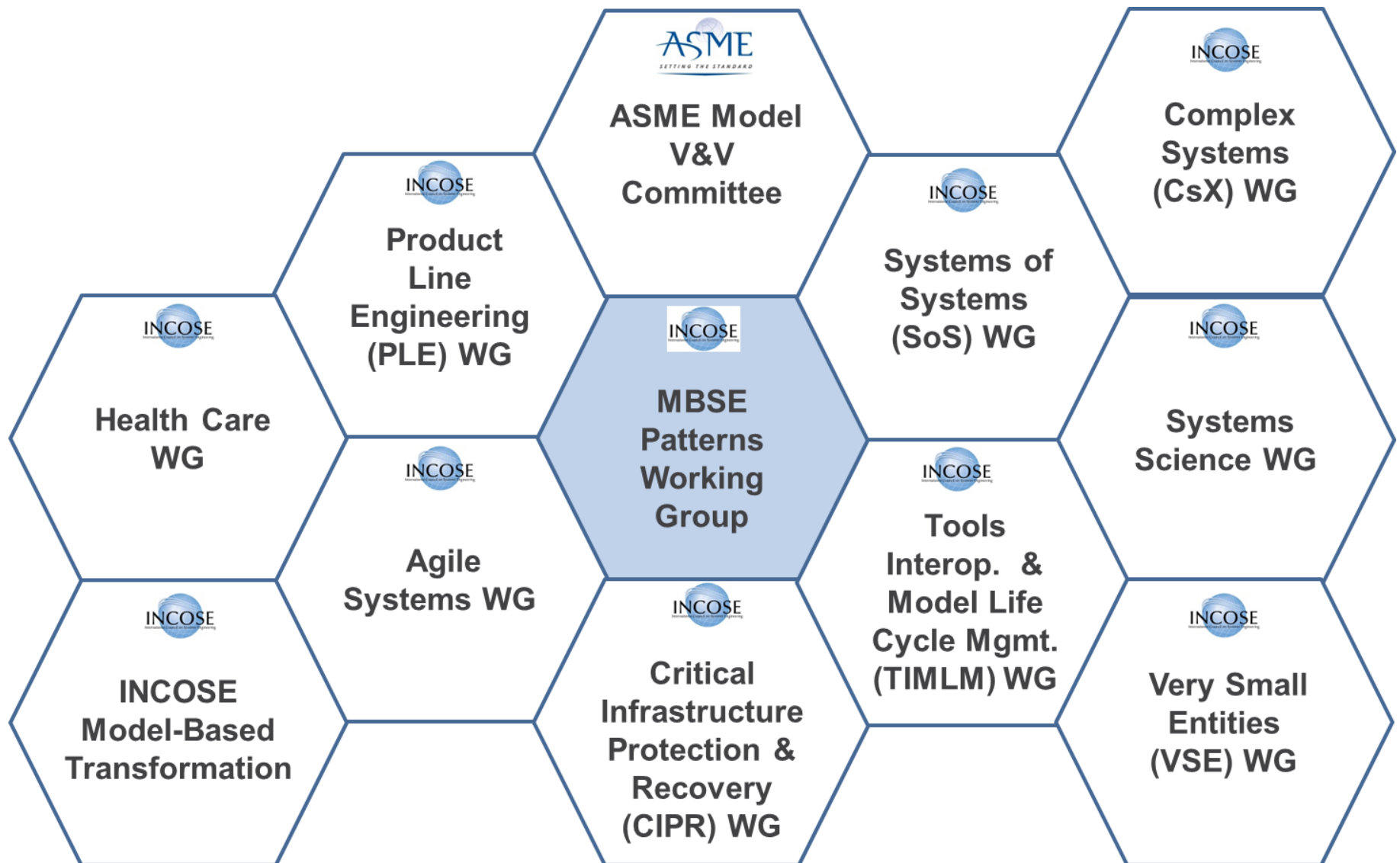# INCOSE Patterns Working Group: IW2017 Meeting Minutes

