

**IEEE P1800 SystemVerilog Study Group**  
**APPROVED MINUTES**  
**13 May 2010**  
**8:00 a.m. – 10:00 a.m. PDT**  
**Teleconference**

**1 CALL TO ORDER - INTRODUCTIONS & AFFILIATIONS**

The meeting was called to order at 8:07 a.m. PDT.

**Member DRs/DRAs Present:**

Dennis Brophy (Mentor Graphics, DR)  
Mehdi Mohtashemi (Synopsys, DR)  
Karen Pieper (Accellera, DR)  
Neil Korpusik (Sun, DR)  
Charles Dawson (Cadence, DR)  
John Havelick (Freescale, DR)  
Daniel Even-haim (Intel, DR)  
Dave Gates (AMD DR)

**Member DRAs Present:**

Yatin Trivedi (Synopsys DRA)  
Dave Rich (Mentor Graphics DRA)  
Brad Pierce (Synopsys, DRA)  
Scott Little (Freescale DRA)  
Matt Maidment (Intel DRA)  
Dmitry Korchemny (Intel DRA)

**Observers:**

Shalom Bresticker (Intel)  
Cliff Cummings (Sunburst Design)  
Scott Little (Freescale)  
Michiel Ligthart (Verific)  
Rishiyur Nikhil (Bluespec)  
Gordon Vreugdenhil (Mentor Graphics)  
Mike Kipness (IEEE SA Staff)  
John Marshal (Marvell)

Chair Pieper shared the IEEE SA website that has Basic and Advanced Member lists can be found at [http://standards.ieee.org/sa-mem/corp\\_overview.html](http://standards.ieee.org/sa-mem/corp_overview.html).

**2 APPROVE AGENDA**

A motion (Dennis Brophy, Yatin Trivedi) was made to approve the agenda. The motion passed unanimously.

### **3 PATENT POLICY AND CALL FOR PATENTS**

Chair Pieper read the IEEE patent policy to the group and displayed it on the WebEx. The patents slides can be found [here](#).

### **4 APPROVAL OF MINUTES**

A motion (Mehdi Mohtashemi, Charles Dawson) was made to approve to approve the 8 April 2010 meeting minutes. The motion passed unanimously.

### **5 FUNDING, BUDGETING, AND FINANCIAL UPDATE**

None.

### **6 SCHEDULE STATUS UPDATE**

June 10, 2010 Teleconference 8 a.m. PDT

June 16, 2010 NesCom meeting to discuss P1800 PAR

There were a few comments from NesCom members and are cataloged in My Project. Karen will that the action to work with Mike to review the comments.

July 8, 2010 Teleconference 8 a.m. PDT

### **7 DISCUSSION OF SCOPE DOCUMENT**

The committees need to come back to the WG to determine what can be done by October 2011. The review process takes 6 months to complete. Matt says they cannot do all the 25 items. What they can do, needs several meetings to determine.

Minor clarifications and errata can be addressed. But major items need full working group approval.

In 5.2 Scope: SystemVerilog is a Unified Hardware Design, Specification and Verification language. This document revises the IEEE 1800-2009 revision with errata resolutions, clarification, and enhancements for hardware design and verification.

5.3 Purpose: The purpose of this document is to provide the EDA, semiconductor, and system design communities with a solid and well-defined unified hardware design, specification and verification standard language, while resolving errata and developing enhancements to the IEEE 1800-2009 revision. The language is designed to co-exist, be interoperable, possible merge, and enhance those hardware description and verification languages presently used by designers.

A motion (Dennis Brophy, Neil Korpusik) was made to make the above changes to update the PAR. The motion passed unanimously.

## **8 P1800 TECHNICAL COMMITTEES AND CHAMPIONS OPERATIONAL UPDATE**

### **BC**

The BC Presentation on top-25 list can be found at [http://www.eda.org/sv-bc/SV-BC\\_Scope\\_for\\_1800-2012.pdf](http://www.eda.org/sv-bc/SV-BC_Scope_for_1800-2012.pdf). Matt reviewed how the committee did the work to conclude on the 25 and this is highlighted in the slide presentation.

Looking at the results, there is a mandate for the top issues. The top 8 items have a high weighted score. The top-4 items had scores greater than 200 and much greater mandate than the next 4.

