

# EIA IBIS Open Forum Minutes

Meeting Date: **March 14, 2008**

## GEIA STANDARDS BALLOT VOTING STATUS

See last page of the minutes for the voting status of all member companies.

## VOTING MEMBERS AND 2008 PARTICIPANTS

Agilent	Sanjeev Gupta, Radek Biernacki, Amolak Badesha Fangyi Rao, Ian Dodd, Yutao Hu, Vuk Borich Nobutaka Arai, Ludwig Eichinger
AMD	Nam Nguyen*
Ansoft Corporation	Steve Pytel
Apple Computer	(Bill Cornelius)
Applied Simulation Technology	(Fred Balistreri)
ARM	(Nirav Patel)
Cadence Design Systems	Terry Jernberg, Hemant Shah, Ambrish Varma [C. Kumar], Brad Griffin*
Cisco Systems	Syed Huq*, Mike LaBonte*, AbdulRahman (Abbey) Rafiq Huyen Pham, Emily Yao, Susmita Mutsuddy John Fisher, Paul Ruddy, Jun Li, Jianmin Zhang Luis Boluna, Kelvin Qiu, Jane Lim, Ilyoung Park Rick Brooks, Chris Padilla, Ehsan Kabir
Ericsson	Anders Ekholm*
Freescale	Jon Burnett
Green Streak Programs	Lynne Green
Hitachi ULSI Systems	Kazuyoshi Shoji
Huawei Technologies	Tao Guan*, Xiaoqing Dong
IBM	Adge Hawes*
Infineon Technologies AG	Christian Sporrer
Intel Corporation	Michael Mirmak*, Rich Mellitz
IO Methodology	Lance Wang, Zhi (Benny) Yan, Li (Kathy) Chen
LSI	[Frank Gasparik], Brian Burdick*, Kim Helliwell (Itzik Peleg)
Marvell Semiconductor	Arpad Muranyi*, John Angulo
Mentor Graphics	Randy Wolff*
Micron Technology	Eckhard Lenski, Klaus Huebner, Katja Koller
Nokia Siemens Networks GmbH	(Atsuji Ito)
Panasonic	Jim Nadolny, Justin McCalister
Samtec	Mike Steinberger, Walter Katz, Todd Westerhoff*
Signal Integrity Software	Doug Burns, Mike Mayer, Barry Katz
Sigrity	Sam Chitwood Brad Brim, Ben Franklin Kristopher Stytt
STMicroelectronics	(Anil Kalra)

Synopsys  
Teraspeed Consulting Group  
Texas Instruments  
Toshiba  
Xilinx  
  
ZTE  
Zuken

Ted Mido  
Bob Ross\*, Tom Dagostino, Al Neves  
Richard Ward  
(Yasumasa Kondo)  
David Banas\*, Ajay Shah, Suzanne Yiu  
Mustansir Fanaswalla  
(Ying Xiong)  
Michael Schaefer, Ralf Bruening

#### **OTHER PARTICIPANTS IN 2008**

Aeroflex Metelics  
Aica Kogyo  
Altera  
Avago Technologies  
Bayside Design  
Celestica  
ECL Advantage  
EFM  
Elma Bustronic  
Exar  
Flextronics  
GEIA  
Golden Bridge Networks  
ICT Solutions  
NetLogic Microsystems  
North Carolina State University  
Nokia  
Nuova Systems  
Physware  
Politecnio di Torino  
Qimonda AG  
Siemens AG  
Simberian  
SimLab Software GmbH  
Tektronix  
TietoEnator GmbH  
Tyco Electronics  
Vertical Circuits  
Xsigo Systems  
Independent

