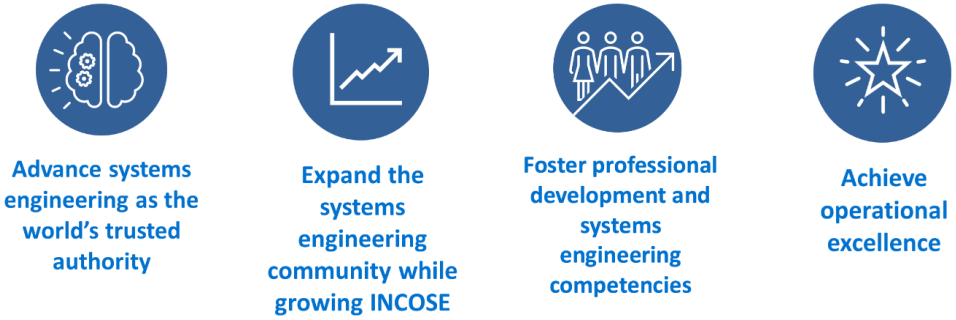
Supporting the INCOSE Strategic Plan Objectives



Recommendations to INCOSE Leadership, from Patterns Working Group

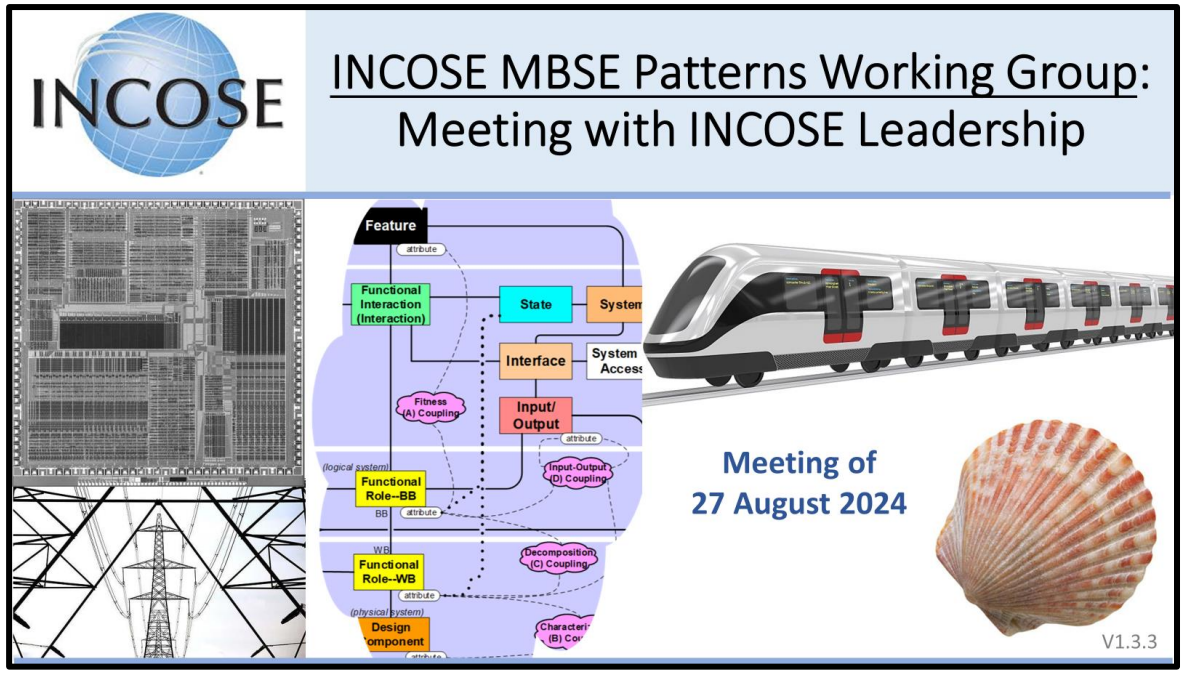
Following INCOSE leadership meeting of August 27, 2024

- Bill Schindel schindel@ictt.com
- Troy Peterson tpeterson@systemxi.com

V1.2.1

Purpose and scope

- As requested at the end of the meeting of August 27, 2024, with INCOSE leadership, . . .
- . . . this material provides follow-up action recommendations from the INCOSE Patterns Working Group.



Meeting Agenda / Contents Summary

- Introductions, meeting objectives, agenda plan
- MBSE Patterns WG mission, identity, focus
- Alignment with INCOSE Strategic Plan
- Packaging INCOSE products
- Recent and current projects
- Informal discussion, questions
- Adjourn

10 slides

- Attachment: Additional information on WG projects

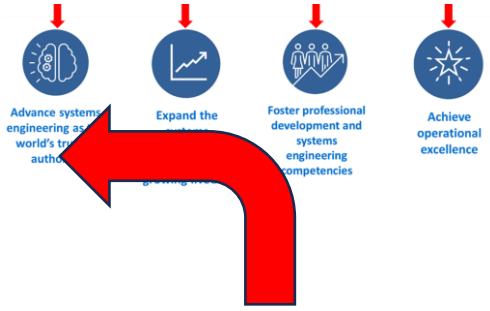
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[Click Here to Download Aug 27 Meeting Slides]

Action Performers

Recommended Actions (See following 10 pages)

