Meeting Minutes

Meeting: Aug 18-19, 2014, web meetings of Patterns Challenge Team of MBSE Initiative, via remote dial-in attendance. Spread over two days with common content to accommodate attendee calendars.

Participants:

(**=   co-chairs of challenge team)

| Name		Affiliation	Email	Aug 18	Aug 19
Cook	David	Moog Aerospace	'Dcook@moog.com'	*	
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Peterson (**)	Troy	Booz Allen Hamilton	peterson_troy@bah.com	*	*
Pickard	Andy	Rolls-Royce	Andrew.C.Pickard@rolls-royce.com	*	
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Schindel (**)	Bill	ICTT System Sciences	schindel@ictt.com	*	*
Valinoto	Tamara	Northrup Grumman	tamara.valinoto@ngc.com		*
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Summary (of both days):

1. This was the start of "patterns review" meetings of the Patterns Challenge Team. The meeting was held spread over two days for convenience of different members, similar both days (Aug 18-19).

2. We identified three patterns already in progress by sub-teams, and one in active planning.

3. We walked through the Stakeholder and Stakeholder Features portions of one example pattern under construction, and agreed to review this portion of the other patterns in progress next meeting.

4. Various questions related to the portions of the pattern reviewed were raised and discussed.

5. A tentative project schedule, rate of progress, and rate of team web meetings for the rest of 2014 were discussed.

6. Plans for related IS2015 papers were discussed.

7. We agreed to *meet again in two weeks, on Tuesday, September 2, at 4:00 PM EST.*

Details:

8. Pattern construction in active progress by three sub-teams:

    - Product (Oil Filter) and its Manufacturing System: Bill Schindel, Stephen Lewis (ICTT), David Cook (Moog), Saumya Sanyal (K2 Firm)

    - Aerospace Electronic System: Tamara Valinoto and her NGC colleagues

    - RC and Autonomous Car: Troy Peterson and BAH colleagues

9. Pattern in active planning by a fourth sub-team:

    - Verification System: Andy Pickard, Rolls-Royce (also an earlier interest of Dan Dvorak, JPL)

10. Submission (in November) of related IS2015 papers is encouraged. At least two are in the works, from teams listed above.

11. The review of the Stakeholder pattern segment led to a discussion of different terminologies / practices as related to ideas associated with the word "stakeholder":

   a) Some person(s) speak(s) for / represent(s) the interests of ultimately impacted parties in a system of interest. This person has a very practical / important role of advocating for and approving or signing off that the interests of the ultimately impacted parties have been acceptably addressed. Typical examples would be the Lead Maintainer, Operations Management, Safety Specialist, Medical Specialist, Product Manager, Regulatory Specialist/Regulator, or General Manager. (In S*Models, this party is called the "Stakeholder Representative" or "Stakeholder Advocate". The specific name is less important than the idea represented here.) Parties of type (a) are the "voice of" or "speak for" parties of type (b), below.

   b) Some party (typically a whole class of individuals or organizations) is ultimately impacted (for better or worse) by a system of interest. This party, for practical reasons of distance and large population, is often not very directly available to planners, but is represented by (a) above. However, understanding the nature of this party (b) and their interests is absolutely essential. A common mistake/pathology is confusing this party with (a) above, wherein we begin chasing "check box" goals versus the real needs. One hundred percent of the trade space value model for the system of interest is associated with these (type b) parties. Typical examples, associated with those in (a), would be the Equipment Maintainer, Equipment Operator, Patient, Consumer, or Company Shareholder/Owner. (In S*Models, this party is called a "Stakeholder". The specific name is less important than the idea represented here.)

   c) Some entity (person, inanimate thing, organization, etc.) directly interacts physically with a of interest system, through exchange of force, energy, mass flow, or information exchange. Parties of type (c) may overlap with those of type (a) and (b) above, but need not. Whereas parties in (a) and (b) are associated with modeling the value trade space of the system, parties in (c) are associated with modeling one hundred percent of the technical requirements of a system. (In S*Models, this entity is called an "Actor". The specific name is less important than the idea represented here.)

12. We discussed an example of the Stakeholder Model section of an S*Pattern, shown in the meeting slides for the Oil Filter Pattern.

13. We discussed the use of (Stakeholder) Features / Feature Attributes to define the trade space for a system family. This means that all decisions or arguments about design or other aspects would in every case reference the Feature impact to defend or rationalize the decision or argument.

14. We discussed an example of a Stakeholder Feature Model section of an S*Pattern, shown in the meeting slides for the Oil Filter Pattern. This included the model of Stakeholder-Feature associations: which Stakeholder classes are impacted by which Stakeholder Features.

15. There was a discussion of the population / depopulation of Features in a pattern to arrive at individual configurations within the product line, with setting of values of Feature Attributes also a part of that configuration process.

16. There was a discussion of the use of a subset of the Feature Attributes to describe summing-up of value for a whole system, versus the value of individual features. Utility variables versus more specific stakeholder issues. Consumer likelihood of purchase or win, market share, couplings.

