

GEIA CMC 03/10/2006 MEETING MINUTES

Time: 7:30AM-5:00PM

Date: March 10, 2006

Place: Hyatt Regency Hotel, Austin, TX

Joe Watts opened the meeting and introduced Ansoft as a new member.

Bob Lomenick reviewed the budgets for 2005 and 2006.

Marek Mierswinski reviewed the Verilog-A test suite. Requested input as to explicit features that need testing, and proposed Wiki as a way to set up an open forum discussion. Plan is:

beta test suite May

feedback July-August

final release Sep. meeting

VA tests will be in code rather than Word documents.

Recommend letting Accellera VAMS committee know about CMC test suite.

AA: All CMC members are to email Marek Mierswinski (marekm@tiburon-da.com) with specific aspects or constructs of Verilog-A models that they want to have included in the Verilog-A test suite (all, by 03/31/06).

Reviews of model implementation status and plans were provided by Synopsys, Cadence, Agilent, Ansoft, and Simucad (the latest tables with this information will be posted on the CMC web site).

AA: Updated model implementation status tables will be posted on the CMC web site (vendors/K. Green, by 03/31/06).

AA: An Excel spreadsheet that keeps a history of model implementation status (model versions, simulator versions) will be set up by the CMC and posted on the CMC web site (Rob Jones, by 03/31/06).

Prof. Gildenblat reviewed the PSP 101.0 update. The primary goal was to address issues raised by CMC members in the next generation MOSFET model evaluation process. The number was updated to 101.0 rather than 100.2 because the model is not backward compatible. Significantly the reciprocity has been fixed, as have negative capacitances; these are major changes. The symmetry for IP3 simulation has been improved. The PSP action item list was reviewed, the items that were supposed to be addressed have been; it was agreed that PSP version 101.0 (previously called release 3) had all features required for standardization. Testing will be done by member companies and a phone meeting held May 1 to review the testing status. A decision for standardization will then be made at the May face-to-face meeting. TI presented a list of additional items that they considered important. Some required more detailed investigation, the operating point information was considered good, TI will develop a proposal for how to define these. Dick Klaassen reviewed binning in PSP, the basic form of the binning improves on that available previously in that it accounts for the different types of expected geometry scaling.

AA: All companies to evaluate PSP 101.0 and provide feedback prior to May 1, a phone meeting will be held then to evaluate the results of the testing (all, by 05/01). A document of PSP "status" (what is and is not included, for EDA vendors to use) will be provided (C. McAndrew, 05/01). TI will propose how to define MOSFET operating regions, and review at the May meeting (TI, 05/08). TI will provide more details on 1/f noise needs, including data (TI).

AA: Prepare press release on PSP (M. Basel to own, J. Watts/C. McAndrew/D. Klaassen to assist).

Prof. Schroter presented an update on HiCUM. Koen Buisman presented an update on MEXTRAM. CMC requested for on-going information updates on a convergence problems with MEXTRAM. A small group will be formed to look into enhancements to the tunneling model. Peter Lee proposed enhancements for NF and NR parameter additions.

AA: A phone meeting will be arranged on MEXTRAM in 4 weeks (around 04/07) for an update on solving the convergence problems (P. Humphries/D. Weiser/R. Lomenick/S. Mertens/D. Klaassen/Y. Ma/R. Poore/TU Delft). A small group will also be formed to investigate and evaluate the BE tunneling current model (TU Delft/P. Humphries).

AA: P. Lee will work with TU Delft on addition of NF and NR parameters.

Mohan Dunga provided an update on BSIM3 status and enhancements, this concentrated on changing the Vds limiting and functional form to improve symmetry near $V_{ds}=0$.

Ivan Pesic raised the issue of certain simulators have non-standard implementations of models but calling them by the name of the standard model. Joe Watts had contacted GEIA lawyers and they had indicated trade-marking a name could be a useful option. The consensus was that people should have freedom to change a model for local needs, but that the use of the CMC standard model name should only be for models that are 100% compliant. If there is an issue that needs fixing this should be raised at the CMC.

AA: The CMC will formulate a statement of policy regarding use of the names of CMC standard models only for 100% compliant implementations, and send a letter clearly explaining this position to CMC member companies (J. Watts). This will be sent out for review before the next meeting and will be voted on for formal adoption at the next meeting.

Joe Watts reviewed the results of the prioritization of topics for 2006. PSP was clearly the top item. Verilog-A was the second most important issue. Colin reported that ADMS now supports an open-source Spice3 derivative simulator, ngspice, and is available for evaluation. In discussion of the priorities BSIMSOI was raised as still being more important than the rankings reflected, and the proposal to include parasitic extraction activity was raised. This received some support.

Interest was gauged in trying to drive to a common model file format (along the lines of paramsets defined for Verilog-A in LRM2.2). It was agreed that this was worth looking into.