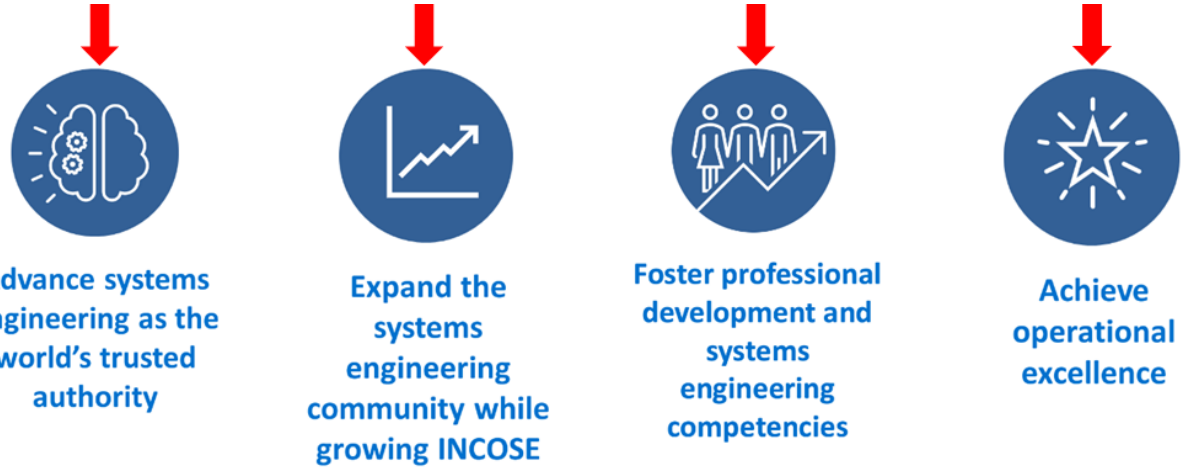
	Actions	Responsible Action Performers										INCOSE Strategic Objectives			
		INCOSE Leadership--Officers, Including Tech Ops	INCOSE Marketing Communications	INCOSE Liaison to SDOs	INCOSE Inter-Society Collaboration Team	INCOSE Professional Development Team	INCOSE Certification Team	Patterns Working Group	Other INCOSE Working Groups	Leadership of Systems Enterprises and Government Units	Individual INCOSE Members (including students)	Advance SE as the World's Trusted Authority	Expand the SE Community While Growing INCOSE	Foster Professional Development and SE Competencies	Achieve Operational Excellence
1	Reinforce the implementation of the INCOSE Strategic Plan through leadership, communication, progress monitoring, and application of the System 3 portion of the ASELCM Pattern to describe a series of INCOSE capability releases at stakeholder and technical performance levels.	■						■				■	■	■	■
2	Raise INCOSE membership and stakeholder awareness that Patterns are about more than MBSE templates, in connection with their fundamental roles in STEM, SE Foundations, and machine learning (AI).	■	■			■	■	■	■	■	■	■	■	■	
3	Offer, promote, and deliver "PBSE Tutorial" C-Suite and non-engineer overview of impactful application of pattern-based systems engineering.	■	■					■	■	■	■	■	■	■	
4	Target offerings of "Uncover the Pattern" workshops for technical audiences to advance awareness of extraction and exploitation of systems patterns and stronger connections to foundations.	■						■	■	■	■	■	■	■	
5	Target offerings of "Advancing the Practice" class series to strengthen the practice impact of foundations of systems engineering in general and model-based systems engineering in particular.	■			■	■	■	■	■	■		■	■	■	
6	Make formalization of INCOSE collaboration with other entities less burdensome and more responsive.	■		■	■			■	■			■	■		■
7	Carry out piloting of publication of an INCOSE Standard, using the S*Metamodel.	■	■					■				■		■	
8	Harvest existing Patterns Working Group assets as INCOSE Products. Examples: Two Primers; ASELCM S*Pattern; S*Metamodel; Tool-Specific Mappings; S*Pattern Configuration Wizard; Model Characterization Pattern; Advancing the Practice class series.	■	■					■				■	■	■	
9	Increase INCOSE collaboration with OMG, beginning with targeted applications of MBSE Patterns.	■		■				■				■	■	■	
10	Pursue a second phase of the Rosetta Stone Project (begun in 2024, across INCOSE, ASME, AIAA, and NAFEMS).	■		■				■				■	■	■	

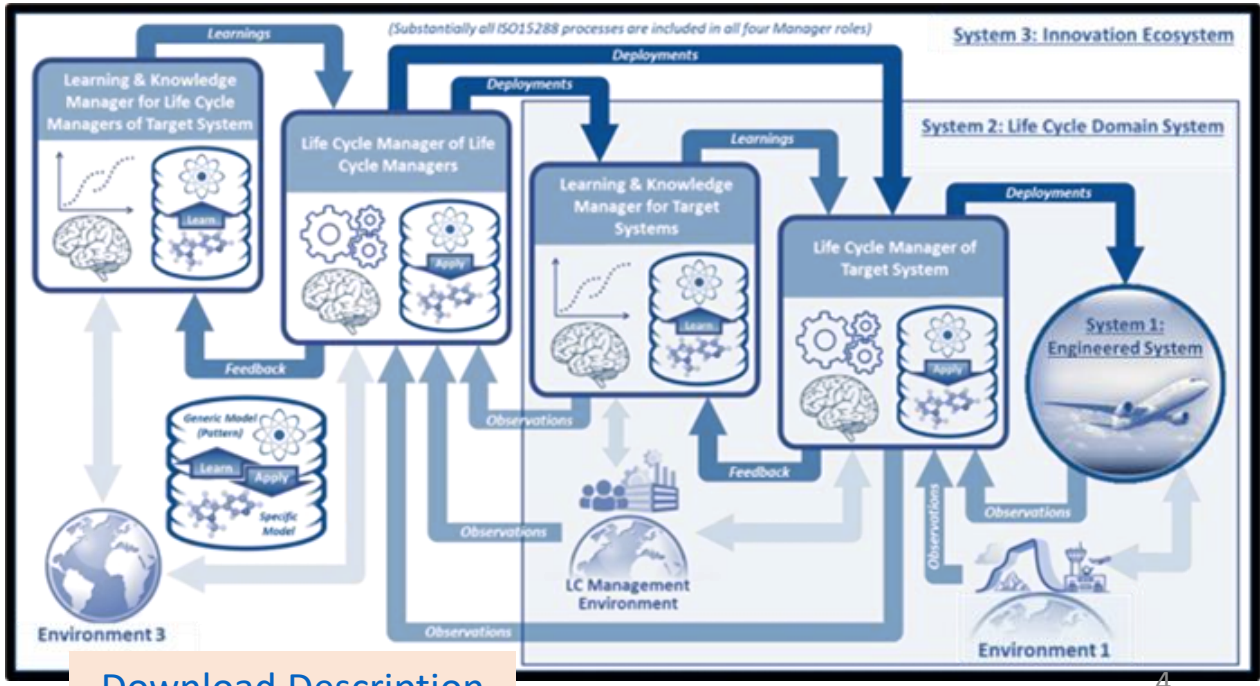


Impacted INCOSE Strategic Plan Objectives

1. Reinforce the implementation of the INCOSE Strategic Plan through leadership, communication, progress monitoring, and application of the System 3 portion of the ASELCM Pattern to describe a series of INCOSE capability releases at stakeholder and technical performance levels.

