The Second Semat Workshop:
On the Road to an Architecture Baseline

July 13-14, 2010 Washington D.C

Prepared by Shihong Huang
The Outreach Group

Following the first Semat workshop in Zurich on March 2010, the second Semat workshop took place in Washington D.C. on July 13 – 14, 2010. The workshop was attended by 21 people who have been actively involved in the contributions and discussions of the six Semat tracks' activities. The workshop's atmosphere was very positive, accompanied by rigorous discussions, constructive comments, and a collaborative spirit. The general consensus of the meeting is that we are making steady progress towards the goals laid out before and will reach our one-year milestone with anticipated results.

This report highlights the events of this 2nd Semat workshop, including its activities, track presentations, major results, timeline of tasks, and future venue.

1 The Activities

The activities of the workshop consisted of three parts. The pre-meeting discussion served as a precursor to the entire workshop. It laid out the workshop's focuses, highlighted progress that has been made, issues to address, and goals to achieve before the next workshop in September. The first day of the workshop was dedicated to the six tracks' status reports and gathering feedback. The second day focused on the discussions of each tracks' concerns and ways to moving forward. In addition, a significant amount of time was allocated to track coordination and definitions, and open discussion of concerns and challenges.

2 Track Presentations

Each track lead presented work that has been done, next steps, and the discussion of concerns and comments. This section briefly highlights the track activities and progress.

2.1 The Requirement Track

Dave Cuningham was named as the new track lead. The Requirement track was created to contextualize and provide scope of Semat. It identified the use cases to be supported by Semat and it prioritized them. The results of the track are to describe some use cases, to provide a common glossary for the kernel language, and to facilitate and support other tracks.

Initially, regarding use cases, there were 20 users Identified (8 of which were sub-categories of Practitioner) and 102 Associated Things or Activities. Then 27 "scenarios" were elaborated and these were later prioritized by the track members, two of which were chosen for further elaboration: understand software engineering and compare methods.

The track identified a set of highest priority use cases needed to be specified that would help Semat reach a stable architecture. These use cases are: define practice, validate practice, compose method, and evaluate method.

2.2 The Universal Track

The goal of the Universals track is to identify the universal elements of software engineering that must be part of the Semat kernel. Its overall goal is to create a platform (the kernel) allowing people to describe their current and future practices and methods so that they can be composed, simulated, applied, compared, evaluated, measured, taught and researched.

Ian Spence, track lead, presented the track progress, the track activates, what they have found so far, and what is next. The Universal track has identified seven universals, i.e., External Stakeholders, Software System, Team, Opportunity, Requirements, Work, and Method. Each universal has a detailed description document, including what it is, why it was selected, and where it came from, and background including the other names that were considered and why they weren't taken forward.

2.3 The Kernel Language Track

The kernel language track is at the heart of Semat. Its activities and progress have a direct significant impact on other tracks. The kernel language track presentation given by Ivar Jacobson (track lead) included three parts: an overall introduction, kernel language requirements, and language definition and examples. At the end, a plan for the next iteration was proposed.

The track report suggested the conclusion of the inception phase of Semat. We have started the elaboration phase and are getting to a stable architecture. Kernel language requirements have defined 14 use cases related to the kernel language, and a kernel language supplement that was extracted from the Vision Statement. An initial set of prioritized use cases have been identified, they are *define practice*, *validate practice*, and *compose practice*. A detailed description of "defining a software engineering practice" use case was presented. At last, the scope and focuses of the kernel language glossary were presented.

Kernel language track also proposed the first draft of the kernel language with abstract syntax using class diagrams in UML notation, which could be later transformed into other meta-languages, such as KM3.

2.4 The Assessment Track

The Assessment track has provided two key "dimensions" that need to be assessed: (a) (internal) assessment of "readiness of Semat products", which aims to assess whether the products of the various Semat tracks are suitable for use based on criteria such as: consistent, useful, usable, understandable, sufficient, etc. (b) (external) assessment capability as part of Semat product(s), focused primarily on Semat Universals.

The Assessment track report was presented by track lead Paul McMahon. The presentation mentioned that software development practices depend on the context of the project. What should be assessed depends on what is important about the context.