The results were juxtaposed to the February meeting results. The top-5 BC items are covered by the February results, except for the connections to analog. The BC suggests that the connections to analog be handled by a separate committee.

Issues still continue to come in. What can they work on as more issues are uncovered? The Top-25 issues are ballot issues and should be addressed before other issues. Rules to keep focused on the top-25 need to be put in place and have a process to change the focus new items cause this.

### **EC**

The EC Presentation can be found at [http://www.eda.org/sv-ec/hm/att-7409/SVEC\\_top25\\_13May2010.pdf](http://www.eda.org/sv-ec/hm/att-7409/SVEC_top25_13May2010.pdf). Mehdi indicated they followed the same voting process as the BC that Matt outlined.

Duplicate Mantis items were consolidated into one by closing out one of the duplicates. 8 of 25 in the list are listed as enhancements. This does not mean that the others are not enhancements. The guideline recommendation was to do this in context of the February meeting list, 6 of top-10 are covered.

We are in for a long haul to get these items done because the level of difficulty was rated high for the proposed items.

A voting process was tried to identify the most critical issues. It was noted that even the top-5 items will keep the BC busy for one year. Thus, trying to schedule all the issues may not have meaning. Those items that can be done in the allotted time should be addressed.

The BC may require requirements documentation to be written for items to get further BC consideration.

## AC

The AC Presentation can be found at <http://www.eda.org/sv-ac/hm/att-8930/SVACScopeFor2112.pdf>. Dmitry indicated the AC did not prioritize based on Mantis items, but according to issues. Instead of selecting 25 issues, they selected 12 issues covered by 33 Mantis items.

AMS assertions came out as the highest ranked item. The next major item was Checker Usability. The next category that was most important was Assertion System Functions. The presentation shows the follow-on items that follow these first three.

The AC items were mapped on to the list from the February meeting.

## Ad Hoc

Brad had offered an update on his Ad Hoc. There is AOP from Marvell that may not match well with SV. Power intent should be incorporated. There was no consensus and there is room for improvement. Gordon Vreugdenhil indicated there are important programming language concerns that are falling through the crack. They may be boring and not specific features. Therefore, it might be appropriate to divert some of those small items to a smaller committee to address.

The problems we have today in SV come from a specification that is written by committee rather than from work that is known and used in practice. That is why we get so many clarification requests and a high level of dissatisfaction.

## CC

The CC did not have a presentation completed for today. Chas did report back on committee activity. There was a question about what the point of the scope document is. Is it to work on the things in the next two years? What happens if we get to the end of two years? If the work in the scope is not done, do we continue or drop that not done from the scope then?

There are issues on extending VCD. That part of the LRM is traditionally done by another committee. It could really be an SV-CC issue.

The CC is concerned about new things coming in as it has to support the new features from the other groups. Since they don't know what those features will be, they cannot add them to their scope document yet. The CC cannot know in advance if the new items are simple or complex. Until they know what the other committees want and what is approved to work on by the full committee, it cannot give an assessment of what it will take to do its work.

They are prioritizing current items and determine the effort to solve those items. At their next meeting they will be done with this effort and can prioritize them.

## Other

Discrete Domain Real Modeling was reviewed by John Havelick. John and Scott Little have had discussion on it. This proposal is not a SV and Verilog AMS merger. There is an Accellera group that is looking at that right now. The basic problem they have is that mixed simulation models are too slow due to the speed of the analog solver. What they want to do is be able to swap out to real model to the discrete analog that the digital simulator can handle with better performance.

Scott highlighted a few of the common features they have been discussing which added to the motivation to do this. There are a lot of people that right packages to create real nets with the idea of resolution functions – and other types of nets with a struct type too. The users can create a generic net type with a resolution function to resolve two driving a net. If a net of one type driving a net of another type that is not assignment compatible, there is a way to convert them to bridge between when the models are swapped. That is the direction they would like to take this work.

John suggests that we determine what kind of committee or task force be created to see if the working group supports it.

Why is this not good for AMS to work on? The language alignment is better with SV than with the AMS team so the SV people should be involved. Would multiple drivers no different types of nets be addressed in AMS? Yes, it is being addressed there, but this is to be dealt in the discrete domain only – not the continuous or analog domain. Therefore it is a better fit here.

Since this does not fit in any one place within 1800, what group of people from what sub teams would be needed to address a solution on this?

