

Minutes of Compact Model Council Meeting

December 8, 2005 Face-to-Face Meeting in Washington, DC

Companies and Universities in Attendance:

Agere, Agilent, ADI, ANSOFT, Broadcom, Cadence, Cypress Semiconductor, Freescale, Fujitsu, Hiroshima University, IBM, Intel, Intersil, STARC, NEC Electronics, Pennsylvania State University, Philips, RF Micro Devices, Renesas, Samsung, Silvaco, ST Microelectronics, Synopsys, TI, Toshiba, UC-Berkeley, Elpida Memory, National Semiconductor, Mentor Graphics

1. Results of Next Generation MOSFET Model Ballot (Joe Watts – IBM)

Joe reviewed the outcome of the ballot. The results were 17 members in favor of PSP and 14 members in favor of HiSIM. All 31 members eligible to vote did. PSP was selected to be the CMC's next generation MOSFET model standard.

2. Membership Review (Joe Watts - IBM)

Total membership is now 34.

3. Treasurers Report (Robert Lomenick - Intersil)

Robert reviewed the final 2005 budget and the proposed 2006 budget. He also spoke about the 2005 budget surplus. See his slides for details.

The CMC approved the proposed budget with one change—funding for BSIM models was increased to \$100,000.

Geoffrey Coram (ADI) and Colin McAndrew (Freescale) reviewed Verilog-a validation suite proposals. The CMC made a decision to spend some of its budget excess on this project. Preference was expressed for a commercial entity over a university. The CMC approved the proposal to distribute part of the surplus to universities that participated in the next generation MOSFET model project.

Action Item:

The officers will make a decision on which Verilog-a validation suite proposal to fund and communicate this to members. A more detailed work specification will be generated prior sending the funds.

4. Implementation of Standard Models (Vendor Member Companies)

See website for details.

5. Next Generation MOSFET Next Steps

Colin McAndrew volunteered to be the CMC's liaison for PSP.

Gennady Gildenblat (PSU) presented plans for the next release of PSP. That release is targeted for 1Q06 (version 100.2). His plan is to do two releases per year. The subsequent release would be in 3Q06. These releases will include both SimKit and Verilog-a model formats. See website for more details of this presentation.

The PSP team announced the April beta release of PSP will contain the Vsb clamping fix, capacitance fix, and all other BSIM4 advanced features.

The CMC will decide which model will be its initial PSP standard at the 1Q05 meeting.

Action Item:

The PSP team will circulate a proposal to CMC members for modifying the PSP junction geometry instance parameters names to make them compatible with current industry standard models.

Action Item:

Colin McAndrew (Freescale) will send out an email to the CMC members asking for objections to setting PSP parameter S0 to a fixed value (0.98) and removing it from the parameter list. This is targeted for the 1Q06 release.

Action Item :

Colin McAndrew (Freescale) will generate a survey of feature differences between PSP and BSIM4. He will circulate this to members via email then there will be a follow up telecon with members to devise the model update and release plan.

Action Item:

Joe Watts will arrange a January 2006 teleconference to discuss next steps for PSP and location and date of 2Q06 CMC meeting.

6. Meeting Planning for 2006

- 1Q—March 10 in Austin, Texas following ICMTS
- 2Q—TBD; possibilities include following the Workshop on Compact Modeling in Boston (May) or SRC meeting in Raleigh (June) or in Japan
- 3Q—October 12 in Europe following BCTM
- 4Q—December following IEDM in San Francisco

Action Item:

Ivan Pesic will propose a conference in Japan to sync the 2Q06 meeting with. This will be discussed at the January telecon.

CMC took a floor vote on whether or not set up dial-in at the 1Q06 Austin meeting. Results were seven in favor and 16 against; remainder abstained. So there will be no dial-in at the 1Q06 meeting.

7. Code Requirements for CMC Standard Models (Colin McAndrew)

See CMC website for presentation slides on this topic.

CMC made the decision not to require C code for CMC standard models. A Verilog-A only implementation is acceptable.

It was noted that ADMS is being brought up to be LRM-2.2 compliant.

8. CMC Goals and Priorities for 2006

IBM offered to provide its Verilog-a varactor model as a starting point for a standard. See presentation slides. CMC agreed to start a subcommittee on this. Ted Anderson from IBM will chair this subcommittee.

Cadence proposed their LDMOS model as a starting point for a new standard. See presentation slides for details. CMC agreed to start a subcommittee on this. Yutao Ma from Cadence and Linda Smith from National Semiconductor will co-chair it.

9. BSIM3/BSIM4/BSIM-SOI (Jane Xi – UC Berkeley)

See presentation slides for details.

CMC decided to take no action at this time on the issue raised about LINTNOI in the KF 1/f noise model and the subthreshold equation in the UFN model of the BSIM models.

Chenming Hu (UCB) presented an overview of his surface potential multi-gate transistor model. See presentation slides for details.

Jane Xi will be leaving UCB in January 2006. Chenming Hu is searching for a replacement.

10. Proximity Effect Subcommittee (Paul Humphries – ADI & Mark Basel – Mentor Graphics)

See presentation slides for details.

Action Item:

Mark Basel (Mentor) will work with BSIM team to pull out instance extraction algorithms from the BSIM4.5.0 documentation. He and Paul Humphries (ADI) will complete a new document on the extraction which will be posted on the CMC website.

He will also have a draft for the enhanced features before the next meeting. He will send this out for review prior to the meeting.

11. Model QA and Release Procedures Subcommittee (Rob Jones – IBM)

See presentation slides for details.

Action Item:

Rob Jones (IBM) will coordinate monthly telecons prior to the next meeting in order to complete the documents on model QA and release procedures.

12. Resistor Model Subcommittee (Colin McAndrew – Freescale)

See presentation slides for details. Colin is targeting mid-January for a preview code update of R3.

13. Membership Matters (All)

Action Item:

Keith Green (TI) will follow up with SRC on funding for PSP research, particularly for the subthreshold fitting for non-uniform lateral channel doping.

Action Item:

Colin McAndrew will ask GEIA for a standard document template.

CMC decided to start up a standard junction diode model effort after R3 is completed, which is targeted for mid 2006.

Action Item:

Joe Watts (IBM) will send out the list of 2006 goals drafted at this meeting to all CMC members for solicitation of feedback.

14. Previous Action Item Carry-Overs

Action Item:

Michael Schroter will add a flicker noise switch and a 3-way instance switch for self-heating to HiCUM 2.2: 1) off, 2) main components only, 3) all components. The model version number will increment to 2.2c.

15. Next Meeting

The next meeting will be held on March 10, 2006 following ICMTS in Austin, Texas (USA).

It was agreed to keep the subcommittee meetings to no more than 3 hours total the evening prior to the regular CMC meeting.

Action Item:

Joe will coordinate with the subcommittee co-chairs about times allotments needed for the 1Q06 evening meetings.

Meeting Adjourned.

This meeting was conducted in accordance with the EIA Legal Guides and EIA Manual of Organization and Procedure.