INCOSE Patterns Working Group: IW2017 Meeting Minutes

*=on site attendance;   T=by telecom link

Meetings →

Participants ↓

First	Last Name	Affiliation	email	Patterns WG General Meeting 1, Joint with PLE WG 01.29.17	Patterns WG General Meeting 2 01.30.17	Patterns WG – CIPR WG Joint Meeting 01.29.17	Patterns WG Contributed Session at System Science WG 01.30.17	Patterns WG Contributed Session at Agile WG 01.30.17	Patterns WG Contrib. Session at Tools Interop & Model LC Mgmt. WG 01.30.17	Patterns WG Contribution to Agile Systems WG – SSWG Joint Mtg 01.31.17	Patterns WG Session Contribution to Complex Systems WG 01.31.17	Patterns WG – SoS WG Leadership Meeting 01.31.17	Patterns WG – VSE WG Leadership Meeting 01.31.17	Patterns WG at IW Marketplace Poster Session 01.31.17	Other Patterns WG Related IW2017 Interactions 01.28.17-01.31.17
1) Don	Adams	LinQuest	don.adams@linquest.com		*										
2) Rudy	Balciunas	NASA	rudolf.m.balciunas@nasa.gov	T											
3) Conrad	Bock	NIST Manufacturing Division	conrad.bock@nist.gov												*
4) Daniel	Bognar	Safran Engines	daniel.bognar@safran-group.com	*											
5) Mike	Celentano	Roche; INCOSE TechOps Director	mike.celentano@incose.org												*
6) Guillermo	Chale	Alstom; PLE WG chair	hugo-guillermo.chale-	*											
7) Paul	Clements	Big Lever Software	pclements@biglever.com	*											
8) David	Cook	Moog Aircraft Group	dcook@moog.com	*											
9) Judith	Dahmann	MITRE; SoS WG Chair	jdahmann@mitre.org									*			
10) Mike	DeLamare	Bechtel; CIPR Chair	madelama@bechtel.com		*									*	
11) John	Demanek	Electronic Infrastr. Security Cncl.	john.organek@eiscouncil.org		*										*
12) Gerry	Deren	Siemens PLM Software	gerald.deren@siemens.com						*						
13) Rick	Dove	Paradigm Shift; ASE WG Chair	dove@parshift.com					*		*					
14) Hyman	Duan	PERA	hyman.duan@peraglobal.com		*										
15) Arnaud	Durantin	Dassault Systems	adn3@3ds.com		*										
16) Stephane	Estable	Airbus	steph2ue.estable@airbus.com	*											
17) John	Fitzgerald	U of Newcastle; SoS WG	john.fitzgerald@newcastle.ac.uk									*			
18) Sandy	Friedenthal	SFA; OMG SE DSIG Chair	safriedenthal@gmail.com												*

Meetings →

Participants ↓

Meeting columns (listed top to bottom as they appear stacked in the header; in the data table they run left-to-right in reverse order, i.e. column 1 = bottom-most meeting):

- Other Patterns WG Related IW2017 Interactions 01.28.17-01.31.17
- Patterns WG at IW Marketplace Poster Session 01.31.17
- Patterns WG – VSE WG Leadership Meeting 01.31.17
- Patterns WG – SoS WG Leadership Meeting 01.31.17
- Patterns WG Session Contribution to Complex Systems WG 01.31.17
- Patterns WG Contribution to Agile Systems WG – SSWG Joint Mtg 01.31.17
- Patterns WG Contrib. Session at Tools Interop & Model LC Mgmt. WG 01.30.17
- Patterns WG Contributed Session at Agile WG 01.30.17
- Patterns WG Contributed Session at System Science WG 01.30.17
- Patterns WG – CIPR WG Joint Meeting 01.29.17
- Patterns WG General Meeting 2 01.30.17
- Patterns WG General Meeting 1, Joint with PLE WG 01.29.17

Data table columns (C1 = General Meeting 1 Joint w/ PLE WG … C12 = Other Patterns WG Related IW2017 Interactions):

	First	Last Name	Affiliation	email	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
19)	Joachim	Fuchs	ESA	joachim.fuchs@esa.int												*
20)	Sriram	Ganesan	HPE/USPS	Sriram.ganesan123@gmail.com	*											
21)	Kevin	Gunn	MITRE	kgunn@mitre.org	*											
22)	Kirsten	Helle	FMC Technologies	kirsten.helle@fmcti.com												*
23)	Joe	Hightower	Boeing; ASME VV50 Committee	joe.c.hightower@boeing.com												*
24)	Bill	Hnat	Retired	aerobas1@aol.com	T	T										
25)	Claire	Ingram	U of Newcastle; SoS WG	claire.ingram@newcastle.ac.uk									*			
26)	Muhamm	Islam	MITRE	mislam@mitre.org	*											
27)	John	Juhasz	Telepath	telepath.juhasz@yahoo.com			T									
28)	Andreas	Keis	Airbus	andreas.keis@airbus.com	*											
29)	Charles	Krueger	Big Lever Sftwe, PLE WG co-chair	ckrueger@biglever.com	*											
30)	Suehye	Lee	Keio University	Suehye@gmail.com	*											*
31)	Malcolm	Lunn	Ford Motor Co.	lunnmalcolm@me.com	T											
32)	Ron	Lyells	Honeywell; ASE WG co-chair	ron.lyells@honeywell.com			*									
33)	Apoorv	Maheshwari	Purdue University	apoorv@purdue.edu	*											*
34)	Phyllis	Marbach	INCOSE LA Chapter President	prmarbach@gmail.com	*											*
35)	James	Martin	Aerospace Corp., and SSWG Chair	martinqzx@gmail.com					*		*					
36)	Joe	Marvin	PSG	joemarvin@psg-inc.net	*										*	*
37)	Marshall	Mattingly	Raytheon Missile Systems	marshall@kajon.com	*											

