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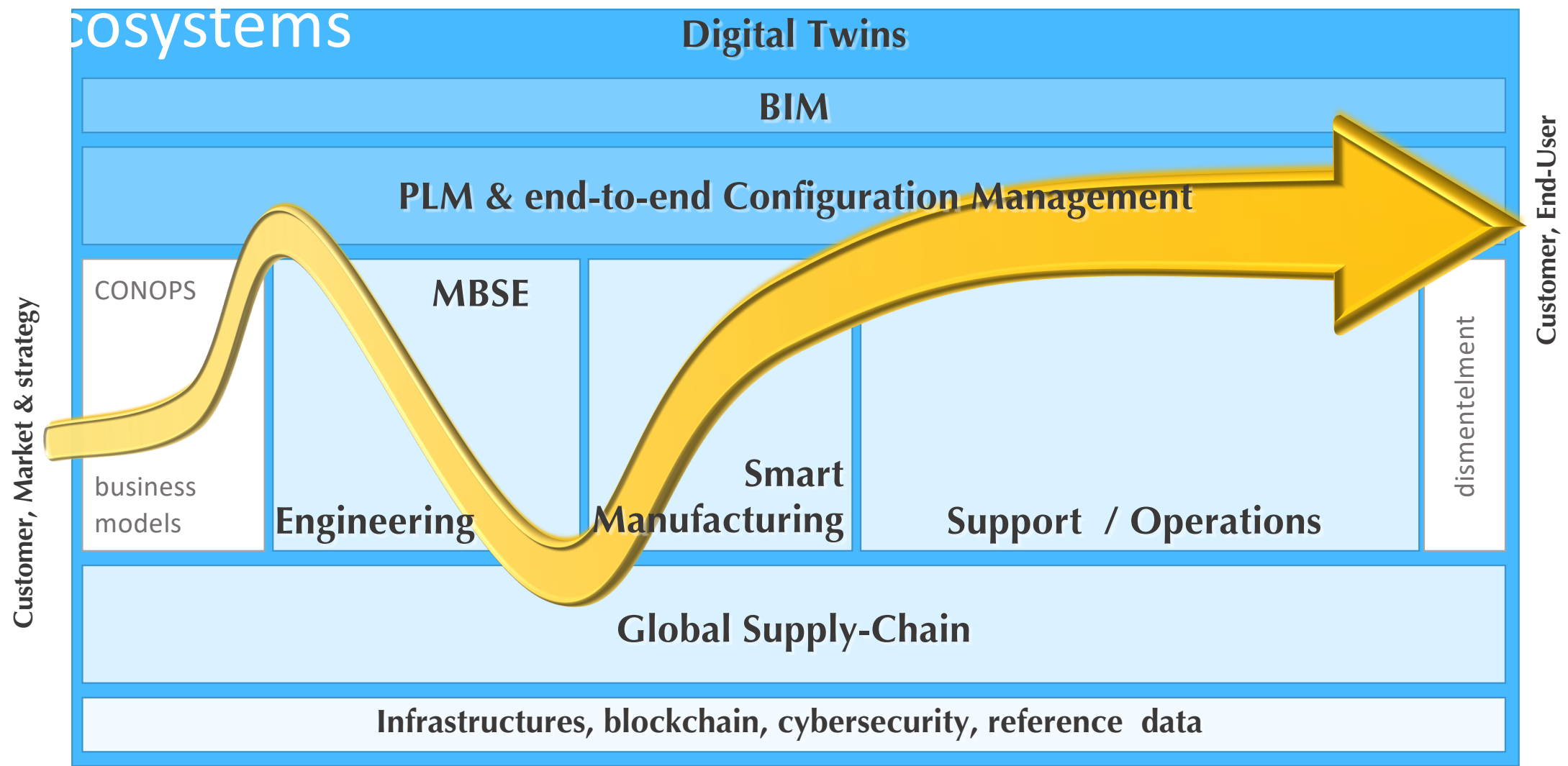
AFNeT Standards Days

Model-Based Systems and Software Engineering (ISO/IEC 24641)

by

Eric GAUTHIER (Thales)

<http://standardsdays.afnet.fr> - AFNeT Standards Days 2020 : 6 & 7 October 2020



Why this Initiative?

SE Community – Where are we?