AA: Gauge interest in parasitic extraction sub-committee (M. Basel, with S. Veeraraghavan/R. Jones/C. McAndrew/B. Peddenpohl).

AA: Will approach Geoffrey Coram about leading a model file format standardization effort (along the lines of Verilog-A paramsets; J. Watts to ask, team to include J. Victory/D. Klaassen/R. Lazansky/S. Mertens/I. Pesic/Y.Ma/W/ Liu/R. Poore).

Yutao Ma reported on the LDMOS subcommittee activities from the previous evenings meeting.

Mark Basel reported on proximity effects subcommittee activities. The document that defines how well proximity effect instance parameters should be extracted from layout is now finished and will be posted on the CMC web site. The document was officially adopted as a CMC standard.

AA: The well proximity standard document will be posted on the CMC web site (M. Basel and K. Green).

Rob Jones reported on the QA subcommittee activities. Both the model release and model QA documents are close to completion.

AA: QA documents will be updated by 03/17 and will be reviewed at a phone meeting 03/29 (R. Jones to coordinate), feedback to be provided by 05/01 (all).

The CMC will use the document template from Mark Basel as a standard format.

Ted Anderson reported on the MOS varactor model subcommittee.

Joe Watts reviewed Action Items from the previous meeting.

A meeting in Japan was discussed, the preference seemed to be for ICMTS in March, as opposed to the VLSI Technology Symposium in July.

Boston meeting:

Subcommittee meetings will be longer at the Boston meeting because it is a Sunday. Each subcommittee will meet for 45 minutes (consecutively).

Candidates for consideration for LDMOS model standardization will be reviewed at the meeting. Possibly have to start the meeting Sunday to ensure we can get through all orders of business (assuming 4 candidate models at 1 hour per model). Subcommittee meetings will be allotted 4 hours, and LDMOS reviews will likely take 4 hours.

AA: Decide on the location and date of the meeting in Japan at the May 8 meeting.

ACTION ITEMS

AA: All CMC members are to email Marek Mierswinski (marekm@tiburon-da.com) with specific aspects or constructs of Verilog-A models that they want to have included in the Verilog-A test suite (all, by 03/31/06).

AA: The Verilog-A test suite list will be provided in an Excel spreadsheet and placed on the CMC web site for review by member companies (M. Mierswinski/K. Green, by 03/17/06).

AA: The Verilog-AMS LRM committee will be informed of the CMC Verilog-A test suite activities (C. McAndrew).

AA: Updated model implementation status tables will be posted on the CMC web site (vendors/K. Green, by 03/31/06).

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AA: QA documents will be updated by 03/17 and will be reviewed at a phone meeting 03/29 (R. Jones to coordinate), feedback to be provided by 05/01 (all).

AA: Subcommittees to continue activities (subcommittee chairs).

AA: Decide on the location and date of the meeting in Japan at the May 8 meeting.

Members attending:

Poore	Rick
An	Judy
Humphries	Paul
Mertens	Samuel
Tolikas	Mary
Ma	Yutao
Peddenpohl	Bob
McAndrew	Colin
Veeraraghavan	Surya
Gu	Ben
Watts	Josef
Jones	John
Anderson	Fred
Schaper	Ulrich
Mudanai	Sivakumar
Lomenick	Robert
Cherne	Richard
Victory	James
Basel	Mark
Smith	Linda
Iizuka	Takahiro
Klaassen	Dirk
Lee	Peter
Resvani	Ali
Kolev	Plamen
Bogdan	Carolyn
Wix	Steven
Pesic	Ivan
Linden	Peter
Juge	André
Liu	Weidong
Weiser	Doug
Zhang	Xin
Liu	Yong
Rogers	Sara
Naito	Takeshi
Tsai	Tse-Lun
Jan	Jin-Shyong
Yeh	Kuo-Liang
Lazansky	Rick
Johnson	Pete

Non-Members attending:

Gildenblat	Gennady
Mierzwinski	Marek
Buisman	Koen
Dunga	Mohan
Hu	Chenming
McCarthy	Kevin
Schroter	Michael

Member Companies Absent:

**Agere Systems
Atmel
Broadcom
Elpida
Samsung
SRC
STARC
Tower**

Voting rights status:

Companies with **ACTIVE** voting status:

**Agere Systems
Agilent Technologies
AMD
Analog Devices
Ansoft Corporation
Atmel
Broadcom
Cadence Design Systems
Cypress Semiconductor
Elpida
Freescale Semiconductor
IBM
Infineon
Intel
Intersil
Jazz Semiconductor
Mentor Graphics
National Semiconductor
NEC Electronics
Philips Research
Renesas Technology Corporation
RF Micro Devices
Samsung
Sandia National Laboratories
Simucad
SRC
STARC
ST Microelectronics
Synopsys, Inc
Texas Instruments
Toshiba Corporation
Tower
TSMC
United Microelectronics Corporation
Xpedion Design Systems**

Companies with **INACTIVE** voting status:

None