---------------------- REVIEW 1 --------------------
PAPER: 36
TITLE: Model Lifecycle Management for MBSE
AUTHORS: Amit Fisher, Sanford Friedenthal, Mark Sampson, Lonnie
Vanzandt, John Palmer, Mike Nolan, Michael Loeffler, Manas Bajaj,
Krista Hovey and Laura Hart

OVERALL EVALUATION: 0 (borderline paper)
REVIEWER'S CONFIDENCE: 4 (high)
1. Content advances the knowledgebase for, or the practice of, systems
engineering (please see review criteria description): 2 (fair)
2. Content is substantive: 3 (good)
3. Content is logical: 3 (good)
4. Content assertions are backed by supporting data: 1 (poor)
5. Content is effectively conveyed and key concepts are integrated: 2
(fair)

----------- REVIEW -----------
This is an extremely important topic area, screaming out for solutions
and analysis of those alternatives. From this perspective, I was
thrilled to read the abstract and such an impressive collection of
author affiliations.

The authors correctively (IMHO) recognize the importance of a
heterogenous collection of tools as well as a "multiple version-
controlled model repository approach". Unfortunately, the paper falls
short of actually getting into the specifics (i.e., detailed discussion
of issues) of why MLM is challenging. No solution approaches are
offered or even hypothesized beyond the brief discussion of RDF, Linked
Lifecycle Data, and OSLC. As a result, there was not much to take away
from the paper beyond the fact that the authors are looking into the
problem.

Technically, I expected the concept of a "baseline" introduced in
Section 2.1 to play a much more significant role in the latter
discussion. The ability to define and manage a baseline across a
heterogenous collection of tools with multiple version control systems
seems to be the greatest challenge of all. It's not too difficult to
see how linking across model elements in different tools can be done,
yet it is much less clear how consistent configurations and baselines
can be identified and managed across these linkages as different
elements in different tools change. That is the crux of the challenge.

More generally, the paper is in "rough" shape in terms of the actual

writing. This can be readily corrected, but grammar, punctuation, and sentence structure need some focus. Also, some of the text is repetitive and overly buzz-word laden. The paper could be readily shortened with improved readability.

Some more specific detailed comments:

1. The Figure 1 caption is "A Representative Model Management Concept". It appears to me to more simply show version history relationships among three models. If this figure is really supposed to show an MLM concept, either it or the prose describing it fall short. Could the figure be extended to show valid configurations? And/or a defined baseline? Could it show the problems that occur when one model changes thus leaving the entirety in an inconsistent (i.e., potentially invalid cross-model linkages) state?

2. It's a nit, but in the second paragraph on the definition of a model there is a "for example a free text requirement document will not be in scope" statement prior to the discussion a few sentences later which says why.

3. Why are software models omitted from text almost throughout? Also, structured requirements repositories as in DOORS? These belong ... they are key aspects to all the authors' companies.

4. I am not clear on why you introduced Figure 2. After going through the definitions they are hardly used. I suggest you make more specific relationship to how model elements and model element containers relate to the MLM concepts.

5. Your definition of model configution item does not specifically call out linkages than may exist across models. These are critical (perhaps should even have their own definition) and are the crux of the problem with defining consistent configurations and baselines.

6. If you want to maintain distinct definitions for configuration and baseline, shouldn't there be some notion of "consistency" associated with configuration? One of the problems MLM will hopefully address is ensuring that it is possible to identify (and rectify) when a configuration is "broken" in some way because one of the models changed and another did not.

7. You introduce the term "metadata" but never use it. Why?

8. In section 2.2, I would expect CM and DM to appear as overarching terms. Perhaps I am too simplistic about it, but in my mind ALM and PLM and MLM are forms of CM and DM. Just something to consider.

9. To me, the section 3 use cases are unnecessarily confusing and non-specific. If you are going to focus on a just a few key use cases, then I would expect some basic things like "a reliability analysis model determines that in order to meet requirements, redundancy must be added to the architectural model." This simple use case drives a real MLM problem; namely the linkage between the architecture and its redundancy and the performance analysis model that shows whether the solution suffices. And what happens when either side changes again?

10. Is the physical/logical distinction necessary for the discussion that follows? It doesn't seem to be worth discussing.

11. In section 4.1, it might be clearer to call out a "hybrid" model distinct from the last paragraph in the multiple local repository discussion. And hybrid models are probably the most common in practice.

12. How does one strike a baseline in a multiple version-controlled model repository? The difficult with that isn't even mentioned.

13. In section 4.2, how does option #4 (a CM system tracks who made commits but atomic modifications are non-attributable) work? Isn't a commit an atomic modification by definition? At least if what you are commiting is a change to the lowest granularity of CM.

14. The subparts of section 4.3 don't mesh well together. I assume they were prepared by different authors; what is needed is some alignment on the sort of information you are trying to capture in this discussion.