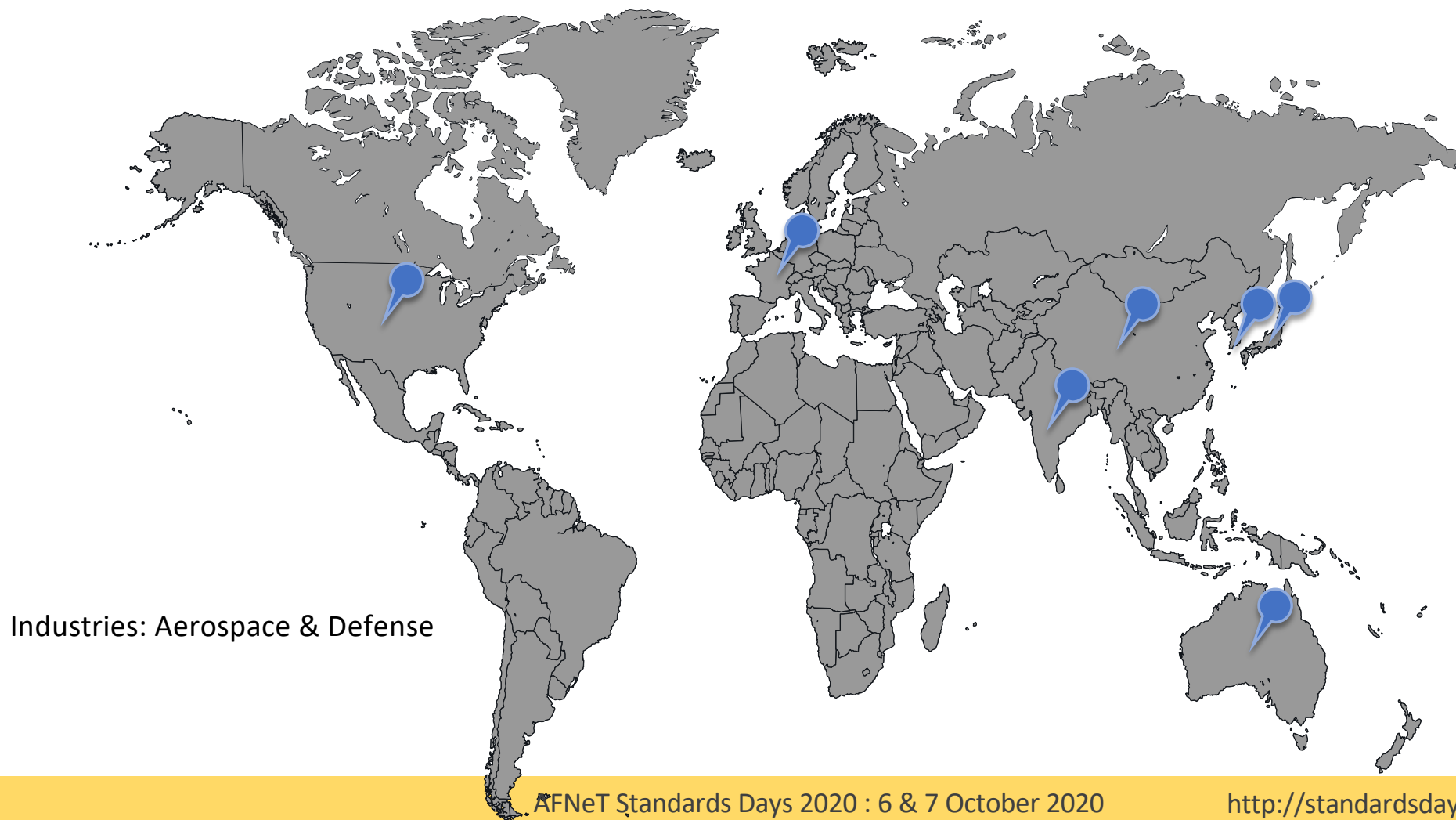
- Each successive survey since 2007 has shown an increase in MBSE maturity
- Model-based engineering is a strategic topic in many organizations and an important research topic in academia
- However, currently there is no real common, shared reference for the practice of MBSE

Global context - MBSE standards

- Existing standards cover languages, formalisms, exchange formats, processes, methods, etc.
- But a reference to a systemic approach to implement model-based engineering in an organization is missing

What is this Initiative?

Initiators



Industries: Aerospace & Defense

Purpose of the initiative

Provide a reference framework:

- for implementing MBSSE practices and approaches***
- by leveraging national standardization initiatives and lessons learned from various organizations***

