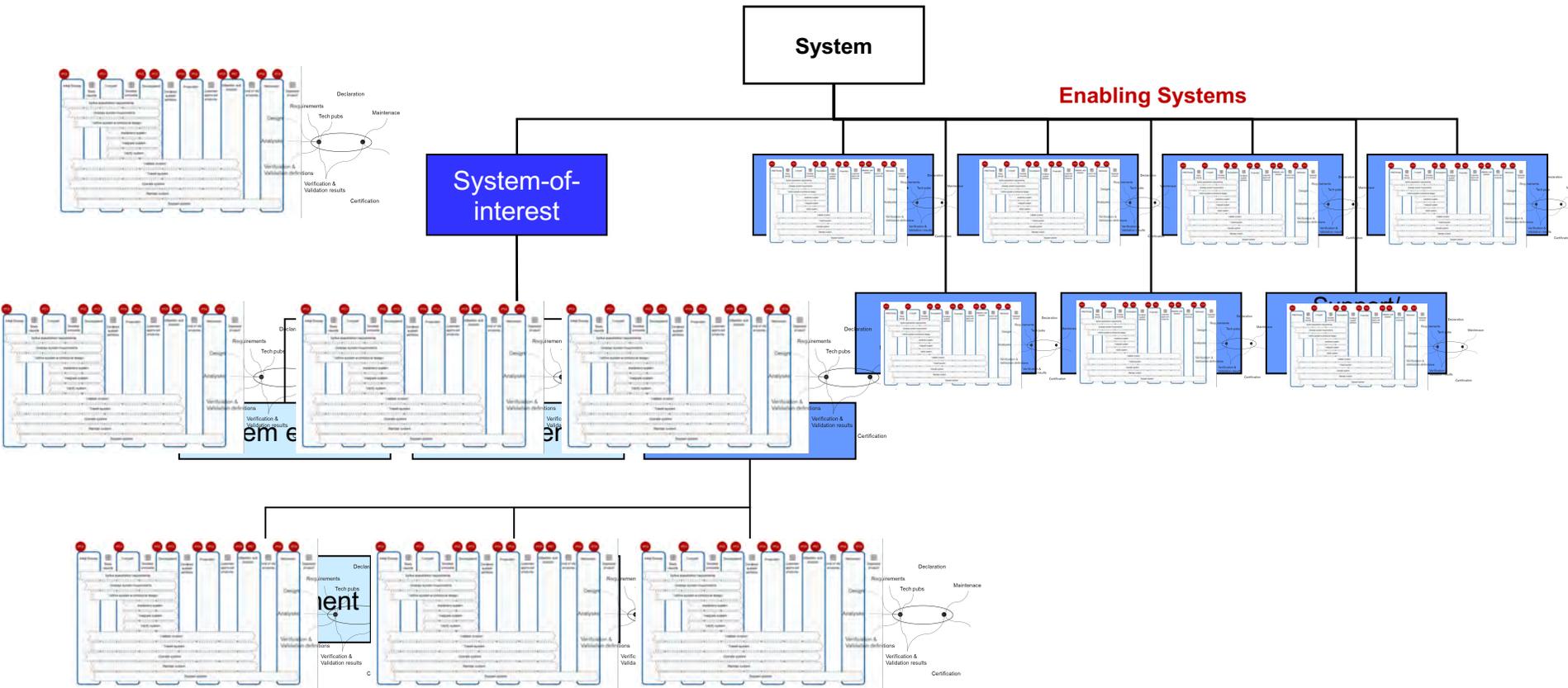
# Thread – as defined by process



# System subsystem thread



# System – enabling system thread



# System – test system thread

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How well does the models in a test rig represent the real aircraft?