David Nguyen  
Akihiro Tanaka  
Ravindra Gali, Jing Wu, John Oh, Hui Fu  
Minh Quach, Sari Tocco  
Elliot Nahas, Kevin Roselle  
Ihsan Erdin  
Thomas Iddings  
Ekkehard Miersch  
Michael Munroe  
Helen Nguyen  
Hasnain Syed  
(Chris Denham)  
Saman Sadigh  
Steven Wong  
Eric Hsu  
Paul Franzon\*  
Ali Arsian  
Zhiping Yang  
Marc Kowalski  
Igor Stievano  
Md Morshed Alam Heial, Suhas Jawale  
Manfred Maurer, Annika Woehner  
Yuriy Shlepnev  
Heiko Grubrich  
Steve Corey  
Heinz-Hartmut Ibowski  
Chad Morgan  
Mark Egbers  
Robert Bada  
Guy de Burgh, Ardy Forouhar, Dave Galloi  
Kazuhiko Kusunoki

In the list above, attendees at the meeting are indicated by \*. Principal members or other active members who have not attended are in parentheses. Participants who no longer are in the organization are in square brackets.

## **UPCOMING MEETINGS**

The bridge numbers for future IBIS teleconferences are as follows:

Date	Telephone Number	Meeting ID
April 4, 2008	1-866-432-9903	1-2174-0718

All meetings are 8:00 AM to 9:55 AM US Pacific Time. Meeting agendas are typically distributed seven days before each Open Forum. Minutes are typically distributed within seven days of the corresponding meeting. When calling into the meeting, press 1 to attend the meeting, then follow the prompts to enter the meeting ID. For new, local international dial-in numbers, please reference the bridge numbers provided by Cisco Systems at the following link:

[http://www.cisco.com/web/about/doing\\_business/conferencing/index.html](http://www.cisco.com/web/about/doing_business/conferencing/index.html)

NOTE: "AR" = Action Required.

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## **INTRODUCTIONS AND MEETING QUORUM**

No new participants.

## **CALL FOR PATENTS**

Michael Mirmak called for any patents or pending patents related to the IBIS Version 3.2, 4.0, 4.1, 4.2, or ICM 1.1 specifications. No patents were declared.

## **MEMBERSHIP UPDATE AND TREASURER'S REPORT**

Michael Mirmak reported that he received a GEIA update. We currently have 14 renewed members for the year. He is expecting that number to double. He notified the members to let the committee know if a renewal invoice has not been received. Nam Nguyen wondered if there was a website where he could see the payment status. Bob Ross replied that there was not. Michael stated that companies can ask for individual feedback from the committee.

## **REVIEW OF MINUTES AND ARS**

Michael Mirmak called for comment regarding the minutes of the February 7, 2008 IBIS Open Forum summit as well as the minutes of the February 22, 2008 IBIS Open Forum teleconference. Randy Wolff noted that Brad Griffin's name was misspelled in both sets of minutes. Bob Ross noted in the summit minutes that an extra sentence in the introduction stated some conflicting attendance information. Correct numbers for the summit are 90 attendees and 41 companies. The minutes were approved with the noted changes.

## **WEB PAGE UPDATES**

Syed Huq reported that the roster page was updated with a new entry for iDEA++. He will be working on additions and removals of member "\*" indicators as well on the roster page.

### **MAILING LIST ADMINISTRATION**

Bob Ross noticed several hotmail accounts bounced and Comcast accounts were delayed. He will have to see if this is a persistent problem. In the beginning of March, mail was slow due to server upgrades at GEIA. There were also other rejected emails from Sorbos, but this may have resolved itself.

### **MODEL LIBRARY UPDATE**

No update.

### **PRESS UPDATE**

Bob Ross mentioned a press link in EETimes, Asia from the December 16-31, 2007 issue. The link was to a paper by Hemant Shah titled "A Fresh Approach to SerDes I/O Modeling." The link to the article is:

[http://www.eetasia.com/ARTICLES/2007DEC/PDF/EEOL\\_2007DEC17\\_DT\\_ACC\\_TA.pdf?SOURCES=DOWNLOAD](http://www.eetasia.com/ARTICLES/2007DEC/PDF/EEOL_2007DEC17_DT_ACC_TA.pdf?SOURCES=DOWNLOAD)

### **MISCELLANY/ANNOUNCEMENTS**

None.