Main Objective

Improving the “Engineering capability” of an organization thanks to MBSSE

Providing useful models



Building them to continually improve knowledge on the system of interest

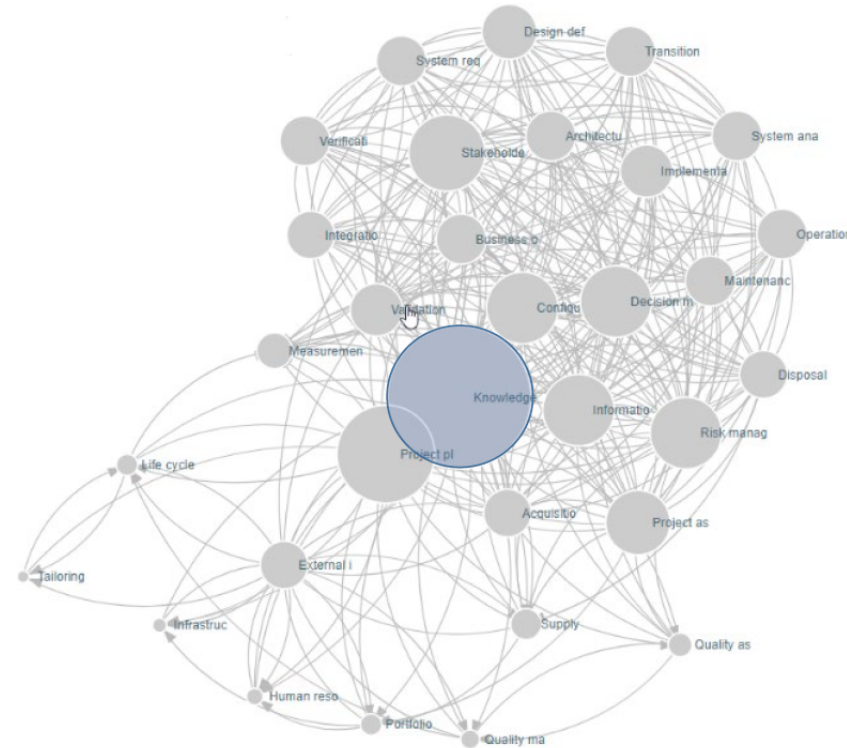
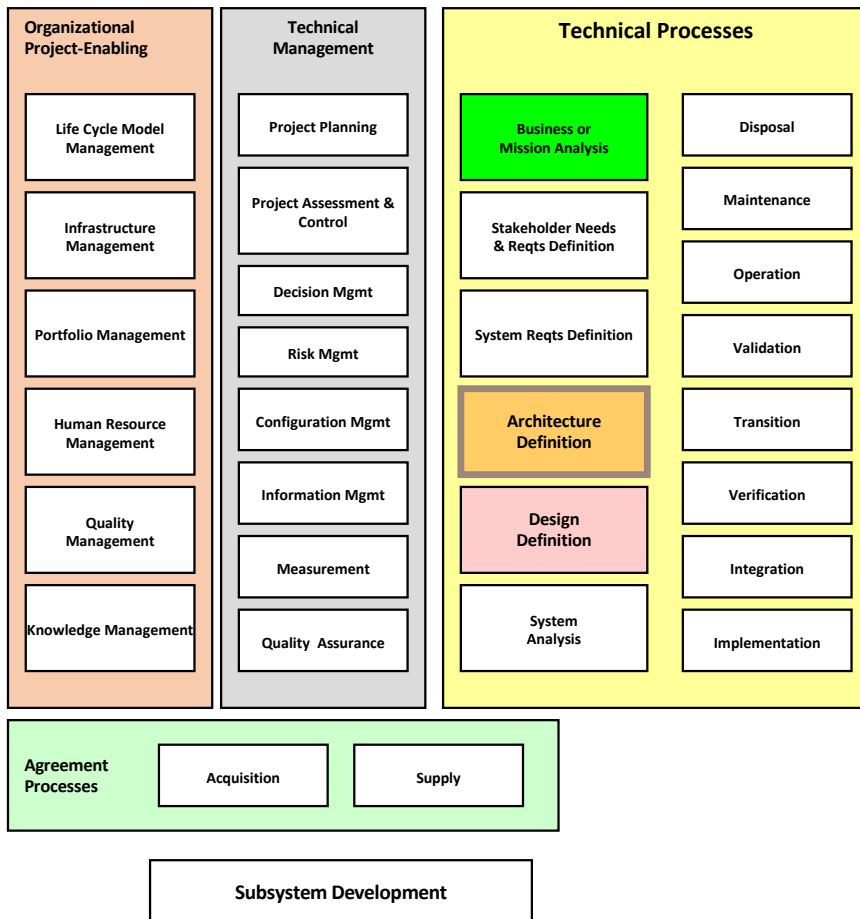
Building them effectively with the required level of representativeness



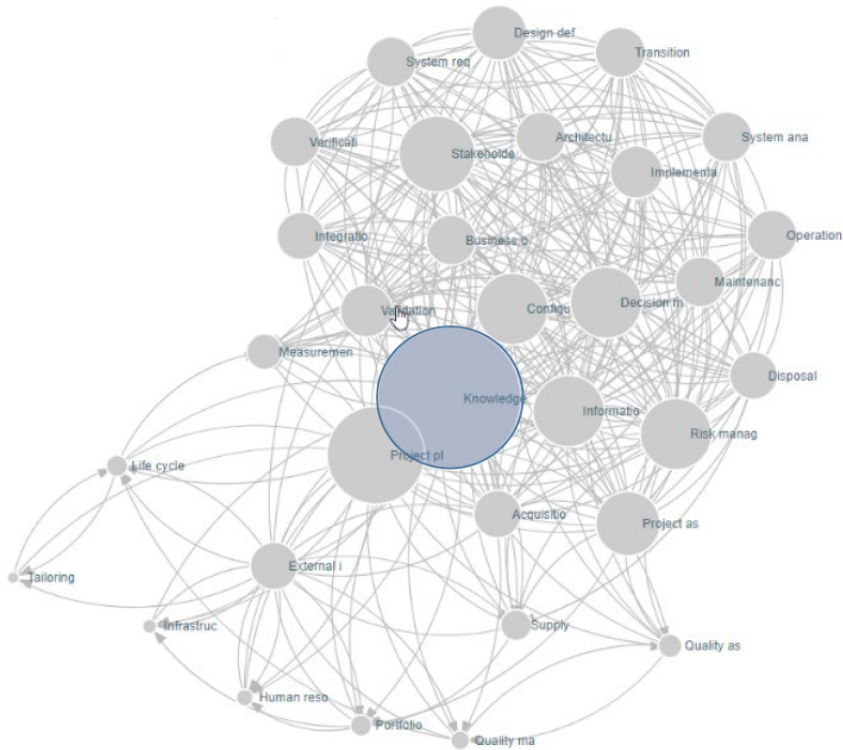
Building them collaboratively, targeting understandability among all stakeholders