There are three immediate goals of the Assessment track. The first one is to define suitable assessment approaches to support users of Semat in assessing their software engineering work against Semat outputs. The second one is to Identify assessment approaches to use *internally* by Semat track participants to self-assess their own work. The last one is to propose a strategy and supporting plan for managing the assessment of Semat outputs as they are used by end users. The general discussions concluded that the primary output of the Assessment track should be focusing on an Assessment Framework for Semat user self-assessment.

2.5 The Definition Track

The task of the Definition Track is to track the concepts developed in other tracks and ensure that each has a definition that is clear, rigorous, acceptable to the industry, legally publishable and not contradictory nor unnecessarily duplicative with Semat or other terms. Though Semat definitions will remain with the formal models and tracks in which they are defined, the Definitions Track may provide and maintain relevant informal terms for use by all tracks.

2.6 The Theory Track

The Theory track was led by Michael Goedicke. Track lead emphasized that the track not only needs to provide logical theories, but also empirical theories for Semat to explain the relationship among the elements of a concept, e.g., Universals. A theory provides the basis to derive (additional) properties. Roughly speaking, there are two kinds of theories: one is mathematic/logics based that use formal languages, algebraic systems; the other is empirical theories that use statistics, psychology, sociology etc. He also showed a software engineering map where software engineering theories apply. He used an example to explain the relationship between theory track and others. For instance, the universal track provides concepts, where the theory track provides formal explanations of the concepts.

3 The Overall Results

If the Zurich workshop served as the requirements elicitation, validation and verification phase of the Semat initiative, the Washington D.C. workshop can be seen as making concrete and tangible progress towards our final goals. Each track has been working diligently to produce intermediate results. This section highlights some of the overall workshop discussions and results.

One of the consensuses reached was that we have finished the inception phase of Semat, and have started the elaboration phase that is getting to a stable architecture.

3.1 Domain Definition for Kernel Language

Ivar Jacobson and Stephen Mellor have developed the Domain Definition for the Kernel Language. The document describes the objective of the kernel language, the principal intended users of the kernel language, and the expected attributes of the kernel language. A draft of the domain definition v1.3 is available at

http://www.semat.org/pub/Main/TracksReports/Domain_definition_v_1.3.pdf

3.2 Structure of Semat

An issue was raised whether some of the tracks should be merged and reorganized. After a plenary discussion by the participants, the consensus was that although the current track structure is not perfect, it is surely good enough to carry out the concurrent tasks moving forward. So we will keep it as is. All track structures are kept intact and now each track works towards the delivery of phase reports before the next Semat workshop. The question about track structure will be raised again at the next meeting when we will have a better understanding of where we stand. Track coordination is needed among tracker leads.

3.3 Two Kinds of "Practices"

It was agreed that we would drop the word "pattern" as these patterns just seem to be a different kind of practices. There are two kinds of *practices*: one is "peer practice" that defines a

sequence of activities to be undertaken, and has clear beginning and ending states; the other is "cross-cutting practice" that qualifies how the activities being undertaken should be done.

3.4 New co-Lead of the Kernel Language Track

Together with lead Ivar Jacobson, Michael Goedicke has accepted to be the co-lead of the kernel language track. With his expertise in language and theories, Michael will be a great asset to the track.

3.5 Timeline for the Kernel Language

A timeline of various tasks has been proposed and accepted by the troika and participants. Each track will synchronize with the kernel language timeline to coordinate their work and deliverables.