### **OPENS FOR NEW ISSUES**

Michael Mirmak requested time for a discussion with Dr. Franzon about National Science Foundation (NSF) funding as relates to IBIS efforts at North Carolina State University (NCSSU).

### **INTERNATIONAL/EXTERNAL PROGRESS**

- DASC

Michael Mirmak noted there has not been a meeting lately, but there will be one March 20. The DASC website is found at:

<http://www.dasc.org/>

- P1735 Encryption

Syed Huq missed the last meeting, so he had no update at this time. The IEEE DASC Study Group on Encryption web site is found at:

<http://www.eda-stds.org/ip-encrypt/hm/>

Bob Ross noted that the call for participation went out for the IEEE Workshop on Signal Propagation on Interconnects (SPI). The conference is in Avignon, France, May 12-15, 2008. IBIS material is sometimes discussed at this conference. More information can be found at:

<http://spi.univ-brest.fr>

### **IEC APPROVAL ACTIVITIES**

Randy Wolff noted that he and Michael Mirmak plan to have a chat with John Messina from NIST soon regarding IEC approval. Michael has had trouble getting in touch with John so far though.

### **SUMMIT STATUS**

#### **- DAC Planning**

DAC will be held June 8-13, 2008 in Anaheim, CA. Tuesday, June 10 is scheduled for the summit meeting. Michael Mirmak asked Mentor to look into room reservations, and he will contact John Angulo specifically for this. Calls for papers will go out starting in April. Bob Ross noted that this is the election of officers meeting. Michael told members to let the board know if they would like to be nominated. Bob noted that the exhibition is free on Monday to all attendees.

#### **- Asian Summits Planning**

Bob Ross noted that there is still consideration on hosting the China summit in Shanghai or Shenzhen. The China summit is nearly fully funded. Tokyo facilities are arranged. The Taiwan summit depends upon funding and is looking for sponsorship from local companies.

Sponsorship opportunities for the DAC IBIS summit are available, with sponsors receiving free mentions in the minutes, agenda, and other announcements. Contact the IBIS Board for further details.

### **IBIS QUALITY TASK GROUP**

Mike LaBonte reported that the group discussed a presentation from Eckhard Lenski on input thresholds including various ways to specify them with [Model], [Model Spec] and [Receiver Thresholds]. A few changes to the Quality specification came out of the discussion. Anders Ekholm began a discussion on overshoot parameters, and this also led to small changes to the specification. The group will be resuming discussion at section 5.3.8 in their next meeting on Tuesday.

The Quality Task Group checklist and other documentation can be found at:

[http://www.eda-stds.org/ibis/quality\\_wip/](http://www.eda-stds.org/ibis/quality_wip/)

### **IBIS MODEL REVIEW TASK GROUP**

No update.

## **ADVANCED TECHNOLOGY MODELING TASK GROUP**

Arpad Muranyi reported that there were meetings in the last two weeks. Walter Katz gave a presentation on EBD style architecture for linking IBIS and ICM by generating netlists with common SPICE elements. There is debate on continuing with Walter's proposal or going with Michael Mirmak's proposal that is a shorter term, less comprehensive solution. Todd Westerhoff noted that he is running and correlating the first commercial AMI models currently.

Task group material can be found at:

[http://www.eda-stds.org/ibis/macromodel\\_wip/](http://www.eda-stds.org/ibis/macromodel_wip/)

## **AD HOC TASK GROUPS (INTERCONNECT)**

Michael Mirmak reported that most discussion in the last meeting was on Touchstone 2.0. We will discuss this later in the meeting. Proposed changes have created more discussion and changes to the document. The group is meeting weekly on Wednesdays.