*=on site attendance;   T=by telecom link

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38)	Leon	McGinnis	George Tech Research Institute	leon. mcginnis@gatech.edu	*											*
39)	Jimmie	McGiver	JHU APL; Complex Sys WG Chair	jimmie.mcever@jhuapl.edu								*			*	
40)	Dorothy	McKinney	Considered Thoughtfully	dorothy.mckinney@incose.org								*				
41)	John	Nallon	CSC; TIMLM WG Chair	jnallon@csc.com						*						
42)	Swaminat	Natarajan	TCS Research	swami.n@tcs.com	*		*					*				*
43)	Ryan	Noguchi	Aerospace Corporation	ryan.a.noguchi@aero.org			*									
44)	Kent	Palmer	Archonics	kent@palmer.name					*						*	
45)	Troy	Peterson	SSI; INCOSE MB Transformation	tpeterson@systemxi.com								*				*
46)	Drew	Pihera	Georgia Tech Research Institute	drew.pihera@gtri.gatech.edu	*											
47)	Ken	Ptack	VSE WG	swoop42@verizon.net										*		
48)	Angela	Robinson	VSE WG	angela.robinson.incose@gmail.com										*		
49)	Frank	Salvatore	Engility	Frank.Salvatore@engilitycorp.com												*
50)	Mark	Sampson	Siemens; INCOSE MBE Initiative	mark.sampson@siemens.com												*
51)	Bill	Schindel	ICTT System Sciences; PWG Chair	schindel@ictt.com	*	*	*	*	*	*	*	*	*	*	*	*
52)	Aric	Schorr	Moog Aircraft Group	aschorr@moog.com	*											
53)	Bob	Swarz	INCOSE CAB	rswarz@wpi.edu												*
54)	Sarah	Sheard	SEI/CMU	sheard@sei.cmu.edu			*					*				
55)	Bob	Sherman	Procter & Gamble	sherman.rf@pg.com												*
56)	Janet	Singer	ISSS	janetmsinger@gmail.com				*								

Meetings →

Participants ↓

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57)	Michael	Singer	ISSS	mjsinger@soe.ucsc.edu			*									
58)	Timothy	Sprock	NIST SE Group	timothy.sprock@nist.gov											*	
59)	Barry	Steer	Draper Labs	bsteer@draper.com & cybersteer@gmail.com		*									*	
60)	Heinz	Stoewer	Space Associates GmbH				*									
61)	Carl	Svensson	FMV	carl.svensson@fmv.se	*											
62)	John	Thomas	John Thomas Associates	john.thomas@john-a-thomas.com			*					*			*	
63)	Ajay	Thukral	Cientive Group	ajay.thukral@cientivegroup.com	T											
64)	Vijay	Thukral	Cientive Group	vijay.thukral@cientivegroup.com	T											
65)	Jonathan	Torok	NSWC Crane	jonathan.torok@navy.mil												X
66)	Peter	Tuddenham	College of Exploration	peterdtuddenham@gmail.com				*								
67)	Hubertus	Tummescheit	Modelon	hubertus.Tummescheit@modelon.com											*	
68)	Chris	Unger	GE Med Systems; HC WG Chair	christopher.unger@med.ge.com			*									
69)	Lonnie	van Zandt	Sodius; TIMLM WG Co-Chair	lonniev@gmail.com			*									
70)	Mark	Walker	BCT; CIPR Co-Chair	lmw107@bct-llc.com			*									
71)	Michael	Watson	NASA / MSFC; CxS WG Co-Chair	michael.d.watson@nasa.gov	*							*				
72)	Richard	Wise	George Tech Research Institute	richard.wise@gtri.gatech.edu	*											
73)	Len	Wozniak	General Motors	len.wozniak@gm.com	*											
74)	Other individuals not listed, attending other WG sessions shown, for which attendance lists were not obtained.						*	*	*	*	*	*			*	

Summary of Patterns Working Group Meetings and Activities at IW2016: The Patterns WG continues to spend most of its effort in interaction with other WGs, WG leaders, and other INCOSE members, planning and executing joint projects. He above table summarizes those in the following IW2017 interactions, in three major categories, further described on the following pages:

1. **Patterns WG Meetings, Joint Meetings:** Scheduled meetings were held by the Patterns WG, some jointly with other WGs, details reported below.