**ACTION REQUEST [Brad Pierce]:** Scope for the futures committee (Ad Hoc FC)

**ACTION REQUEST [John Havelick]:** Drive the discrete committee (Ad Hoc DC)

Karen wants the paragraphs of scope back by 27 May 2010. She also wants approval of the other PAR changes by 27 May 2010.

## **9 NEW BUSINESS**

## **10 NEXT MEETING (ANNOUNCE DATE, TIME, AND LOCATION, IF KNOWN)**

June 10, 2010 P1800 Meeting teleconference 8 a.m. PDT

## **11 ADJOURNMENT**

A motion (Dennis Brophy, Charles Dawson) was made to suspend the meeting until 27 May 2010 8:30 a.m. PDT.

**IEEE P1800 SystemVerilog Study Group**  
**APPROVED CONTINUATION MINUTES**  
**27 May 2010**  
**8:00 a.m. – 10:00 a.m. PDT**  
**Teleconference**

**1 CALL TO ORDER - INTRODUCTIONS & AFFILIATIONS**

The meeting was called to order at 8:07 a.m. PDT.

**Member DRs/DRAs Present:**

Dennis Brophy (Mentor Graphics, DR)  
Mehdi.Mohtashemi (Synopsys, DR)  
Karen Pieper (Accellera, DR)  
Neil Korpusik (Oracle, DR)  
Charles Dawson (Cadence, DR)  
John Havlicek (Freescale, DR)  
Daniel Even-haim (Intel, DR)

**Member DRAs Present:**

Dave Rich (Mentor Graphics DRA)  
Brad Pierce (Synopsys, DRA)  
Scott Little (Freescale DRA)  
Matt Maidment (Intel DRA)

**Observers:**

Shalom Bresticker (Intel)  
Cliff Cummings (Sunburst Design)  
Scott Little (Freescale)  
John Havlicek (Freescale)  
Michiel Ligthart (Verific)

Chair Pieper shared the IEEE SA website that has Basic and Advanced Member lists can be found at [http://standards.ieee.org/sa-mem/corp\\_overview.html](http://standards.ieee.org/sa-mem/corp_overview.html).

**Secretary Note: Dennis joined the meeting in progress after getting off a plane and left to pass security to board his next flight. Meeting minutes are from a combination of sources.**

**2 FEEDBACK ON THE PAR**

Karen got feedback on the content of the PAR. It needs to be short and concise so it can be used as an abstract. This is the feedback she got when she passed it on to the IEEE for review.

The Scope should be rewritten so it will be the same as the scope will appear in the final document. The Purpose should be the purpose of the resulting document.

Karen made numerous changes to the PAR. A motion (Shalom Bresticker, John Havlicek) was made to approve the small set of PAR changes. The motion passed unanimously.

### **3 COMMITTEE STATUS**

**SV-AC** - expects to complete their work by the October cutoff date.

**SV-BC** - still working on a timeline

**SV-EC** - will not finish all of their top-25 by the October cutoff date.

There are some mantis items that will take a lot of work.

**SV-CC** - Still gathering inputs

Have mantis items to work on. They are currently categorizing them. They are still working on their top-25 list. They will have one more meeting before next p1800 meeting.

They will be done with top-25 list by next meeting. The SV-CC is moving at a slower pace than the others.

**SV-DC** - John H. - Sent out an email with their scope.

There are no plans to bring an analog solver into 1800 (SystemVerilog) Conversions will be used yielding fast simulation of analog blocks. The SV-DC expects to have a roadmap by September 15<sup>th</sup>. The working group will review this when this is done.

**SV-FC** Brad sent out a proposal for the sv-fc . It will cut across Technical Committee boundaries. It will address separate compilation, type system, and an extensibility mechanism. They will work on high priority mantis items transferred from other TCs

Chair Pieper had a discussion the scope document in that it should be a living document. For the project, we will start with minor errata and corrections. When we get prioritized lists, we can authorize work that is either all of it or a subset of it. The SV-AC, Chair Pieper says is ready to start now.

In terms of SV-AC, Dmitry indicates he will need 30 months to do plus 2 months for errata and minor issues.

Chair Pieper indicated we are still waiting on the EC and BC. The suggestion was made to take the list and review them, and then come back for a full discussion. John Havlicek indicated the SV-AC should get some authorization too.

Dmitry introduced the group to ams real types that the assertion system functions would need to understand. There was also discussion on the usability of checkers. Dennis indicated Mentor would like more time to discuss the issue internally.