Task group material can be found at:

<http://www.eda.org/ibis/adhoc/interconnect/>

## **NEW ISSUES**

Paul Franzon discussed the National Science Foundation and its relationship to funding of NCSU work related to IBIS. NCSU did the original s2ibis development. The NSF program fosters university and industry interaction. Paul recently asked for letters of support from industry to help with applying for NSF funding for further IBIS development. NCSU would like to improve accuracy through correction factors, improve utility through templates and increase automation for new IBIS modeling techniques. This is under consideration by NSF now, but he could use additional letters of support, as these would be considered by the NSF program manager. He noted there is room in the proposal for adjustment. NSF gives a grant, and NCSU is free to use the money as best fit for the program. He wants to keep IBIS alive and viable at multi-GHz rates.

Bob Ross asked when a decision might be reached. Paul said sometime in the summer. Syed Huq noted struggles with support of tools sometimes and asked if there will be support behind any new software. Paul said NCSU can provide some low level support even when there is no longer any funding, but he would like to get the software used enough that Lance Wang (or some other company) might be interested in taking over support at a later point. Arpad Muranyi asked how many students would work on the project. Funding would support one full time PHD student. Other students may be involved, but not supported by the grant. Arpad asked how to make the decision on which specific things to work on. Paul responded that this will be decided by him, but he could setup something more formal such as a core advisory group involving IBIS members. This would be highly desirable and might help win approval of the grant. Paul said the plan already is to discuss the project in the IBIS Open Forum setting. Paul will be attending DAC, so we could have a discussion during the DAC

summit meeting.

Arpad asked for a technical discussion later of analog versus digital port definitions when using [External Circuit].

Bob noted that he assembled the approved BIRDS to-date into an IBIS 5.0 draft text file. Bob suggested that we start our review process at the next meeting. The text document is available at the following link:

[http://www.eda.org/pub/ibis/ver5.0\\_wip/](http://www.eda.org/pub/ibis/ver5.0_wip/)

## **TOUCHSTONE 2.0**

Michael Mirmak noted that small changes were made to clarify [Two Port Data Order] language and to clarify that noise parameters only apply to 2-port networks.

The Ad Hoc Interconnect group received new requests for mixed mode support and a new clarification on how ports are defined for passive interconnects. Bob Ross noted that the current document is very clean as it stands without the additional suggestions. The Ad Hoc Interconnect group suggests delaying the vote in order to add a new keyword that will make the document more acceptable to the industry. Bob said that there is a lot of interest in mixed mode, but this will probably need to be addressed in a future Touchstone revision. Michael noted that the industry very much wants additional support in the specification to address labeling of ports to make Touchstone files of measurements more readable. Michael showed proposed text of a new keyword, [Interconnect Port Groups]. Bob noted that addition of this keyword would be optional, but technical standards committees would then be able to specify if the keyword would be required for specific technologies. The vote was postponed to allow the Interconnect Group time to discuss the new keyword proposal and bring the document back to the Open Forum at a later time for further comments and vote.

## **BIRD105: MANDATORY GOLDEN WAVEFORM DATA**

Anders Ekholm noted that there is no real way to validate model accuracy without Golden Waveforms in the model. BIRD105 proposes that Golden Waveform data be required instead of optional. Mike LaBonte noted that the IBIS Quality group could require that Golden Waveforms be included to meet one of the quality levels. This could be a compromise to having to include Golden Waveforms in all models. Mike noted that simulation tools currently do not use Golden Waveform data at runtime. Arpad Muranyi noted that this BIRD would set a new precedent - requiring something that is not absolutely essential to simulation. Todd Westerhoff asked in what scenarios this would be required. Anders said the test load should be similar to a real system load. Todd felt the most difficult part of Golden Waveforms is clearly stating what example waveforms should be supplied. Michael Mirmak noted that making this required makes it required for any driver; does this apply to all drivers such as AMS, AMI, etc.? Mike LaBonte agrees that this feature should be used more, but it is relatively unused and untested. He would like to see more examples. For instance, the waveforms might need to be automatically generated by the S2IBIS3 tool. Bob Ross felt like this BIRD might discourage people from creating IBIS 5.0 models. Michael asked if it is required, is there enforced checking on the [Model] data versus the [Test Data]? To get around the restriction, people might put in a two-point, garbage waveform to satisfy the requirement. Michael asked where this would be