- The INCOSE Agile Systems Engineering Life Management (ASELCM) Pattern is a configurable S*Pattern, used to understand, plan, analyze the performance of "learning innovation ecosystems": Enterprises, Supply Chains, Consortia, Societies, Standards Organizations, Research & Educational institutions.
- Used by INCOSE to study agility across enterprises (four published studies 2016-2018).
- Used by AIAA to create their Aerospace Digital Thread and Digital Twin Reference Models (2022-2023).
- Recommendation: Use to create and implement INCOSE "Agile Release Train" models of capabilities targeted by the INCOSE strategic objectives.
- Hold a related leadership workshop at IW2025.



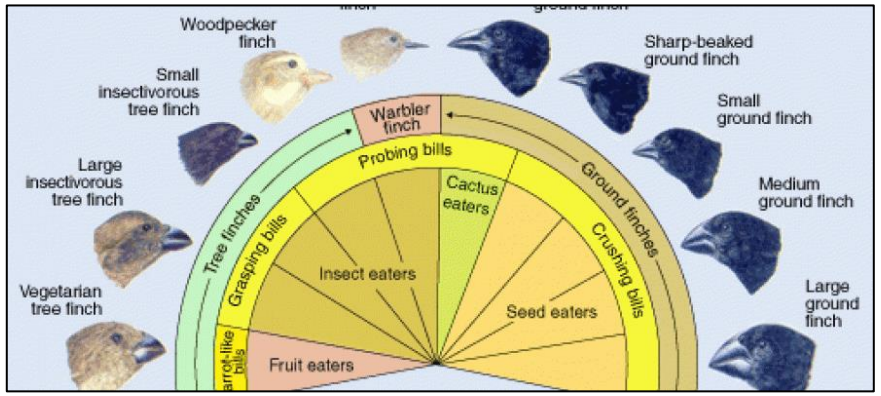


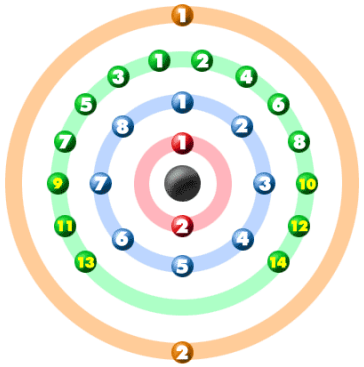
Download Description

2. Raise INCOSE general awareness that Patterns are about much more than “MBSE templates”, in connection with their fundamental roles in STEM, SE Foundations, and machine learning (AI).

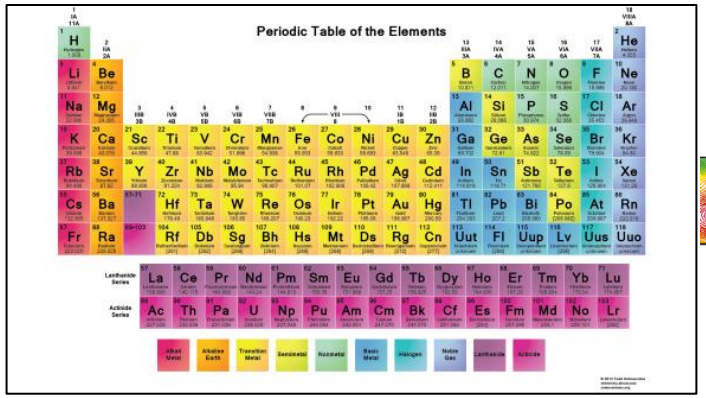
Recommendation: Hold “Uncover the Pattern” awareness briefings by Patterns WG for Board, CAB, WGs.