2. **Patterns WG Contributions to Other Sessions:** Invited Patterns WG contributions were made to other scheduled IW WG meetings and sessions, with details reported below.

3. **Other Patterns WG Related MBSE Workshop Interactions 01.28.17-01.29.17:** In addition to the above scheduled activities, other key Patterns WG related interactions with others during IW2017 are also reported below.

Patterns WG General Meeting 1, Joint with PLE WG   01.29.17:   (Guillermo Chale, Chair, Charlie Krueger, Cochair)

4. The meeting began with a brief introduction to the focus of the MBSE Patterns Working Group, which is three years old, changing from an INCOSE/OMG MBSE Challenge Team to an INCOSE Working Group. (Refer to the MBSE Patterns WG slides in the References below.) :

   - The focus of the WG on S*Models , S*Patterns, and PBSE as a form of MBSE was briefly reviewed. (Refer to the PBSE Methodologies document on the References below.)

   - A brief review was given of the Patterns WG projects underway with other WGs. (see meeting slides in References below)

   - Key point from Leon McGinnis: Be sure this WG effort continues to make use of / reference existing standards, practices, knowledge

5. The majority of this meeting was then devoted to a joint session with the Product Line Engineering (PLE) Working Group:

   - PLE WG Chair Guillermo Chale reviewed the focus of the PLE WG

   - PLE WG Co-Chair Charlie Krueger briefly discussed contemporary trends in PLE implementation

   - Patterns WG Chair Bill Schindel introduced the proposed goals of two joint projects by the Patterns WG and PLE WG, including their goals and contributions by the two WGs. These were discussed by the two WGs as follows.

6. **Joint Project 1:** Demonstration of Legacy Product Line Pattern Harvest, Using Method of Projections :

   - The Method of Projections for producing an S*Pattern from rough and incomplete legacy data was summarized to the joint meeting of the two WGs at the IW2016. (Refer to session slides from that meeting for more information.) A goal of the current project is to create a public demonstration of its use with commercial product information.

   - Guillermo Chale summarized a legacy document he is providing to this project, as input. He indicated that an updated version of the document will also be supplied before the end of the current IW.

   - This is a key step in the project, and Bill thanked Guillermo and Alstom for supporting the project in this way.

   - After review of the above document, a plan of related work sessions for those interested will be published. If you are interested in participation, notify Bill Schindel or Guillermo Chale

- Purdue graduate student Apoorv Maheshwari summarized his ideas for a similar project in connection with his research, indicating interest in joining this project.

7. **Joint Project 2**: Demonstration (also with the TIMLM WG) of a Collaborative Innovation Ecosystem, for Product Line Life Cycle Patterns & Configurations:

- The meeting reviewed "Contributions to Reference Ecosystem for Collaborative Innovation", from the Patterns WG. (See References) This material summarizes the proposed objectives of this project, the other WGs involved to date, and the proposed contributions from the Patterns WG.

- At the time of this meeting, the Tools Interoperability and Model Life Cycle Management (TIMLM) WG had not yet indicated agreement with the proposed project objectives. (That agreement was provided by the TIMLM WG later during the IW conference.)

- In addition to the initial WGs and tool vendors involved in this project so far, others are expected to join. This includes coverage of other life cycle stages and toolsets (e.g., Model Authoring, PLM, Requirements Management, Simulation, etc.).

- In initial support of the start-up of the project, Bill Schindel briefly summarized the following having been accomplished:

  - Creation of S*Profiles for two SysML modeling toolsets (Magic Draw/CSM and Enterprise Architect)
  - Loading of the demonstration example S*Pattern for the oil filter product line family, including parts of its manufacturing pattern
  - Demonstration of configuration of this example S*Pattern for specific product configurations, using a Magic Draw-Big Lever Gears configurator integration and an Enterprise Architect-S*Configuration Agent.
  - Bill reported that additional experiments and changes are planned to the details of this initial testing, and that it in any case should become driven by and integrated with the project objectives and scenarios to be created. (See, for example, the discussion of the Collaboration Pattern in TIMLM later below.)

- During discussion of the project by the meeting, attendees suggested that it include some illustration of system dynamics simulation.

Patterns WG General Meeting 2   01.30.17:

8. Having changed status to be a regular INCOSE Working Group, the Patterns WG now has a regular INCOSE WG public web site and INCOSE members only Connect (MS Share Point) site. See the References for both below.

9. The Patterns WG continues to also maintain its INCOSE/OMG MBSE wiki pages, in support of the INCOSE-OMG partnership and the MBSE Initiative. See the References below to locate this.