most important. Anders responded that it would be important for correlation to anything when SPICE models are not available and validating simulators that give different results with the same models. Anders asked if there were any other ways to check model quality without having Golden Waveforms. Companies can enforce model quality from their vendors, but this does not solve issues with validating simulators. Mike LaBonte noted that this topic can be discussed in the next Quality task group meeting and invited Anders to attend. The BIRD will be discussed further during the next teleconference.

#### **BIRD106: CLARIFICATION ON SIGNAL\_PIN PARAMETERS**

Arpad Muranyi introduced the BIRD. The BIRD fixes ambiguity in the specification regarding usage rules of the Signal\_pin, Diff\_signal\_pins and Series\_pins subparameters under the [Circuit Call] keyword. Signal\_pin variations can not be used together under the same [Circuit Call]. Arpad asked if the new language makes it clear what the usage rules are and removes the ambiguity. Arpad asked for online comments and further discussion at the next meeting, then put it up for a vote at the following meeting. It was noted that this BIRD also relates to BUG99.

#### **IBISCHK4 BUG STATUS**

No update.

The BUG report list is available at the link below:

<http://www.eda.org/ibis/bugs/ibischk/>

#### **ICMCHK1 BUG STATUS**

No update.

#### **NEW TECHNICAL ISSUES**

There was not enough time to discuss Arpad Muranyi's topic on port definitions in [External Circuit].

#### **NEXT MEETING**

The next IBIS Open Forum teleconference will be held April 4, 2008 from 8:00 AM to 10:00 AM US Pacific Time.

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#### **NOTES**

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

The following e-mail addresses are used:

[majordomo@eda-stds.org](mailto:majordomo@eda-stds.org)

In the body, for the IBIS Open Forum Reflector:  
subscribe ibis <your e-mail address>

In the body, for the IBIS Users' Group Reflector:  
subscribe ibis-users <your e-mail address>

Help and other commands:  
help

[ibis-request@eda-stds.org](mailto:ibis-request@eda-stds.org)

To join, change, or drop from either or both:  
IBIS Open Forum Reflector ([ibis@eda-stds.org](mailto:ibis@eda-stds.org))  
IBIS Users' Group Reflector ([ibis-users@eda-stds.org](mailto:ibis-users@eda-stds.org))  
State your request.

[ibis-info@eda-stds.org](mailto:ibis-info@eda-stds.org)

To obtain general information about IBIS, to ask specific questions for individual response, and to inquire about joining the EIA-IBIS Open Forum as a full Member.

[ibis@eda-stds.org](mailto:ibis@eda-stds.org)

To send a message to the general IBIS Open Forum Reflector. This is used mostly for IBIS Standardization business and future IBIS technical enhancements. Job posting information is not permitted.

[ibis-users@eda-stds.org](mailto:ibis-users@eda-stds.org)

To send a message to the IBIS Users' Group Reflector. This is used mostly for IBIS clarification, current modeling issues, and general user concerns. Job posting information is not permitted.

[ibis-bug@eda-stds.org](mailto:ibis-bug@eda-stds.org)

To report ibischk parser BUGs. The BUG Report Form resides along with reported BUGs at:

<http://www.eda-stds.org/ibis/bugs/ibischk/>  
<http://www.eda-stds.org/ibis/bugs/ibischk/bugform.txt>

[icm-bug@eda-stds.org](mailto:icm-bug@eda-stds.org)

To report icmchk1 parser BUGs. The BUG Report Form resides along with reported BUGs at:

[http://www.eda-stds.org/ibis/icm\\_bugs/](http://www.eda-stds.org/ibis/icm_bugs/)  
[http://www.eda-stds.org/ibis/icm\\_bugs/icm\\_bugform.txt](http://www.eda-stds.org/ibis/icm_bugs/icm_bugform.txt)