While the PAR is under development and ratification, we cannot work on major enhancements. Karen did indicate the working group could offer recommendations that could later be approved as changes to the standard.

Chair Pieper did discuss the role of the SV-FC and discussed them would need to approve which mantis could be addressed. For the moment, the groups need to work on their top-25 list and that going forward the new IEEE rules will be followed. Under the new rules, Advanced members can vote and Basic member can observe. Chair Pieper also indicated Sponsor body members can attend meetings too. An FAQ is in development to explain this. For the time being, we will use the old rules to operate. Chair Pieper expects this to last at least another 2 months.

After discuss about the scope document, a motion (John Havlicek, unknown second) was made to approve the scope. The motion passed unanimously.

John Havlicek indicates he want the SV-DC to work on its roadmap now. A motion (John Havlicek, Neil Korpusik) was made to all the SV-DC to work on its roadmap. The motion passed unanimously.

**ACTION REQUEST [Neil Korpusik]** Put together the lists and scopes from the various TCs

**ACTION REQUEST [Karen Pieper]** Send out the text of what she was trying to get approved as a scope document.

Chair Pieper wants to get the PAR approved in this meeting. Therefore she seeks a one week meeting suspension.

#### **4 NEXT MEETING (ANNOUNCE DATE, TIME, AND LOCATION, IF KNOWN)**

June 3, 2010 P1800 Meeting continuation teleconference at 8 a.m. PDT  
June 10, 2010 P1800 Meeting teleconference at 8 a.m.  
June 13th week is DAC

#### **11 ADJOURNMENT**

A motion (John Havlicek, Shalom Bresticker) was made to suspend the meeting until 3 June 2010 at 8 a.m. The motion passed unanimously. The meeting suspended at 9:45 a.m.

**IEEE P1800 SystemVerilog Study Group**  
**APPROVED CONTINUATION MINUTES**  
**3 June 2010**  
**8:00 a.m. – 10:00 a.m. PDT**  
**Teleconference**

**1 CALL TO ORDER - INTRODUCTIONS & AFFILIATIONS**

The meeting was called to order at 8:06 a.m. PDT.

**Member DRs/DRA Present:**

Dennis Brophy (Mentor Graphics, DR)  
Mehdi.Mohtashemi (Synopsys, DR)  
Karen Pieper (Accellera, DR)  
Neil Korpusik (Sun, DR)  
Scott Little (Freescale DR)  
Daniel Even-haim (Intel, DR)

**Member DRAs Present:**

Yatin Trivedi (Synopsys DRA)  
Dave Rich (Mentor Graphics DRA)  
Dmitry Korchemny (Intel, DRA)  
Matt Maidment (Intel DRA)

**Observers:**

Shalom Bresticker (Intel)  
Cliff Cummings (Sunburst Design)  
Ghassan Khoory (Synopsys)  
Gordon Vreugdenhil (Mentor)

**2 NEW BUSIENSS**

**PAR**

Chair Pieper reviewed the scope and purpose on WebEx and read what was going to be in the PAR forwarded to NesCom.

A motion (Dennis Brophy, Neil Korpusik) was made to make to approve the scope of the PAR read by Chair Pieper. The motion passed unanimously.

A motion (Dennis Brophy, Neil Korpusik) was made to approve the purpose read by Chair Pieper. The motion passed unanimously.

Chair Pieper discussed that some additional comments may come back that are simple in nature and should be addressed to make the June NesCom meeting.

A motion (Mehdi Mohtashemi, Dennis Brophy) was made to allow Chair Pieper to make simple editorial changes to the PAR without working group approval. The motion passed unanimously.

We still need to discuss the list of items to work on from the subcommittees. If we suspend this meeting, we could meet on new business regarding review of the top-25 list of all subcommittees on the 24 June 2010.

**ACTION REQUEST [Neil Korpusik]:** Put together the list of all six committees (AC-FC) in a document. Each of the entities needs to look at the document and be prepared to use it to create the scope for the work of the PAR. The scope document can be a living document to authorize a subset of items. When done with those, we could authorize some more.

**ACTION REQUEST [All DRs]:** Understand the priority list what and how from the list they are prepared to authorize from the list.