15. I really hoped that when I got to section 5.2 I would find some discussion on an approach to solve the MLM problem. These are good background technologies to mention but why not dive into a discussion on how to use OSLC to address the real problem instead?

16. This paper would be much stronger if instead of providing some background and an outline for further research, it addressed one of the following: a) detailed discussion of challenges, b) a proposed solution, or c) the definition of a "challenge problem" as discussed in section 5.3 item #6.

17. In appendix A, shouldn't there be some requirements related to checking for consistency across a model configuration, and for managing baselines across multiple tools and repositories?

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PAPER: 36

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OVERALL EVALUATION: 2 (accept)
REVIEWER'S CONFIDENCE: 4 (high)
1. Content advances the knowledgebase for, or the practice of, systems
engineering (please see review criteria description): 4 (very good)
2. Content is substantive: 4 (very good)
3. Content is logical: 4 (very good)
4. Content assertions are backed by supporting data: 4 (very good)
5. Content is effectively conveyed and key concepts are integrated: 4
(very good)

----------- REVIEW -----------
As described in the paper MLM is becoming a major challenge as soon as
MBSE is applied across the complete lifecycle with the need to
interface model artifacts from various model types.
It is a good paper to bring the issue to the SE commnuity.

---------------------- REVIEW 3 ---------------------
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Vanzandt, John Palmer, Mike Nolan, Michael Loeffler, Manas Bajaj,
Krista Hovey and Laura Hart

OVERALL EVALUATION: 3 (strong accept)
REVIEWER'S CONFIDENCE: 4 (high)
1. Content advances the knowledgebase for, or the practice of, systems
engineering (please see review criteria description): 4 (very good)
2. Content is substantive: 4 (very good)
3. Content is logical: 4 (very good)
4. Content assertions are backed by supporting data: 3 (good)
5. Content is effectively conveyed and key concepts are integrated: 4
(very good)

----------- REVIEW -----------
very good and key topic on MBSE today, well presented although to be
completed by IW 2014 MBSE workshop; appreciated also the list of
requirements in appendix.

---------------------- REVIEW 4 ---------------------
PAPER: 36
TITLE: Model Lifecycle Management for MBSE

AUTHORS: Amit Fisher, Sanford Friedenthal, Mark Sampson, Lonnie
Vanzandt, John Palmer, Mike Nolan, Michael Loeffler, Manas Bajaj,
Krista Hovey and Laura Hart

OVERALL EVALUATION: 2 (accept)
REVIEWER'S CONFIDENCE: 4 (high)
1. Content advances the knowledgebase for, or the practice of, systems
engineering (please see review criteria description): 3 (good)
2. Content is substantive: 3 (good)
3. Content is logical: 2 (fair)
4. Content assertions are backed by supporting data: 2 (fair)
5. Content is effectively conveyed and key concepts are integrated: 3
(good)

----------- REVIEW -----------
The topic about MLM is important in developing systems. Implementing
MBSE without MLM should be less effective.
I miss these topics:
What are the risks at organisation level in relation tot budget and
schedule when making the wrong choices?
What are the risks at development level in relation to quality, budget
and schedule? for example by storing information in different models,
relation between models, etc there is a risk that information got lost.

How to deal with different cultures of the stakeholders (for example
environmental experts who are working with pollution models and
mechanical engineers who are working cfc's and CAD models and software
engineers who are building controls) they speak different languages.
Information should than be transformed.

What are compentences needed by organisations to implement MLM as part
of implementing MBSE in their organisations?

--------------------- REVIEW 5 ---------------------
PAPER: 36
TITLE: Model Lifecycle Management for MBSE
AUTHORS: Amit Fisher, Sanford Friedenthal, Mark Sampson, Lonnie
Vanzandt, John Palmer, Mike Nolan, Michael Loeffler, Manas Bajaj,
Krista Hovey and Laura Hart

OVERALL EVALUATION: 3 (strong accept)
REVIEWER'S CONFIDENCE: 4 (high)
1. Content advances the knowledgebase for, or the practice of, systems
engineering (please see review criteria description): 4 (very good)
2. Content is substantive: 4 (very good)
3. Content is logical: 5 (exceptional)
4. Content assertions are backed by supporting data: 4 (very good)

5. Content is effectively conveyed and key concepts are integrated: 4 (very good)

----------- REVIEW -----------
The intent of the paper is good. I think the intent is to spearhead an effort to develop this further. A mature MLM will be required before companies decide to invest heavily in MBSE. The paper does a good job of explaining the motivation, approaches, and some current practices of MLM. Concluding with a good summary of a potential roadmap for INCOSE to develop this technology. I was a little disappointed that the paper was not completed and the authors say so in comments to the reviewers but look forward to seeing the final product after IS2014.