- Need to capture Model Credibility for test worthiness declaration
- Model Credibility is dynamic and our understanding in a model's credibility will change over time



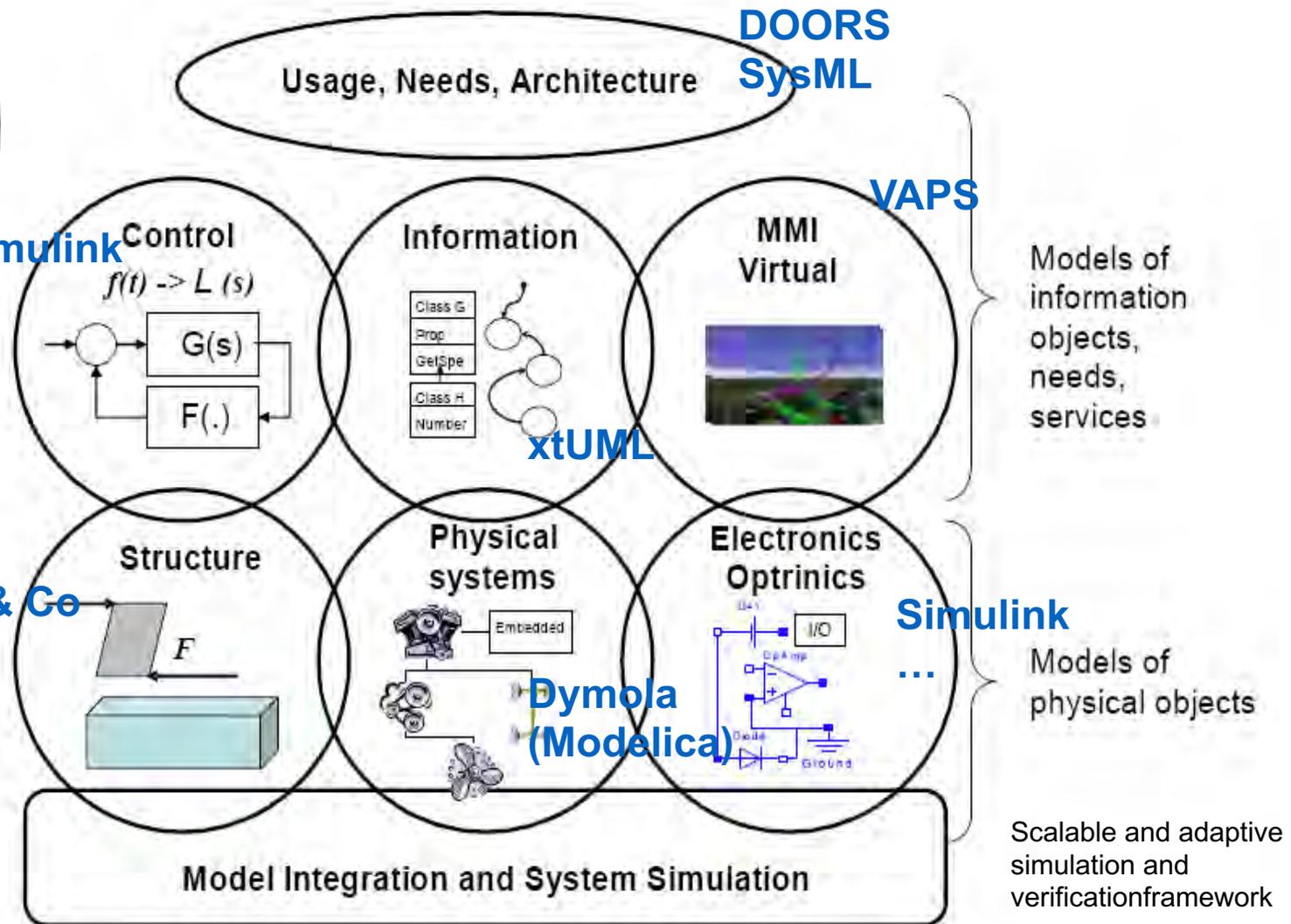
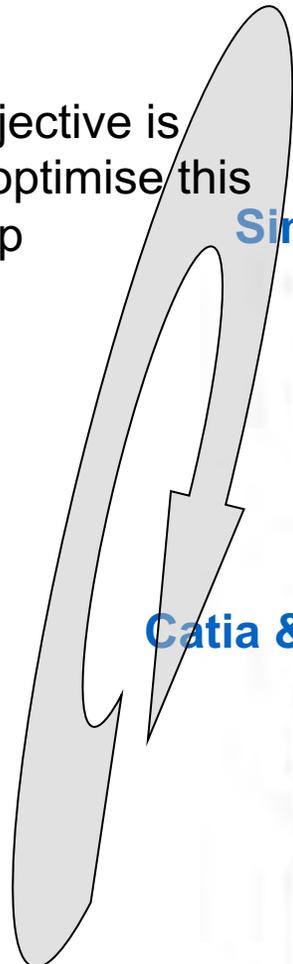
# When threads break