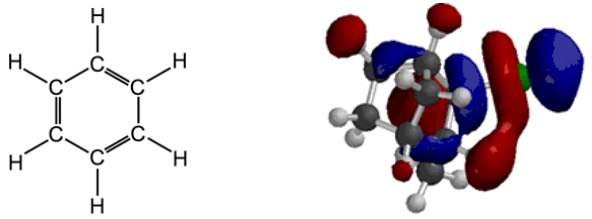


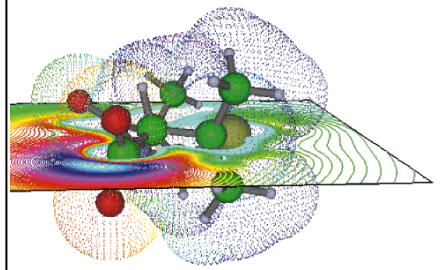








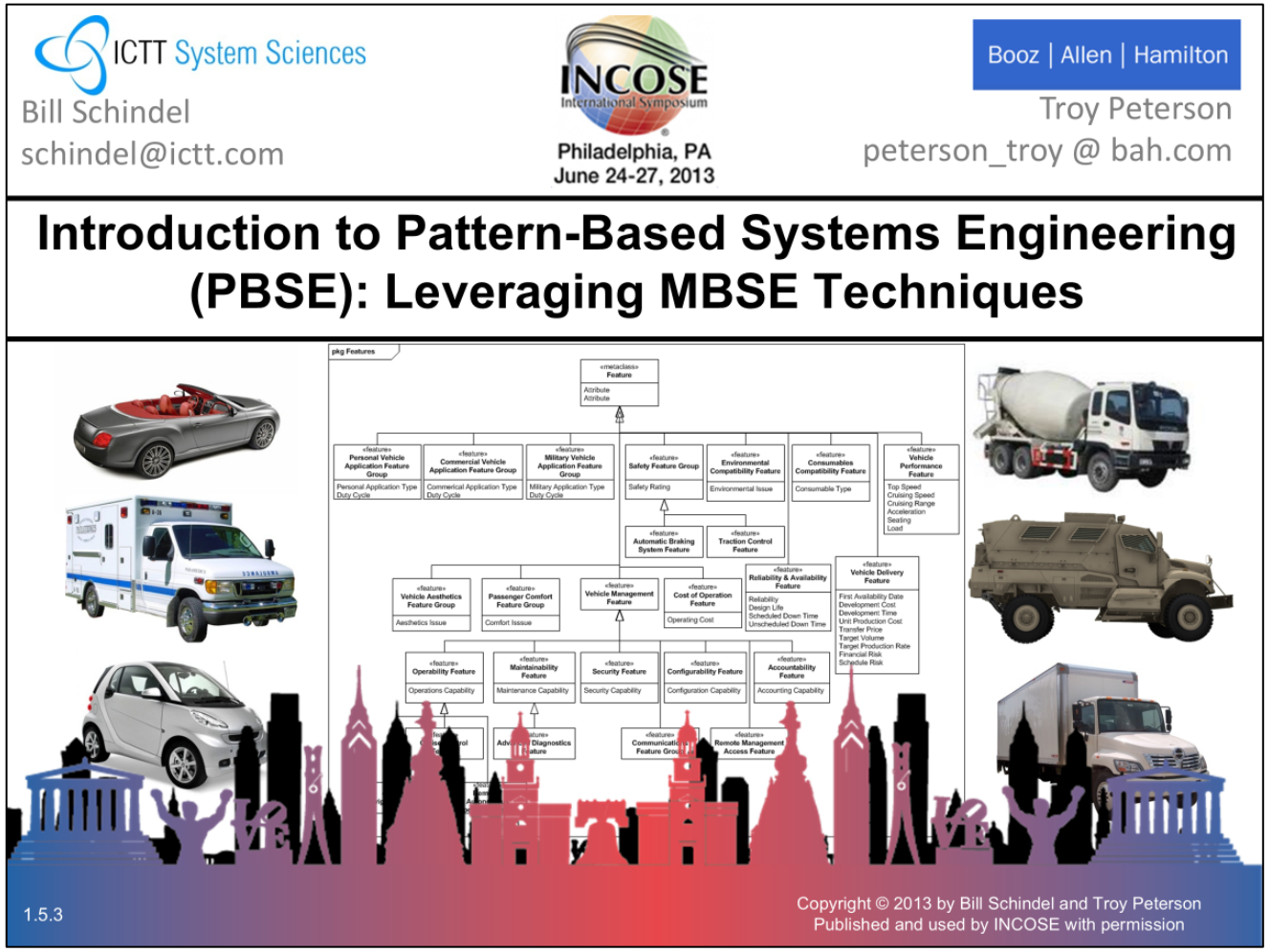






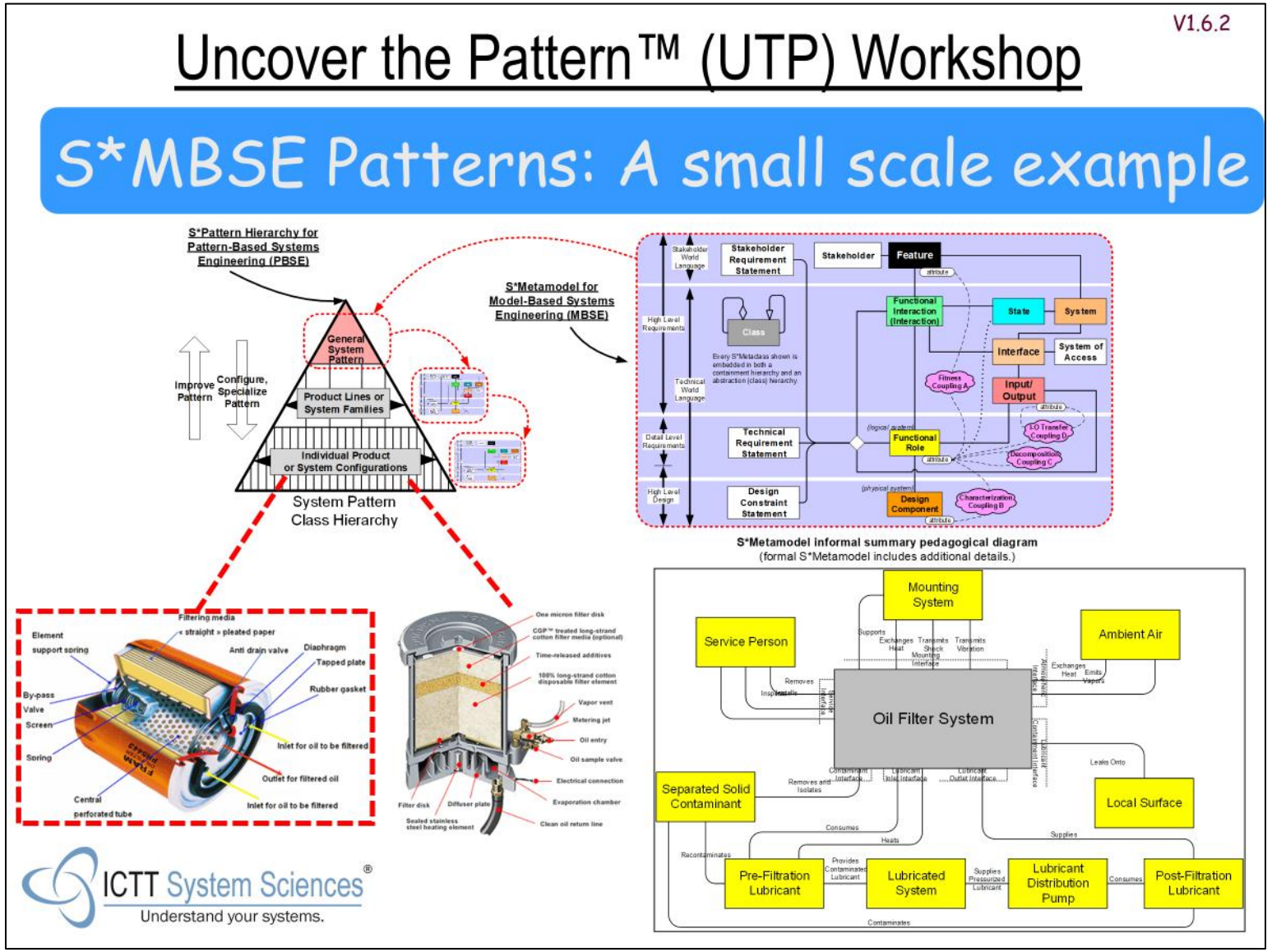
3. Offer, promote, and deliver "PBSE Tutorial" C-Suite and non-engineer overviews of impactful application of pattern-based systems engineering.