Value proposition

ISO/IEC/IEEE 15288 15288-12207 Life cycle processes

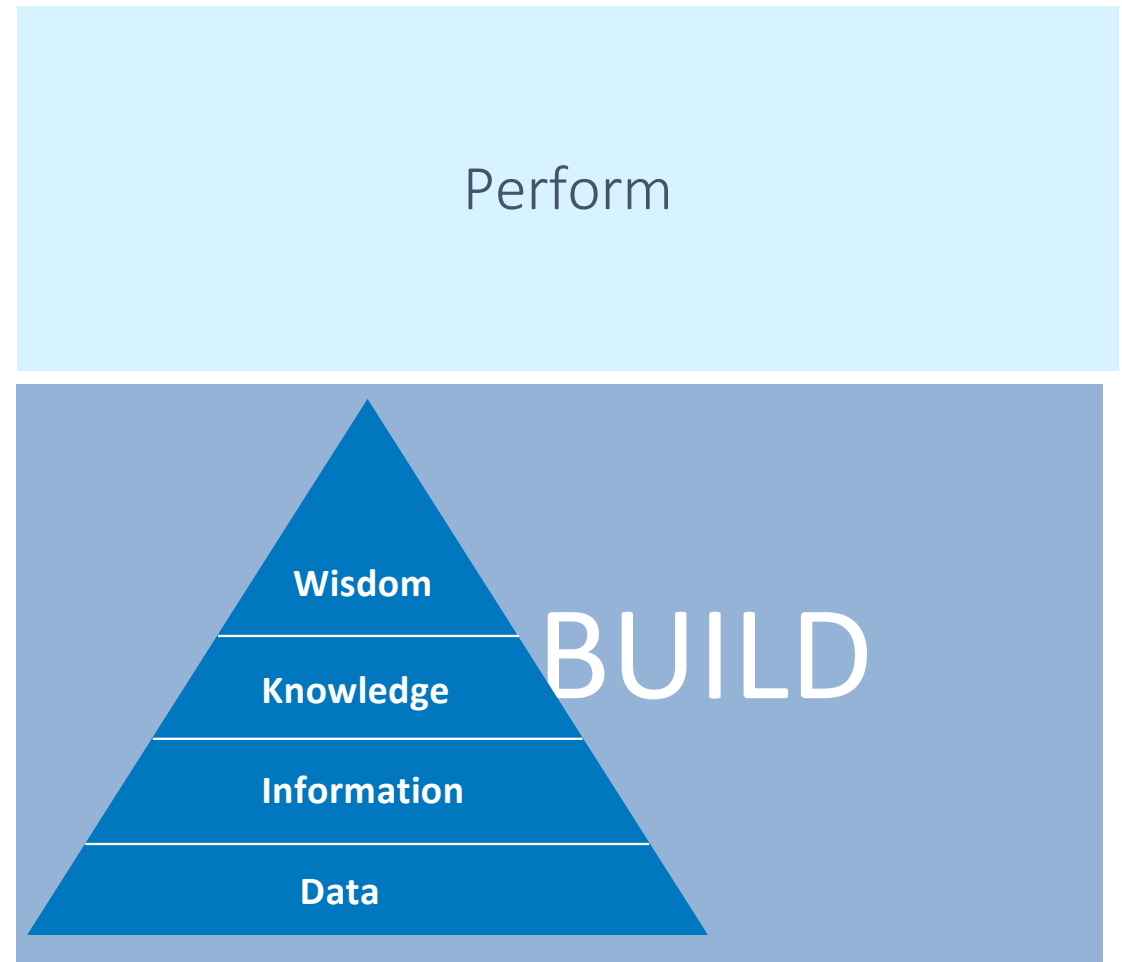
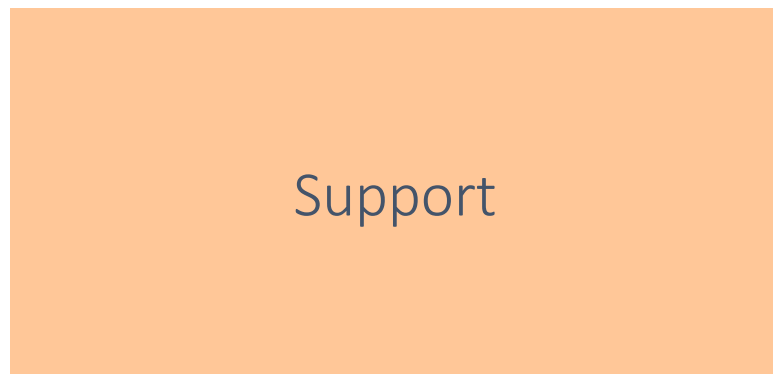
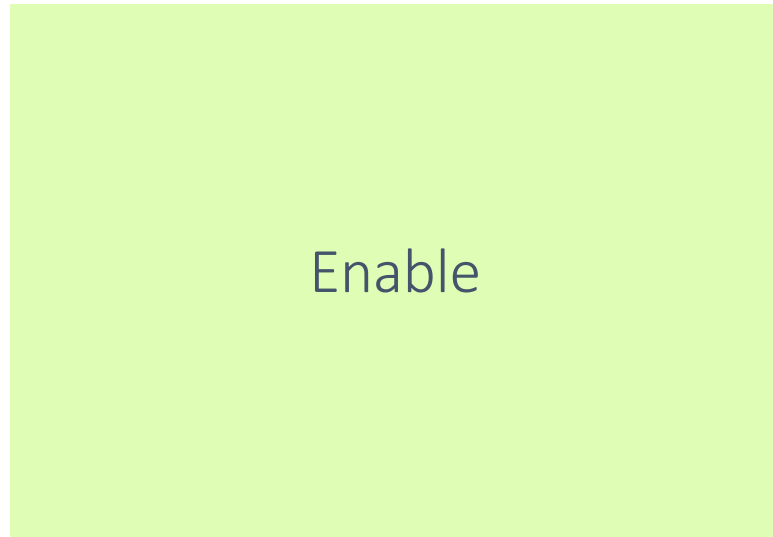