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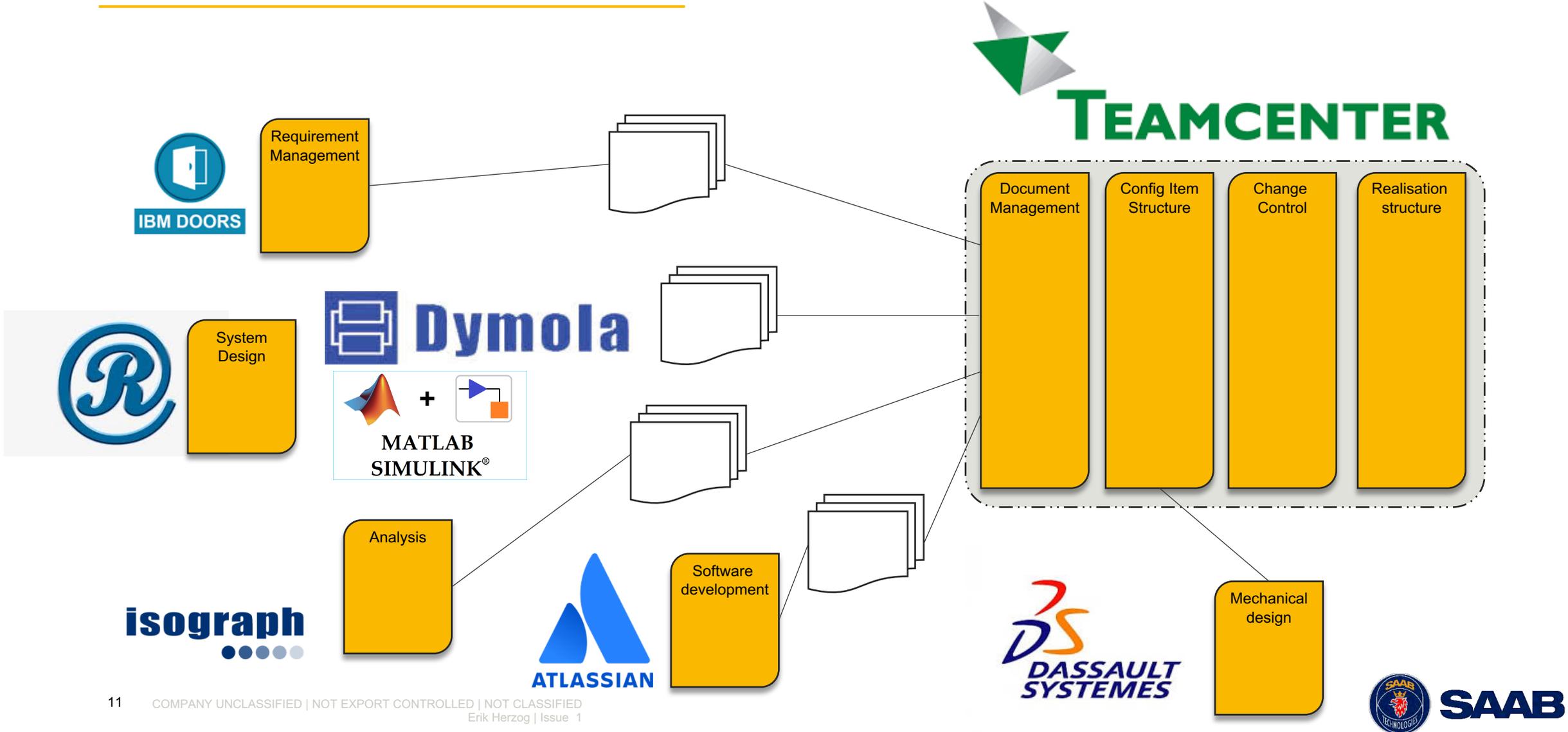