- Targeting leadership and less technical audiences.
- Understanding value impacts.
- Schedule at targeted events.



4. Target offerings of "Uncover the Pattern" workshops for technical audiences to advance awareness of extraction and exploitation of systems patterns, stronger connections to foundations.

- For more technical audiences.
- Impact as well as theory.
- But not hands-on practice.
- Typically 9-10 hours, spread over three days.
- Schedule on targeted basis.



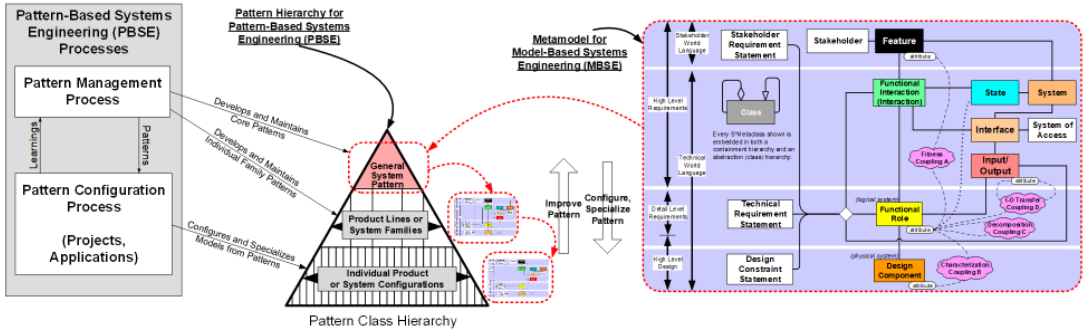
5. Target offerings of "Advancing the Practice" class series to strengthen the practice impact of foundations of systems engineering in general, model-based systems engineering in particular.

- For practitioners.
- Hands-on practice.
- Homework.
- Typically 10 sessions, 3 hours each.
- Schedule on targeted basis.

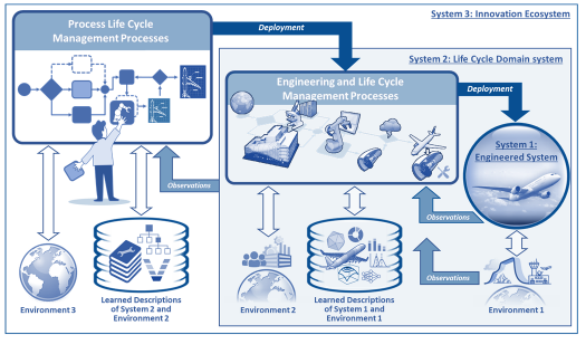
ICTT System Sciences®
Understand your systems.

Advancing the Practice

Introduction to S*Models, S*Metamodel, S*Patterns, Mappings to Languages & Tools, S*Configuration Wizard, ASELCM S*Pattern



Pattern Class Hierarchy



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6. Make formalization of INCOSE collaboration with other entities less burdensome and more responsive.

- Example: 2021-23 Joint AIAA-NAFEMS-Digital Twin Consortium Projects with INCOSE Patterns Working Group.
- Based on use of INCOSE ASELCM Pattern as foundation, from Patterns Working Group.
- Result: Two AIAA branded guidelines, setting records as most downloaded AIAA on line publication.
- We chose to forgo INCOSE branding when advised to add a year for including INCOSE in the agreement.
- Not the way we should have to operate.
- Recommendation: Rethink the historical method and its objectives; streamline based on demonstrated initial interest and progress.