10. There was a discussion of projects of interest to participants, including the historical list of potential projects suggested by participants in the past. Willingness to work on a project is a pre-requisite to it being taken up by the WG. In the case of joint WG projects, this includes identification of a partner willing to work on a project.

11. An Interface Patterns project, discussed in the past, is being identified and planned with Jonathan Torok and Frank Salvatore, representing interface S*Patterns.

Patterns WG – CIPR WG Joint Meeting   01.29.17: (Mike deLamare, Chair; Mark Walker, Co-Chair)

12. The Patterns WG contributions of initial draft subset S*Patterns used to facilitate the goals of the Energy Tech 2016 Conference last November were reviewed, consisting of S*Patterns for the Electrical Power Domain and the more general Critical Infrastructure Domain, both built on the ASELCM S*Pattern.   (Refer to the related session slides in the References.)

13. Use of those patterns to facilitate discussion and capture discussion at the Energy Tech 2016 conference was discussed by its general chair, John Juhasz.

14. John Organek, attending for the Electronic Infrastructure Security Institute, expressed further interest in these MBSE patterns. It is believed that the national laboratories are pursuing CIPR models, although related information not available. He subsequently described interest in utilities in supporting a unified approach, and additional defense interests.

15. The Patterns WG offered to the CIPR a potential joint project of building them out further, if that would serve a purpose for the CIPR WG. (This was discussed further by the CIPR later in the IW, and resulted in an expression of interest on their part to pursue such a joint project together, to be further defined as to objectives, deliverables and participants.)

16. CIPR WG Mike deLamare emphasized the value of pursuing the interactions shown in the model between the various critical infrastructure domain systems in that model, representing the root of their interdepencies, and their implications for recovery and emergent behavior. He indicated that priority domains may be Electrical, Water, Communications, and Oil&Gas.

Patterns WG Contributed Session at System Science WG   01.30.17 (James Martin, Chair; David Rousseau, Session Chair)

17. The Patterns WG contributed an invited one hour presentation to the System Science Working Group, on S*Interaction Patterns as the basis for a hard science of systems, based on the "System Phenomenon" described in the related INCOSE IS2016 paper and ISSS2016 plenary presentation. (Refer to the two related presentations and paper in the References.)

18. Subsequent interaction between the Patterns WG and the SSWG, on the related subject, is projected by the two WGs, at a future venue where additional time may be spent on related pursuits.

Patterns WG Contributed Session at Agile WG   01.30.17   (Rick Dove, WG Chair)

19. The Patterns WG is supporting the Agile Systems WG in the INCOSE two year Agile Systems Engineering Life Cycle Management (ASELCM) Pattern Discovery Project. At this IW meeting of the Agile WG, the Patterns WG contributed a session briefly reviewing certain model segments of the ASELCM Pattern which were observed, discovered, or otherwise used in the four workshop case study sites to date.

20. These are described further in the related IW slides (References section) and the related IS2016 and 2017 papers (References section.)

21. Agile WG discussion of this during the session included an expression of attendee interest in the agile development team interaction capture related to emergence of team awareness of current state and direction.

22. The ASELCM Pattern is also being used by the Patterns WG in other contexts and domains, including the CIPR and Health Care domains, reported elsewhere in these minutes. Additional updates to the ASELCM Pattern are expected.

Patterns WG Contrib. Session at Tools Interop & Model LC Mgmt. WG   01.30.17   (John Nallon, Chair; Lonnie van Zandt, Co-chair)

23. The joint WG project for the "future Innovation Ecosystem" had been discussed in previous INCOSE event meetings over the last year.

24. At this meeting, the Patterns WG presented the proposed summary objectives and a summary of the contributions that the Patterns WG proposes to make to this project. Refer to the related reference slides. Lonnie van Zandt stated that this proposal was acceptable, subject to the concern that the TIMLM view of this project includes description but not construction of an actual ecosystem instance.

25. The proposing WG teams at this point consisted of the Patterns WG, PLE WG, and TIMLM WG. It was suggested that this could be expanded to include WGs such as Simulation, Requirements, etc.

26. Lonnie van Zandt presented his preliminary list of capabilities that information systems should provide to support this ecosystem, and invited feedback and future contributions. In response to the question of whether these capabilities should ultimately span the scope of ISO15288 life cycle processes, Lonnie agreed.

27. There was a lengthy discussion by the TIMLM Workshop attendees, cataloging their concerns with many challenges to collaboration they currently encounter in their current work environments. These were captured by Bill Schindel, with the suggestion that the Patterns WG would use them as a basis to provide back a draft Collaboration Pattern intended to capture fundamentals of human-human, human-machine, and machine-machine collaboration, for review and improvement by the joint WG team members. It is understood that the Innovation Ecosystem project should illustrate support for collaboration described by at least some configurations of the collaboration pattern. Two reference texts related to this subject (see references on Pentland & Rogers), out of a larger body of literature. See also related research work being presented by Donna _____, MIT.