17. We discussed the intention to use a System Pattern to describe a whole product line, configurable for different members of that product line. An S*Pattern is a configurable S*Model, not yet configured for a specific system instance. (In that sense, it is a "150% model" of different systems that could have <u>fewer types</u> of classes when instantiated. However, they could have <u>more instances</u>!") From a single S*Pattern, many different configured S*Models could be generated, representing different system configuration instances:
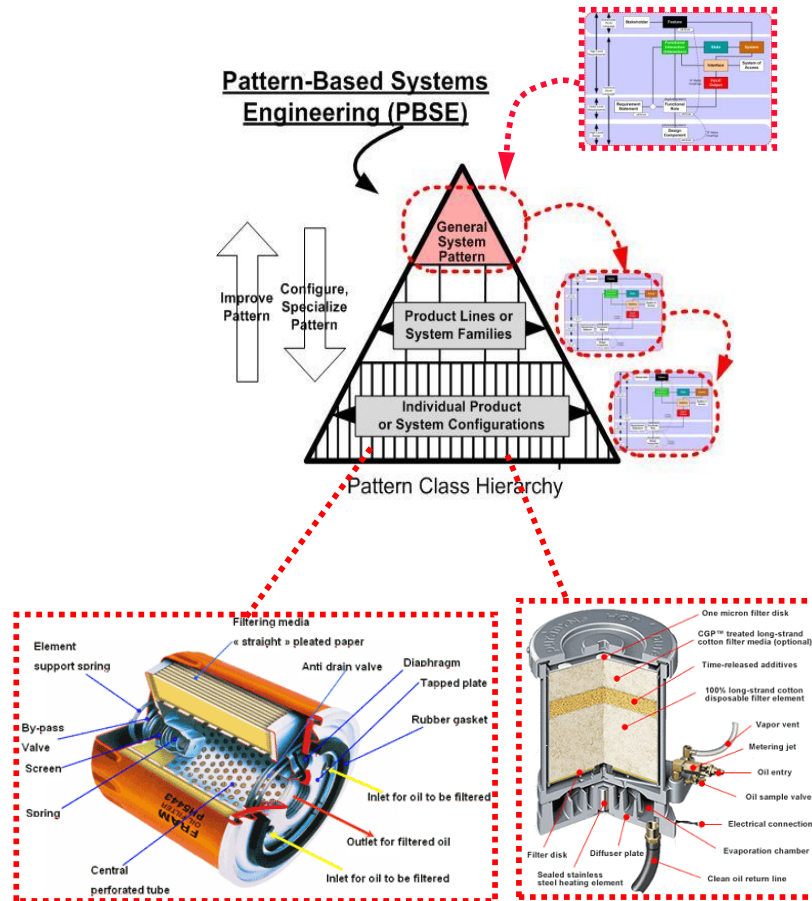
18. The "down stroke" in the above diagram represents, in the most general case, some form of <u>specialization</u> of a higher level pattern into a lower level specific model. A subset of all these forms of specialization is of particular interest, and that is <u>configuration</u>. In the methodology described here, all configuration is specialization, but not all specialization is configuration. By "configuration", we refer to forms of specialization limited to just two kinds of operations:

- Individual classes and relationships of the higher level pattern shown above are either populated (*possibly multiple times*) in the specialized model below it, or else they are not populated at all. (Sometimes called population and depopulation.) (e.g., some Stakeholders and Features from an S*Pattern may be populated or not in a configured model.)

- Individual attributes (parameters) of classes and relationships of the higher level pattern shown above are given <u>values</u>. (Example: "List Price" is set to $450.00.) (In some cases, these values may be ranges, or enumerated lists. In some cases, there may be value sets, such as ranges and lists, already set in the higher level pattern. The specialization process in general narrows the ranges and shortens the lists.)

19. We also looked at a SysML model of this same example S*Pattern, stored in a (Sparx) Enterprise Architect (EA) modeling tool, and shown in the meeting slides. This included noting some style differences in various views available in different tools, such as an X-Y Matrix display of the Stakeholders-Features associations.

20. Tamara Valinoto indicated that the NGC Electronic Systems Pattern is being constructed in Atego's Artisan SysML tool. They are currently running Release 7.4, so don't yet have access to all the Product Line Engineering (PLE) elements of Release 8, but look forward to it.

21. We discussed the fact that an S*Pattern is effectively an architectural framework, and ability to construct S*Patterns within (for example) DoDAF, etc.

Action Items:

22. Establish sub-team project work plans and proceed against them. (All team members performing 2014 projects)

23. Follow up on "stakeholder" terminology discussion (Bill S., Mike V., et al)

24. Generate meeting minutes and distribute to attendees and interested parties. (Troy P, Bill S)

25. Update team web site with more background and references on other historical pattern efforts in systems and specific domains. (Bill S)

26. Follow up with Rick Dove on his 2014 versus 2015 plans, related to Agile WG and Security WG and related outreach. (Bill S)

27. Support IS2015 paper(s) from project teams (All interested team members, Bill S, Troy P)

28. Report to MBSE Initiative on Challenge Team plans and status (Bill S)

29. Continue to seek liaison with other INCOSE WGs, including Energy & Power (Katie), Agile and Security (Rick, Bill), or others.

References:

30. August 18-19 meeting agenda and slides, at http://www.omgwiki.org/MBSE/doku.php?id=mbse:patterns:patterns_challenge_team_mtg_08.18.14

31. Patterns Challenge Team web site (contains all the following downloadable references): http://www.omgwiki.org/MBSE/doku.php?id=mbse:patterns:patterns ; other references on PBSE provided there.

32. Patterns challenge team Charter (see web site)