Core modelling activities and DIKW

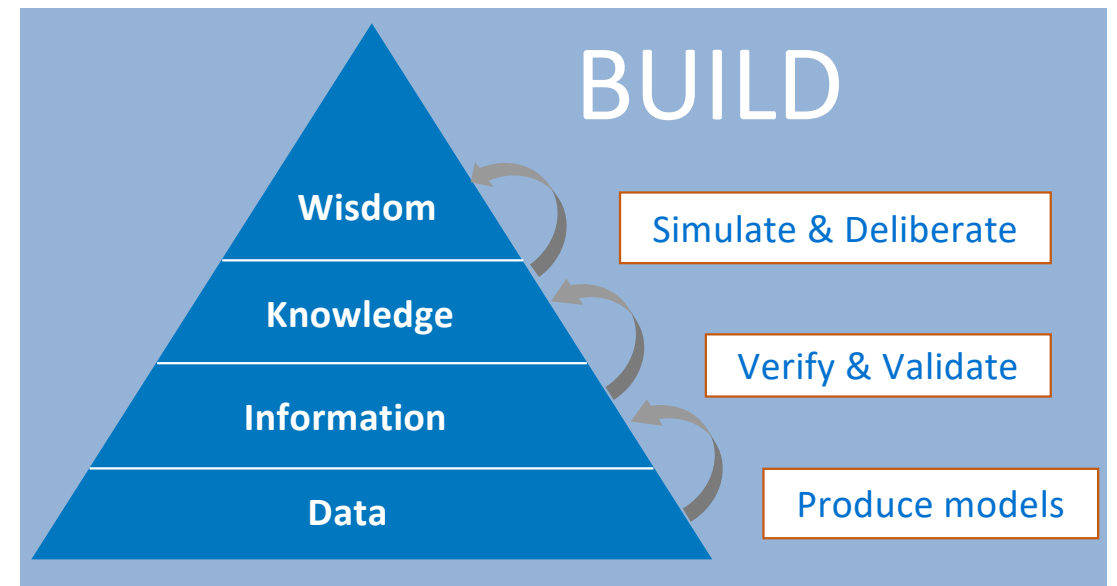
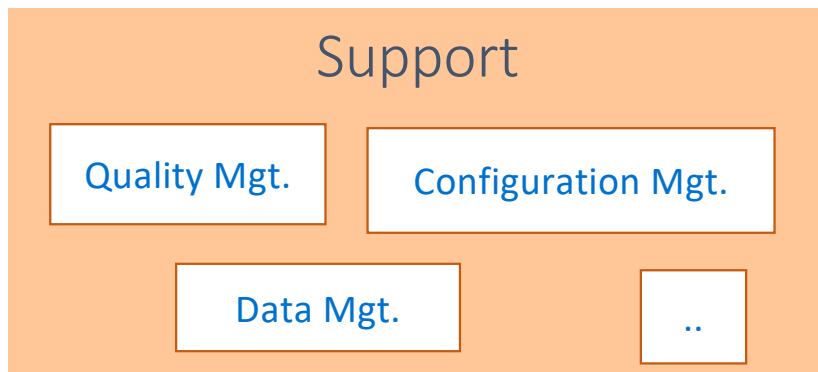
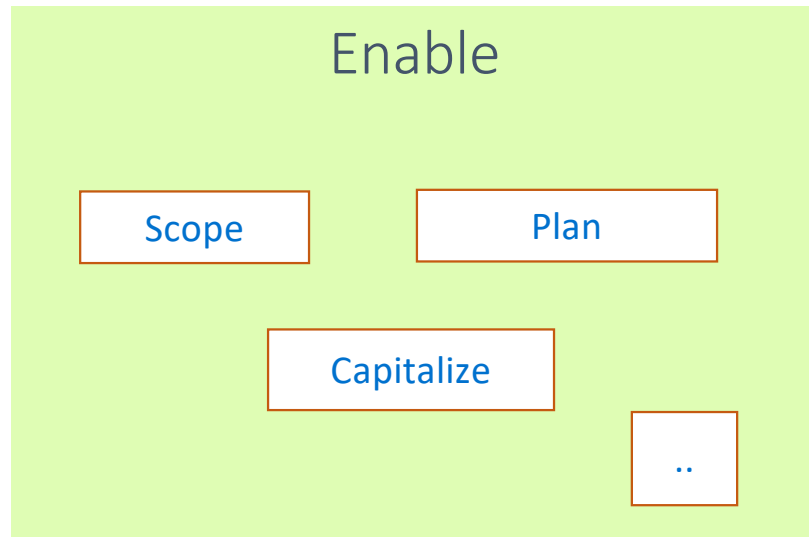