28. There was a discussion of initial frequency of web meetings on the proposed Innovation Ecosystem project, and agreement was made to meet twice in 1H2017 before IS2017.

29. Lonnie noted that the progress of the WG is itself constrained by collaboration issues that are the very subject of this work, asking us to consider whether we can accelerate our work by making use of it.

Patterns WG Contrib to Agile Systems WG – SSWG Joint Mtg 01.31.17 (Rick Dove, ASE WG Chair; James Martin, SSWG Chair)

30. Patterns WG contributed a discussion of the nature of the INCOSE Socorro Summit break-out on Fail Fast and Recover Early (FFaRE), in support of potential future "Summit" collaborative events by SSWG. Bill Schindel noted that the AIAA CASE (Complex Aerospace System Exchange) sessions have a similar objective of exchange engagement instead of educational presentation.

31. The nature of the collaboration targeted by these events is a special case of the Collaboration Pattern being pursued with the Innovation Ecosystem Project.

Patterns WG Session Contribution to Complex Systems WG   01.31.17   (Jimmie McGiver, Chair; Mike Watson, Co-chair)

32. Patterns WG met for one hour with the Complex Systems WG at their invitation, to explore potential for mutual interest in working together on some project. A short briefing was offered on the work of the Patterns WG, by way of introduction. (See the References slides.)

33. A number of suggestions from CxS WG members, and one from Patterns WG, were discussed as potentially worth exploring further:

a) The Patterns WG should in any case first study the Complexity Primer that has been produced by the CxS WG.

b) The two WGs could determine where and how S*Patterns might fit into this primer. For example, some of what the primer describes might be expressed as S*Patterns, if that is deemed to help the purposes of the Primer. Members of the CxS WG suggested in particular reviewing the tabular listing in the primer and considering how S*Patterns may fit, assist, or be aided by this listing.

c) Pattern recognition is important to system complexity in several ways, including (1) the recognition of patterns of complexity and (2) the complex behavior of systems with feedback and capable of extracting, learning, or recognizing patterns.

d) Limitations imposed by complexity are of particular interest to the CxS WG, in advising others about the challenges of dealing with complex systems, beginning with recognizing their presence, being aware of related limitations or other problems, and having some tools and techniques for addressing those issues. These might benefit from representation as system patterns.

e) CxS WG members encouraged consideration of layers of patterns.

f) John Thomas would like to provide effective guidance (patterns?) that characterizes and recognizes when systems are complex in ways that will impact human intent and ability to manage or otherwise cope with the effects of complexity, including exerting broad gauge (as opposed to fine detail) system trajectory "guidance". (This conversation was continued at length during the IW Marketplace session.) John would like to produce a condensed 1-2 page white paper targeting the INCOSE Directors and ADs on this subject.

g) Patterns WG pointed out that the INCOSE Agile Systems Engineering Life Cycle Management (ASELCM) Pattern, which contains multiple instances of ISO15288, is itself a fairly general class model of complex adaptive system (CAS) structure and behavior. (Refer to references.) Dorothy McKinney therefore suggested that the Complexity Primer might be used to intersect with the ASELCM Pattern, to determine implications for agile life cycles that arise from what the Primer describes.

34. The two WGs agreed to follow up on these interests, to see who might want to participate in a joint project(s).

Patterns WG – SoS WG Leadership Meeting   01.31.17 (Judith Dahmann, John Fitzgerald, Claire Ingram)

35. The Systems of Systems (SoS) WG and Patterns WG conducted a joint SoS Patterns Workshop at IW2016, and the leaders of these two WGs met at IW2017 to discuss continued interest in and timing of a follow on activity that had been previously discussed: The potential to add descriptive value to the previously identified SoS Patterns by expressing certain aspects that had been described in (outside the pattern model) words as a part of the modeled patterns, using S*Metamodel elements on a selective basis.

36. The SoS WG has been busy with its constituencies in gathering their "pain points" concerning SoS's, and is currently analyzing what has been collected.

37. In order to reduce perceived risk (on the part of both WGs), John Fitzgerald and Bill Schindel agreed to work together informally between IW2017 and IS2017 to try out a few of the related ideas together, to get a better sense of the promise and any limitations or concerns with using some S*Metmodel elements to capture some of the points of interest. In this way, by the time of IS2017 we should be ready to begin processing the SoS Patterns further, based on that informal experimentation.