# Using models in systems design

Objective is to optimise this loop



# Actual development tool landscape



# Digital thread, what does it take?

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- A competent organisation – coordinated by process
  - Attention to detail
  - Communication across discipline boundaries
- Active Product – Enabling system coordination
- In fact, the current support for maintaining a digital thread is mediocre – at best
  - Lots of switching between poorly integrated tools
- Depend on the work by dedicated people
  - **Professionalism, Persistence and Patience**



# Strengthening the thread

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# Digital thread – fineness transition

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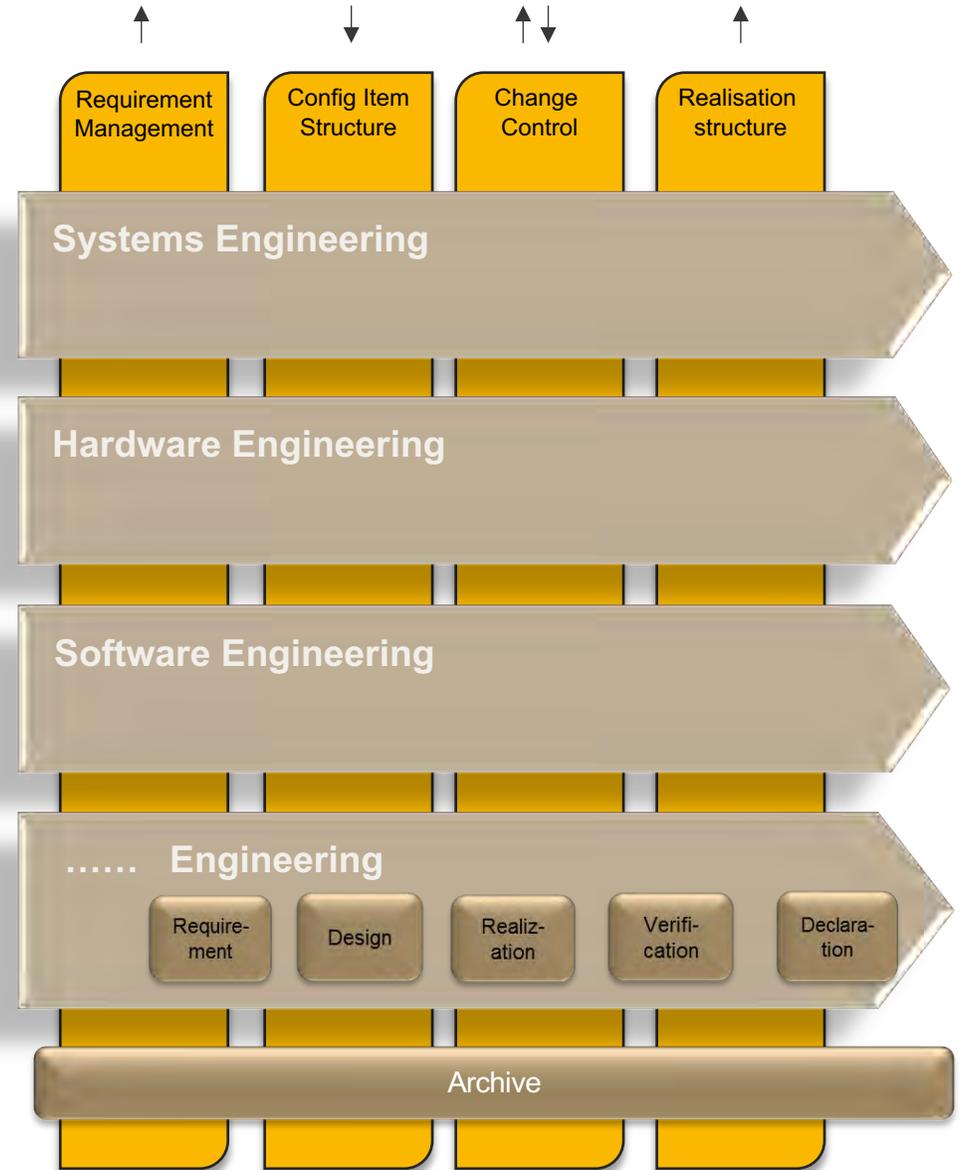