## **10 NEXT MEETING (ANNOUNCE DATE, TIME, AND LOCATION, IF KNOWN)**

June 24, 2010 P1800 Meeting teleconference 8 a.m. PDT

August 12, 2010 Teleconference 8 a.m. PDT

## **11 ADJOURNMENT**

A motion (Dennis Brophy, Scott Little) was made to suspend the meeting until 24 June 2010 8:00 a.m. The motion passed unanimously.

**IEEE P1800 SystemVerilog Study Group**  
**APPROVED CONTINUATION MINUTES**  
**24 June 2010**  
**8:00 a.m. – 10:00 a.m. PDT**  
**Teleconference**

**1 CALL TO ORDER - INTRODUCTIONS & AFFILIATIONS**

The meeting was called to order at 8:06 a.m. PDT.

**Member DRs/DRAs Present:**

Dennis Brophy (Mentor Graphics, DR)  
Mehdi.Mohtashemi (Synopsys, DR)  
Karen Pieper (Accellera, DR)  
Neil Korpusik (Oracle, DR)  
Charles Dawson (Cadence, DR)  
Matt Maidment (Intel DR)  
Neil S (Marvel DR)  
John Havlicek (Freescale, DR)

**Member DRAs Present:**

Yatin Trivedi (Synopsys DRA)  
Dave Rich (Mentor Graphics DRA)  
Dmitry Korchemny (Intel DRA)  
Ghasson Khoory (Synopsys)  
John Marshal (Marvell)

**Observers:**

Shalom Bresticker (Intel)

**2 PAR**

The PAR was approved by NesCom and the SASB.

With PAR approval, we move from a Study Group to a Working Group. Working Group participation is based on membership rules. There is a FAQ on who can participate in entity projects and how. We will move to the new rules when the FAQ is available. For the moment, we continue to operate as before.

**3 SCOPE DOCUMENT**

Neil sent a presentation that contained information of the top-25 for each of the SV-AC, SV-BC and the SV-EC. That presentation can be found [here](#). The presentation does not contain the SV-CC information. There is no list from the CC since there is little difference from what was discussed in the last meeting. The BC has 35 items, not 25 to

work from. The SV-BC will do the top-25 first, then look at the next 10 if they get the top-25, time allowing and with Working Group approval.

In summary, the SV-AC has 12 categories in their list representing about 27 Mantis items. See <http://www.eda.org/sv-ac/hm/att-8930/SVACScopeFor2112.pdf> for details. The SV-BC top-25 items can be found at <http://www.eda.org/sv-bc>. The SV-CC has 32 Mantis items on its lists with additional work on language extensions as generated by the other committees. The SV-EC has 25 Mantis items in its list which can be found at [http://www.eda.org/sv-ec/Minutes/svec\\_top25\\_June7\\_2010result.xlsx](http://www.eda.org/sv-ec/Minutes/svec_top25_June7_2010result.xlsx).

The scope document also authorized the SV-DC to create a roadmap. And the SV-FC to consider Mantis items it would deem appropriate to transfer to the SV-FC as future work. In addition, the SV-FC will drive the development of a specification process to ensure that all cross committee and language design issues are considered prior to changing the LRM..

Chair Pieper showed the scope document on WebEx and read it to the committee members not on WebEx. The scope documents can be found [here](#). For minor enhancements that come in over time that were not planned in advanced, they need to be brought to the full committee for approval. These details are covered in the scope document as well.

A motion (Neil Korpusik, Matt Maidment) was made to accept the scope document as the work of the P1800. The motion passed with one dissenting vote. [Cadence was opposed.]

#### **4 TECHNICAL COMMITTEE UPDATE**

We reviewed everything as we completed the scope document. Dmitry updated the group on additional SV-AC progress.

#### **5 NEW BUSINESS**

Chair Pieper raised the question about the frequency of draft documentation. Do we want Neil thinks we need probably 3 drafts. The first draft would be December 2010, the second in May 2011 and last one in October 2011. Chair Pieper asked for names of possible editor candidates from the group be sent to her. She will come back with approximated prices in the August meeting.

#### **6 NEXT MEETING (ANNOUNCE DATE, TIME, AND LOCATION, IF KNOWN)**

August 12, 2010 Teleconference 8 a.m. PDT

#### **5 ADJOURNMENT**

A motion (Dennis Brophy) was made to adjourn the meeting. Having come to the end of the agenda, no second was need. The meeting concluded at 9:10 a.m. PDT.