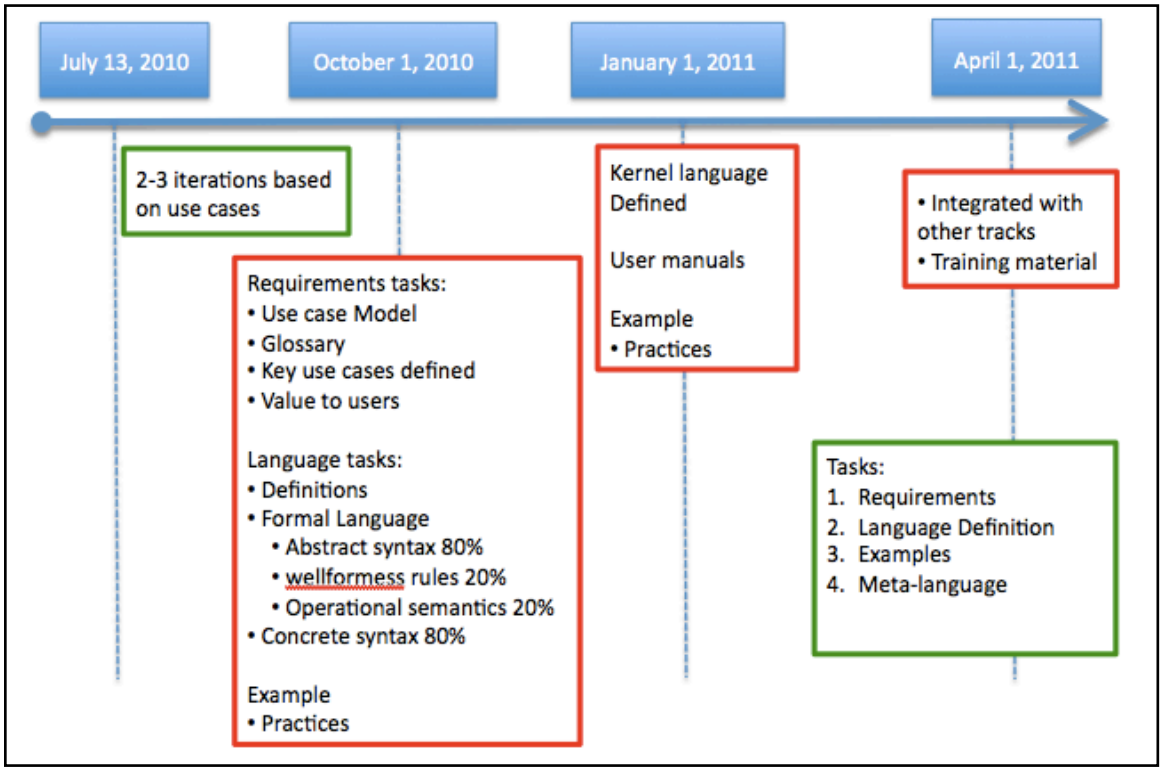

Figure 1: Kernel Language Timeline

4 Final remarks

General remarks:

- Work is in progress. The six tracks are progressing. The kernel language plan and next iteration have been presented, with which all tracks have agreed to synchronize their activities.
- We have agreed upon a plan for tasks before the next meeting in September 2010 and before April 1, 2011.
- We are making progress but more time is needed before concrete results can be identified.

- There was a discussion of risk factors mentioned by Stephen Mellor and mitigation at the end of the meeting, and that the Requirements track would work with the Assessment track in developing track self-assessment metrics.

Action Items:

- More coordination is needed among tracks. We will need to arrange such meetings on a regular bases.
- Identify five practices that Ian Spence would work with, and, if resources can be found he will present them at the next meeting.
- At the end, we will need to use Semat to describe two selected methods, i.e., Scrum and UP. But this work must wait until after the next meeting.
- Need to have a good mechanism to share documents and collaboration among tracks.

5 The Future Venue

The 3rd Semat workshop will be held on September 30 – October 1, 2010, at the PricewaterhouseCoopers (PwC) Office in Milan, in the "Il Sole 24 Ore" headquarters building, designed by Renzo Piano architect. There will be a pre-meeting day on September 29 for individual track preparations. The 3rd workshop will be co-located with the 5th International Forum on Agile Modeling Architecture. Detailed information of this event will be posted on the Semat website (www.semat.org).

Workshop Participants

The 21 workshop participants are listed below:

- Arne-Jørgen Berre
- Jean Bézivin
- David Cuningham
- Boban Danilovski
- Jorge Diaz-Herrera
- Gerhard Esterhuizen
- Michael Goedicke
- Carson Holmes
- Shihong Huang
- Ivar Jacobson
- Mira Kajko-Mattson
- Mark Kennaley
- Philippe Kruchten
- Paul McMahon
- Stephen Mellor
- Bertrand Meyer
- Gunnar Overgaard
- Robert Pettit
- Ed Seymour
- Richard Soley
- Ian Spence