# Genesis PLM Model

- Engineering Disciplines
- Engineering Deliverables

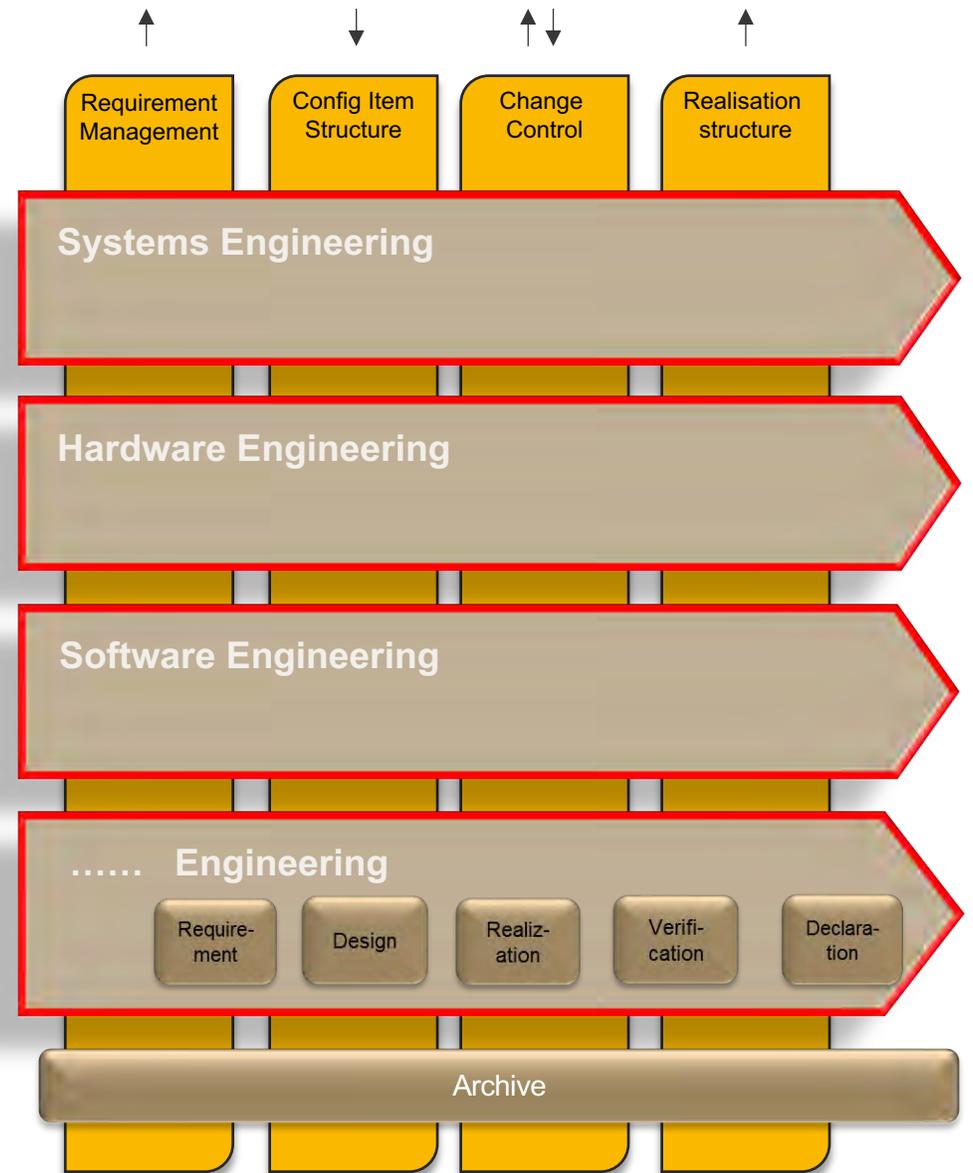


- Design Traceability Dimensions
  - We believe there are four of them only
- Archiving