- Core modelling activities through the lenses of the Data-Information-Knowledge-Wisdom (DIKW) pyramid.
 - By producing models, we build some shareable information.
 - By verifying and validating them, we increase our knowledge (or the confidence in the knowledge we have or the accuracy of our knowledge).
 - Using these models analyzing and simulating them in order to deliberate is a way to gain in wisdom.

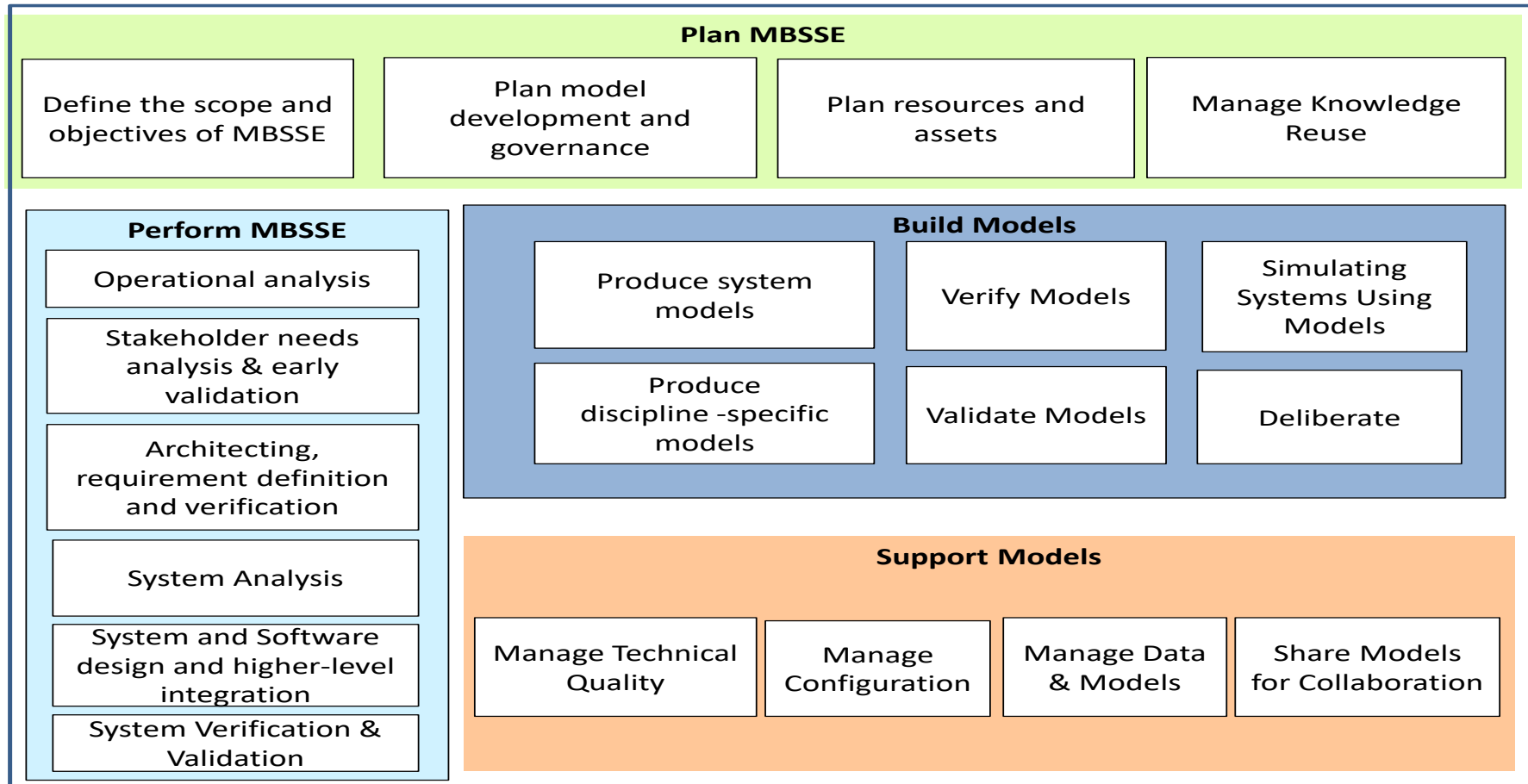
A reference framework



A reference framework