January, 2023



Click to Download AIAA Digital Twin Reference Model

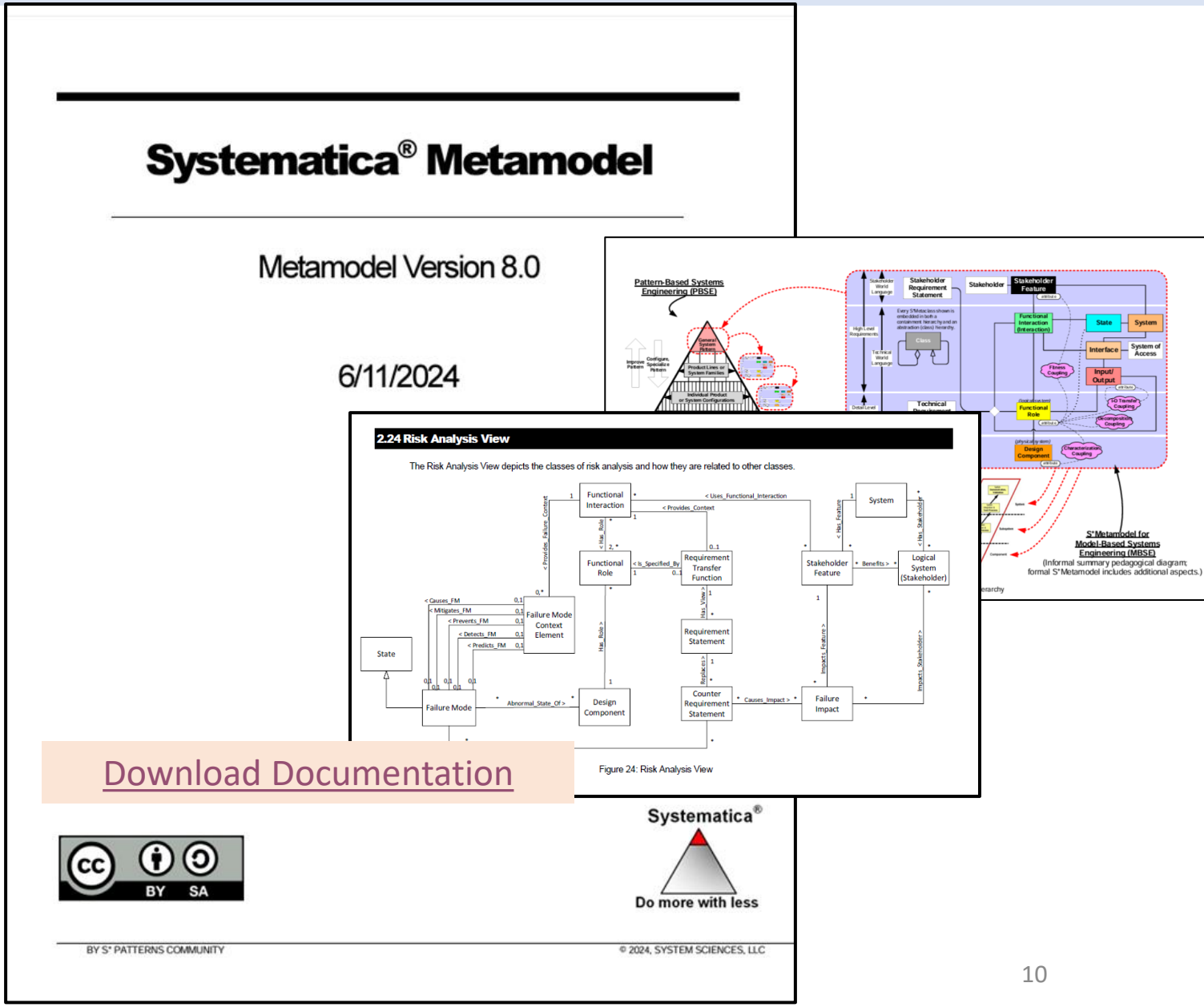
June, 2023



Click to Download AIAA Digital Thread Reference Model

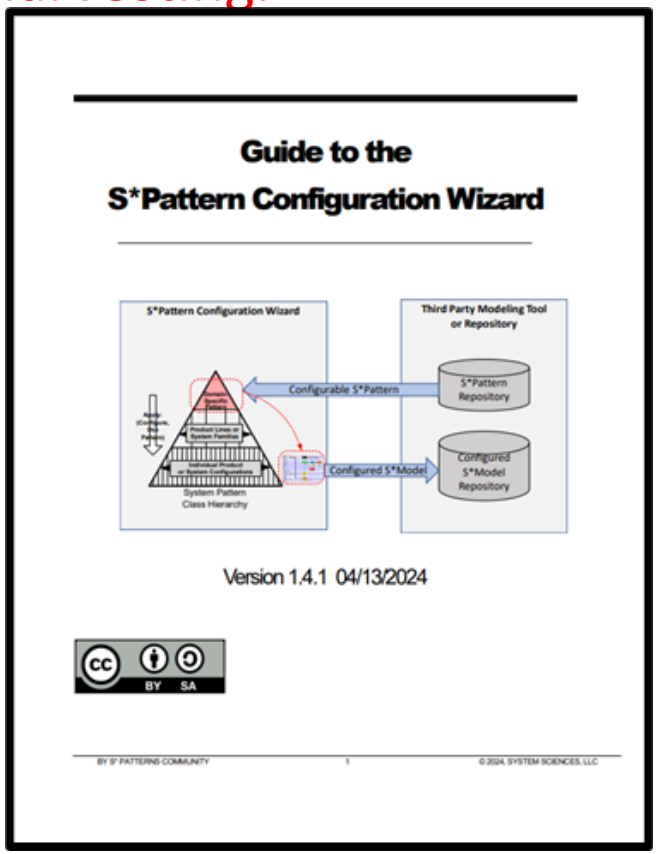
7. Carry out piloting of publication of an INCOSE Standard, using the S*Metamodel.

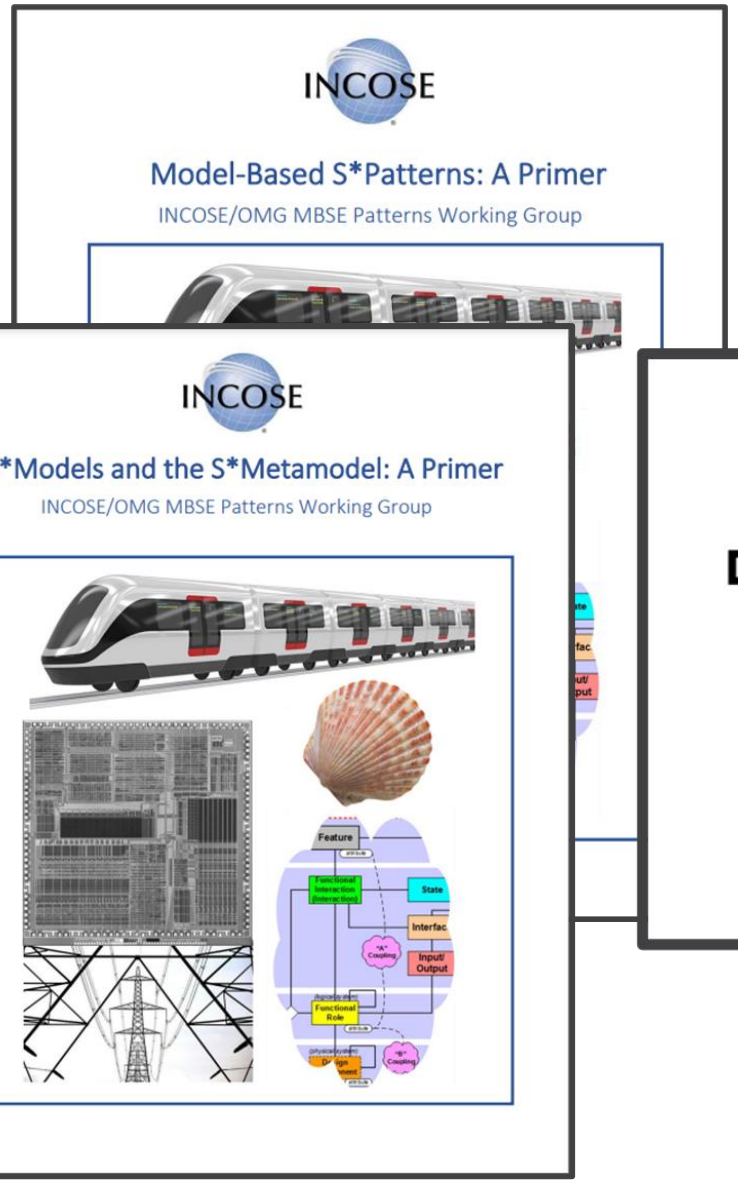
- Systematica (S*) Metamodel is an underlying information model, based on STEM and human-machine learning.
- Neutral: It is mapped to the OMG SysML schema, for multiple third party COTS modeling tools.
- Mature: Over 20 years of use and improvement, across diverse industries and toolsets.
- Built-in pattern configuration rules for simplification of reuse strategies.
- It increases the consistency of models across modelers, projects, enterprises, and encourages generation and use of reusable configurable S*Patterns across multiple third party COTS tools.
- Supported by tutorials, classes, examples.
- Recommendation: Schedule initial discussion of INCOSE standardization consideration, with INCOSE SMEs and standards-interested stakeholders who understand the related issues.