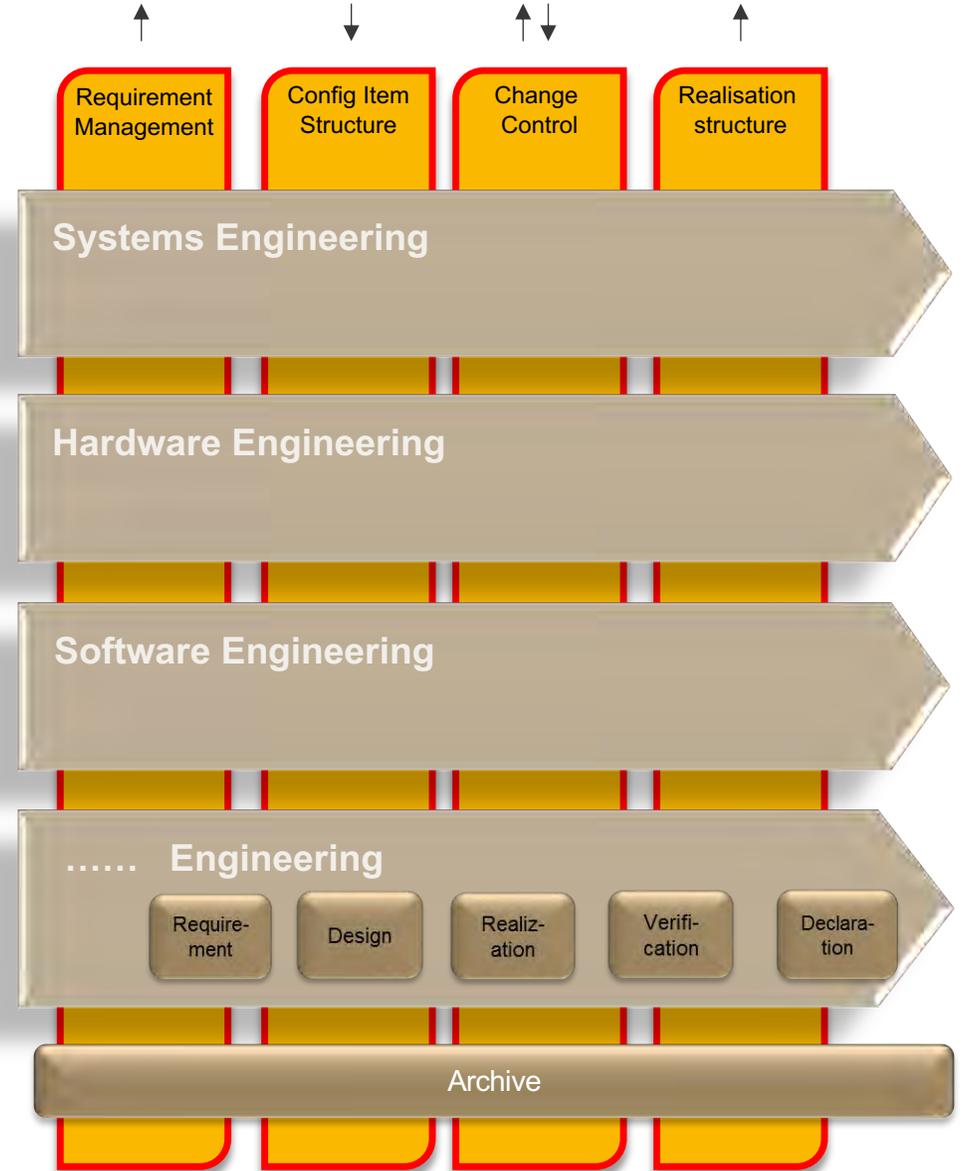
# Modularity

- Optimise support for each engineering discipline
  - Maximise automation, as provided by the supplier
  - Minimise application family switching
- Bring together management and engineers in a single environment
  - E.g., Change management and Status reporting
- Ability to upgrade individual capabilities independent of others
- Ability to replace environment without upsetting the complete PLM landscape



# Traceability

- Need capability to ensure traceability and integrity of product data
- Traceability dimensions between engineering discipline environments
  - Requirements
  - Configuration item structure
  - Change management
  - Realization
- Configuration Management capability required for Requirements Traceability, Configuration item structure and Realization structure
  - Versions and baseline capability
- The OSLC standard offers the desired capabilities
  - But is still not widely implemented



# Summary

- Presentation of a high level Enterprise PLM landscape model
- OSLC appears to be a key enabler for realisation
- Status
  - The intended architecture for future programs
  - Still initial phases
  - Will have a substantial impact on our organisation
- We are very much open to discuss and share ideas with other industry players on how to realise the future PLM landscape
  - To strengthen the digital thread!