38. SoS WG leaders also noted that, aside from the potential to help with representation of some of the library of SoS Patterns, there also seems to be the potential to express some of the SoS Best Practices using S*Patterns. In that connection, Bill Schindel pointed out that the differentiation they were making here is the difference between System 1 Patterns and System 2 Patterns in the overall framework of the INCOSE ASELCM Pattern.

Patterns WG – VSE WG Leadership Meeting   01.31.17 (Angela Robinson, Ken Ptack)

39. At the suggestion of Joe Marvin, Angle Robinson and Ken Ptack, leaders of the Very Small Entities (VSE) WG, each individually contacted the Patterns WG during IW2017, about interest in a joint project. During the Marketplace poster session, Ken reviewed the VSE Deployment Modules Project, describing artifacts associated with various modular subsets of ISO 15288 life cycle processes, and planned for four different levels of sophistication. Based on these preliminary exchanges, the potential to represent these, or portions of them, related process frameworks, or other related ideas using S*Patterns was noted as a possible joint project. The ability to configure an S*Pattern for various situations or applications is related. This could also tap the existing uses of S*Patterns to represent ISO15288 processes, as well as the INCOSE ASELCM Pattern. All for further discussion by the two WGs.

Other Patterns WG Related IW2017 Interactions During MBSE Workshop, Marketplace Poster Session, or IW2017 Sessions, 01.28.17-01.31.17:

40. ASME Model Verification and Validation Standards: Joe Hightower, Boeing, and member of the ASME Model Verification and Validation Standards Committee, was invited by Bill Schindel to deliver an awareness briefing to the MBSE Workshop, on the ASME Model V&V activities and assets. (See References and MBSE Workshop main sessions track, Sunday, Jan 29.)   This is a critical part of the model-based transformation: As we increasingly make use of model-based representations to support our decision-making, the question of how much we can trust these models becomes critical. The related discipline, validation and verification of models, is the subject of a significant literature and history, and now the subject of ASME efforts to summarize these in related standards and guidelines. Joe Hightower summarized this effort, the publications already available, and ongoing work by the related committees. The Patterns Working Group is particularly interested in this work because the verification and validation of patterns is an essential part of our work and of the history of models in science. Bill Schindel, from the Patterns WG, participates in Joe Hightower's ASME VV50 sub-team work.

41. Executable Models, from Patterns: Bob Sherman, Procter & Gamble, and Hubertus Tummescheit, Modelon, presented an MBSE Workshop session on executable models, using S*Patterns describing executable behavior to simulation systems based on standard language. Included use of an OSLC-FMI integration. Executabiity was described as an important step in closing the design loop, and the ability to have both simulation descriptions and results represented/captured in S*Model /S*Pattern tooling provides important infrastructure for this capability. (References, MBSE Workshop Main Track, Sunday, Jan 29).

42. MBE Transformation—Planning and Assessment for Enterprise and Industry Progress: Bill Schindel (ICTT System Sciences) and Joachim Fuchs (ESA) presented an INCOSE Corporate Advisory Board (CAB, chaired by Bob Swarz) report and break out session. (See CAB agenda, Saturday and Sunday, Jan 28-29). The presented and the break-out session exercised an early draft product from the INCOSE MBE Transformation effort lead by INCOSE AD for Transformation Troy Peterson. That product is the MBE Assessment and Planning Dashboard Instrument. The purpose of this instrument is to facility capture and communication of current state and plans for future state of an enterprise (or project, or industry sector) making the transition to a future model-based engineering state, across the ISO 15288 life cycle processes. CAB members provided feedback, used the instrument, and were provided with copies to take home and use in their enterprises. (See references.)

43. <u>Future Directions for SysML v2</u>: Sandy Friedenthal (Friedenthal Associates; OMG SE DSIG) presented a summary of the work in progress by the OMG Systems Engineering DSIG on Version 2 of SysML. This broadly-based effort is important to future progress in tooling and methods for Model-Based Systems Engineering. (Refer to references.)

44. <u>Integrating Modeling and Analysis; Production Systems</u>: Conrad Bock and Timothy Sprock, (NIST) and Leon McGinnis (GaTech) presented a session on both integration of those elements and also connecting production systems. This is closely related to applications of the S*Manufacturing Pattern, and a welcome addition in INCOSE. (See References)

45. <u>ASSESS, INCOSE, and the Changing Role of Engineering Simulation</u>: Joe Walsh, ASSESS, presented an overview of the changing role of simulation, including gating factors which must be addressed to achieve the potential rate of growth. (See References.)