A reference Framework



Status and future work

A Work-in Process ISO Standard



- Ballot ended in June 2020 (ISO/IEC CD 24641)
 - 529 comments (230 from INCOSE)
- Confirmed interest from IEEE
- Objective: ISO/IEC/IEEE MBSSE International Standard supported by INCOSE

Potential usage

To assess the Maturity of MBSE

SYSTEMS ENGINEERING RESEARCH CENTER

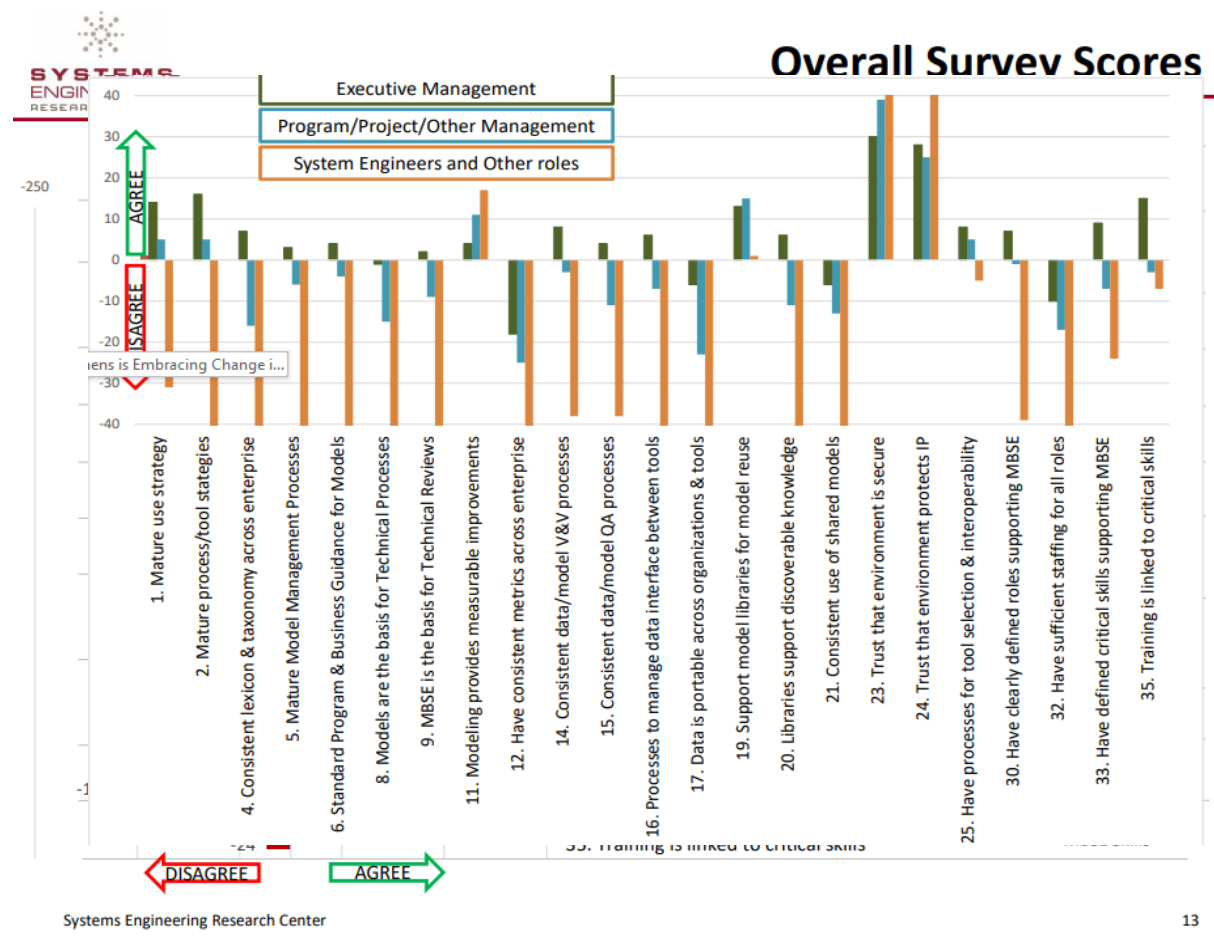
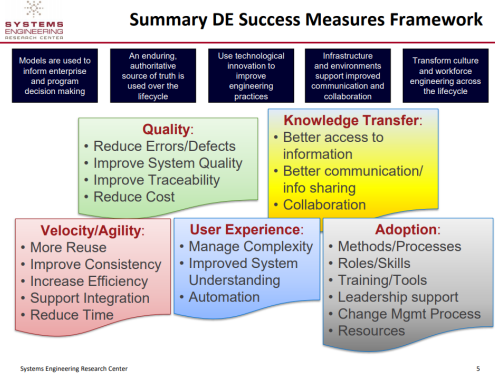
Benchmarking the Benefits and Current Maturity of Digital Engineering/Model-Based SE