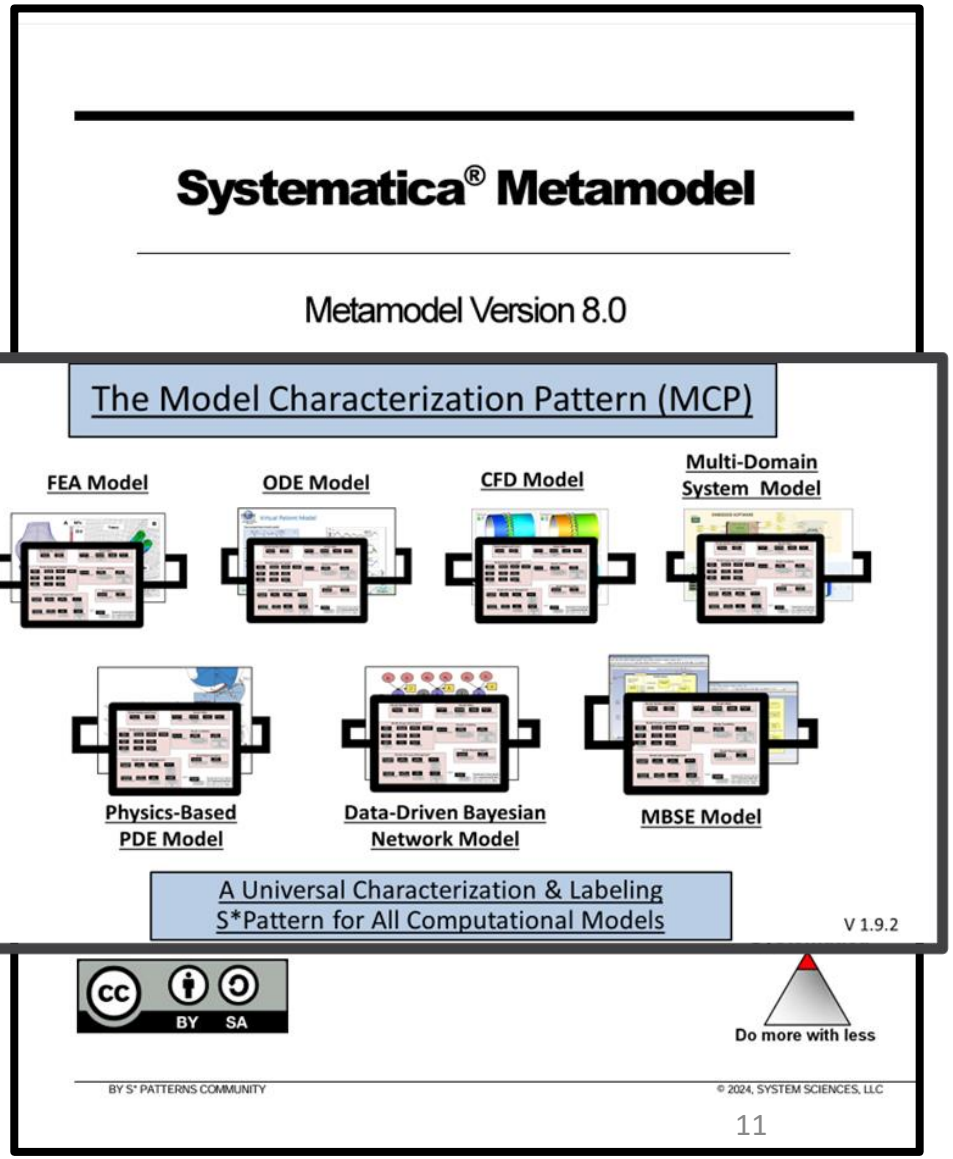


8. Harvest existing Patterns Working Group assets as INCOSE Products. Examples: Two Primers; ASELCM S*Pattern; S*Metamodel; Tool-Specific Mappings; S*Pattern Configuration Wizard; Model Characterization Pattern; Advancing the Practice class series.

- With TPP advice and assistance from Phyllis Marbach and Products Team.
- Recommendation: Commence harvesting.