46. <u>INCOSE Tech Ops Support for Joint Working Group Project Interactions</u>: At the IW Tech Ops WG Chairs Lunch, Director Mike Celentano asked the WG chairs how Tech Ops can help. In response, we described how the growth in joint WG project activities has complicated effective schedule planning for time and space resources at the two annual global meetings (IS and IW), and asked Mike is to consider how these two meetings can be further enabled to facilitate WG success of this kind.

47. <u>Health Care WG – Patterns WG Leadership Meeting</u>:   (Chris Unger, HC WG Chair)

    - Patterns WG agrees to continue to support the Health Care WG 2017 (third) Agile Health Care Systems Conference, scheduled for May, 2017, as part of the Conference Planning Committee.

    - Patterns WG agrees to encourage submission of conference content to the AHC Systems Conference (submission deadline Feb 28, 2017).

<u>Action Items:</u>

48. <u>PLE-PWG-TIMLM Ecosystem Project</u>: Build out tasks plan aligned with adopted Objectives, and align work to date with that plan; add participants; draft updated Collaboration S*Pattern from Jan 30 workshop notes.

49. <u>PLE-PWG Legacy Systems Method of Projections Project</u>: Review Alstom document, begin projection process per 2016 summary process.

50. <u>PWG Interface Pattern Project</u>: Review applicable S*Pattern data, define project goals, deliverables, and work plan

51. <u>CIPR-PWG Project:</u> Complete ET2016 publications; Establish targeted patterns intended users and uses, define work plan to add the other S*Metaclasses, determine EIS interests, add participants.

52. <u>SSWG-PWG</u>: Determine interest in scheduling a longer workshop outside the time constraints of concurrent INCOSE annual conferences.

53. <u>ASEWG-PWG ASELCM Discovery Project</u>: Update IEEE 2017 paper, update IS2017 papers, build out ASELCM Pattern, apply / validate in other case studies.

54. <u>SSWG-ASEWG-PWG</u>: Plan System Summit at GLRC2017.

55. <u>PWG-CxS WG</u>: Review Complexity Primer and analyze intersection with S*Patterns representations. Jointly review listed potential projects for those of interest to participants. Inputs to John Thomas white paper consideration.

56. <u>PWG-SoS WG</u>: John and Bill will pre-work a few simple examples using SoS patterns and issues of interest, before IS2017; based on results, subsequent work can begin at or around IS2017.

57. <u>PWG-VSE WG</u>: Draft description of VSE Deployment Modules related S*Pattern project(s).

Reference Materials:

58. Patterns WG IW2017 meeting web site: (Patterns WG meetings slides and other references for this meeting set)

    - http://www.omgwiki.org/MBSE/doku.php?id=mbse:patterns:patterns_challenge_team_mtg_01.28-31.17

59. INCOSE IW2017 MBSE Workshop web site: (Other meetings and references cited, from this IW)

    - http://www.omgwiki.org/MBSE/doku.php?id=mbse:incose_mbse_iw_2017

60. Patterns WG primary web site, within INCOSE/OMG MBSE wiki: (the primary MBSE Patterns WG web presence, including past meetings, materials)

    - http://www.omgwiki.org/MBSE/doku.php?id=mbse:patterns:patterns

61. Patterns WG web site within INCOSE public web site: (Conforms to INCOSE basic public WG web site, then links to MBSE wiki above)

    - http://www.incose.org/ChaptersGroups/WorkingGroups/transformational/mbse-patterns

62. Patterns WG INCOSE private CONNECT (Share Point) site: (Conforms to INCOSE CONNECT requirements, not currently used because private)

    - https://connect.incose.org/WorkingGroups/mbse-patterns/SitePages/Home.aspx

63. Example S*Pattern content:

    - http://www.omgwiki.org/MBSE/lib/exe/fetch.php?media=mbse:patterns:pbse_wg_meeting_slides_july_12-13_2015_1.2.2.pdf

64. INCOSE PBSE Methodology White Paper, by Patterns WG:

    - http://www.omgwiki.org/MBSE/lib/exe/fetch.php?media=mbse:patterns:pbse_extension_of_mbse--methodology_summary_v1.5.5a.pdf

65. References noted to TIMLM WG meeting, related to systemic aspects of certain forms of collaboration, requested by Lonnie Van Zandt:

    - Alex (Sandy) Pentland, *Social Physics: How Social Networks Can Make Us Smarter*, Penguin Press, 2014.
    - Everett M. Rogers, *Diffusion of Innovations*, Fifth Edition, Free Press, 2003

    The above two are interesting supplements to the larger and more prominent body of literature on collaboration.

66. CAB slides on MBE Transformation Planning and Assessment Instrument:

    - http://www.omgwiki.org/MBSE/lib/exe/fetch.php?media=mbse:patterns:mbse_initiative_slides_for_iw2017_incose_cab_session_v1.1.8.pdf