Tom McDermott, Stevens Inst. of Technology
 Nicole Hutchison, Megan Clifford (Stevens)
 Eileen Van Aken, Alejandro Salado, Kaitlin Henderson (Va Tech)

www.sercuarc.org

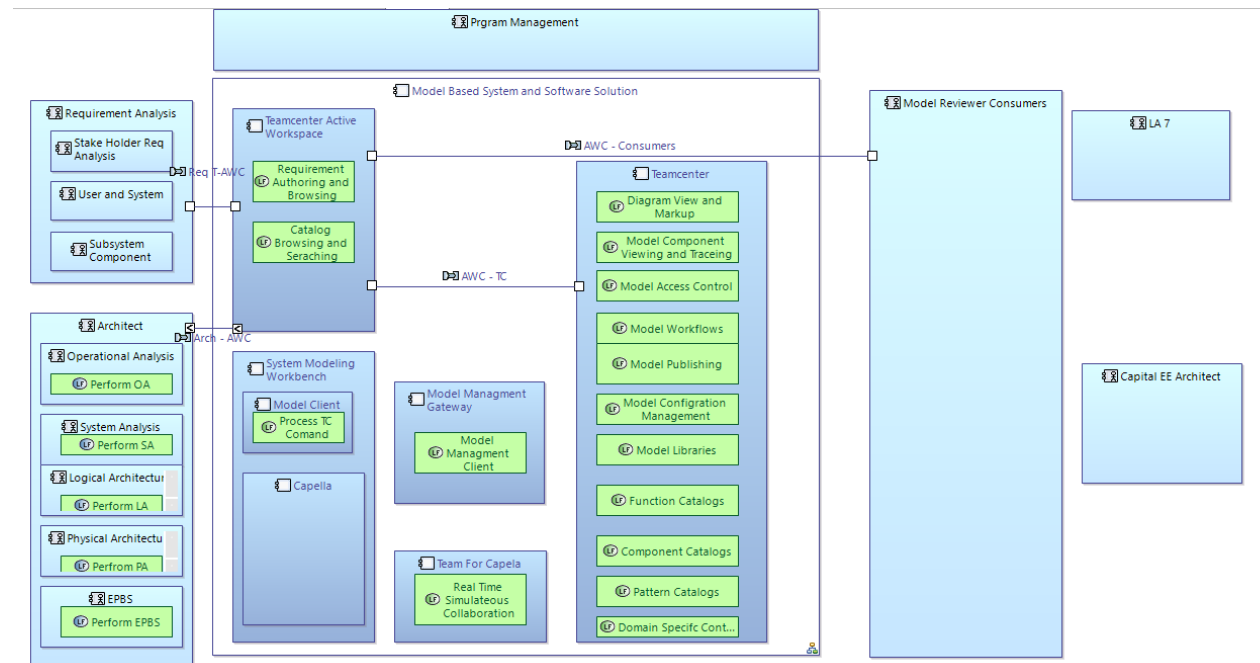
SYSTEMS ENGINEERING RESEARCH CENTER

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To disseminate modelling best practices

- Model Variants
- Evaluation Criteria
- Reports
- Component Reuse and Catalogs
- Pattern Reuse and Catalogs
- Verification Management Support



MBSSE: More Information

- ISO website
 - <https://www.iso.org/standard/79111.html>
 - <https://sd.iso.org/projects/project/79111/overview>
- Request to be added to member list
 - Eric.Gauthier@thalesgroup.com
 - Co-Chair
 - Lalitha.Abhaya@airbus.com
 - Co-Chair

Questions
&
Answers



6th and 7th October

<http://standardsdays.afnet.fr>