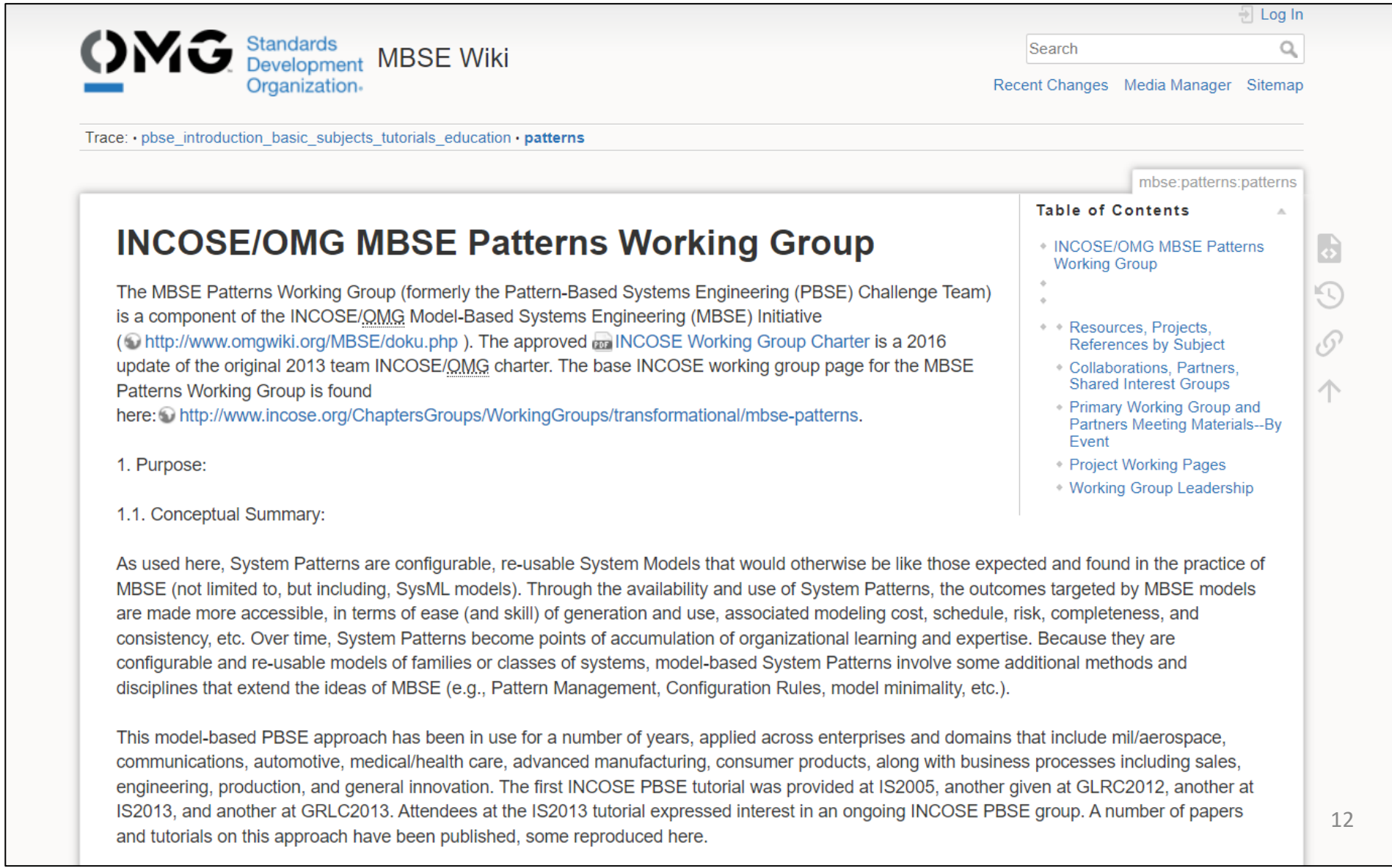






9. Increase INCOSE collaboration with OMG, beginning with targeted applications of MBSE Patterns.

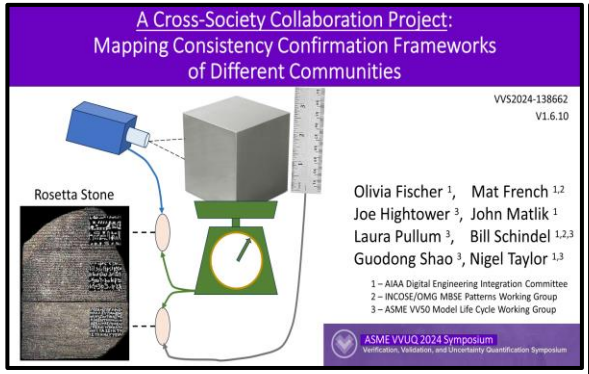
- Establish updated joint objectives with existing OMG partner. Examples:
  - OMG publish S*Patterns.
  - Work together to exchange complementary qualities of both organizations' web site technologies.
- Recommendation: Discuss with OMG.



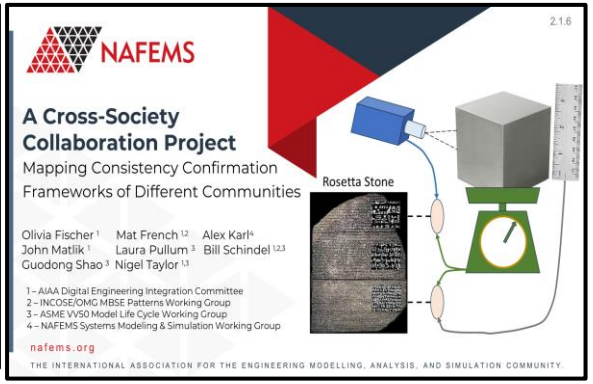
10. Pursue a second phase of the Rosetta Stone Project (begun in 2024, across INCOSE, ASME, AIAA, and NAFEMS).

- Existing 2024 inter-society project to map dissimilar / conflicting V&V frameworks for computational models, engineered systems, others—INCOSE has been providing the Systems content in this ongoing effort.
- Phase 1 began early 2024 and will complete Jan 2025, active work across all four societies is underway.
- Potential Phase 2: Implications of mapping for future standards and harmonizations.
- Note connection to strategic objectives for authority, outreach, and standards.
- Recommendation: Agree on Phase 2 plan.

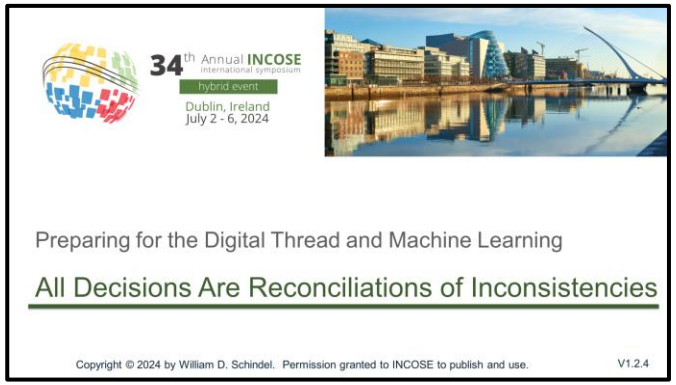
Download Current Phase 1 Project Description



ASME VVUQ2024: May, 2024



NAFEMS Americas 2024: July



INCOSE IS2024: July



AIAA Aviation 2024: July-Aug