To report s2ibis, s2ibis2 and s2iplt bugs, use the Bug Report Forms which reside at:

<http://www.eda-stds.org/ibis/bugs/s2ibis/bugs2i.txt>  
<http://www.eda-stds.org/ibis/bugs/s2ibis2/bugs2i2.txt>  
<http://www.eda-stds.org/ibis/bugs/s2iplt/bugspl.txt>

Information on IBIS technical contents, IBIS participants and actual IBIS models are available on the IBIS Home page:

<http://www.eigroup.org/ibis/ibis.htm>

Check the IBIS file directory on eda.org for more information on previous discussions and results:

<http://www.eda-stds.org/ibis/directory.html>

\* Other names and brands may be claimed as the property of others.

## GEIA STANDARDS BALLOT VOTING STATUS

### I/O Buffer Information Specification Committee (IBIS)

Organization	Interest Category	Standards Ballot Voting Status	February 7, 2008	February 22, 2008	March 14, 2008 Summit	March 14, 2008
Advanced Micro Devices	Producer	Inactive		✓		✓
Agilent Technologies	User	Inactive	✓		✓	
Ansoft	User	Inactive	✓			
Apple Computer	User	Inactive				
Applied Simulation Technology	User	Inactive				
ARM	Producer	Inactive				
Cadence Design Systems	User	Active	✓	✓		✓
Cisco Systems	User	Active	✓	✓		✓
Ericsson	Producer	Active	✓	✓		✓
Freescale	Producer	Inactive	✓			
Green Streak Programs	General Interest	Inactive		✓		
Hitachi ULSI Systems	Producer	Inactive	✓		✓	
Huawei	User	Active	✓	✓		✓
IBM	Producer	Inactive	✓			✓
Infineon Technologies AG	Producer	Inactive			✓	
Intel Corp.	Producer	Active	✓	✓		✓
IO Methodology	User	Active	✓	✓		
LSI	Producer	Active	✓	✓		✓
Marvell Semiconductor	Producer	Inactive				
Mentor Graphics	User	Active	✓	✓		✓
Micron Technology	Producer	Active	✓	✓		✓
Nokia Siemens Networks	Producer	Active		✓	✓	
Panasonic	Producer	Inactive				
Samtec	Producer	Inactive	✓			
Signal Integrity Software	User	Inactive	✓			✓
Sigrity	User	Inactive	✓		✓	
STMicroelectronics	Producer	Inactive				
Synopsys	User	Inactive	✓			
Teraspeed Consulting	General Interest	Active	✓	✓		✓
Texas Instruments	Producer	Inactive	✓			
Toshiba	Producer	Inactive				
Xilinx	Producer	Inactive	✓			✓
ZTE	User	Inactive				
Zuken GmbH	User	Inactive			✓	

#### CRITERIA FOR MEMBER IN GOOD STANDING:

- MUST ATTEND TWO CONSECUTIVE MEETINGS TO ESTABLISH VOTING MEMBERSHIP
- MEMBERSHIP DUES CURRENT
- MUST NOT MISS TWO CONSECUTIVE MEETINGS

#### INTEREST CATEGORIES ASSOCIATED WITH GEIA BALLOT VOTING ARE:

- USERS - MEMBERS THAT UTILIZE ELECTRONIC EQUIPMENT TO PROVIDE SERVICES TO AN END USER.
- PRODUCERS - MEMBERS THAT SUPPLY ELECTRONIC EQUIPMENT.
- GENERAL INTEREST - MEMBERS ARE NEITHER PRODUCERS NOR USERS. THIS CATEGORY INCLUDES, BUT IS NOT LIMITED TO, GOVERNMENT, REGULATORY AGENCIES (STATE AND FEDERAL), RESEARCHERS, OTHER ORGANIZATIONS AND ASSOCIATIONS, AND/OR CONSUMERS.