

# EIA IBIS Open Forum Minutes

Meeting Date: **November 30, 2007**

## GEIA STANDARDS BALLOT VOTING STATUS

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

## VOTING MEMBERS AND 2007 PARTICIPANTS

Agilent	Ian Dodd*, Radek Biernacki, Saliou Dieye, Riccardo Giacometti, Quanli Li, Mike Resso, Chengming Ren, Dong Wei, Tim Wu, Xindong Xue, Nianmin Zhang, Jianping Zhu, Takahiro Sato
AMD	Nam Nguyen*, Tadashi Arai
Ansoft Corporation	Haiqiang Ding, Baolong Li, Ying Liu
Applied Simulation Technology	(Fred Balistreri)
Apple Computer	(Bill Cornelius)
Cadence Design Systems	[Lance Wang], C. Kumar*, Hemant Shah*, Patrick dos Santos, Ambrish Varma*, Shangli Wu, Lanbing Chen, Jianwei Hu, Jacob Lai, Yubao Meng, Jian Peng, Ke (Coco) Xu, Liu Zheng, Norikazu Takada, Yukio Masuko, Terry Jernberg*, Ray Komow*
Cisco Systems	Syed Huq*, Tram Bui, AbdulRahman Rafiq, Huyen Pham, Darja Padilla, Mike LaBonte*, Paul Ruddy, Gurpreet Hundal, Luis Boluna, Ehsan Kabir, Jehyoung Lee, Susmita Mutsuddy, Eddie Wu, Bill (Qinghua) Chen
Ericsson	Anders Ekholm*, Ole Segtum, Peng Fu
Freescale	Jon Burnett
Green Streak Programs	Lynne Green
Hitachi ULSI Systems	Kazuyoshi Shoji, Shinmei Hirano
IBM	Michael Sorna, Adge Hawes, Kevin Kramer*, Wei Wang
Intel Corporation	Michael Mirmak*, [Arpad Muranyi], Lili Deng, Haifeng (Bill) Gong, Tao Hu, Karen Kang, Fanghui Li, Maoxin Yin, James Zhou
IO Methodology	Lance Wang*, Esther Gao, Nancy Peng, Benny Yan, Xinjun Zhang, Wei Zhu
LSI	Frank Gasparik*, Kim Helliwell*, Dinh Tran, Praveen Soora, Brian Burdick*
Mentor Graphics	John Angulo*, Arpad Muranyi*, [Ian Dodd], Eric Rongere, Stephane Rousseau, Bill Hargin, Patrick Carrier, Vivian Pan, Tao Wang, Lifu You, Kenji Kushima, Masahiro Nakajima

Micron Technology	Randy Wolff, Pavani Jella
Nokia Siemens Networks GmbH[1]	Eckhard Lenski*, Flavio Maggioni, Roberto Preatoni, Umberto Gatti, Massimo Ceppi
Panasonic	Atsuji Ito
Samtec	(Corey Kimble)
Signal Integrity Software	Barry Katz, Douglas Burns, Mike Steinberger, Walter Katz*, Todd Westerhoff*
Sigrity	Sam Chitwood, Sandy Dung, Raymond Chen*, Xianfeng Li, Tao (Helen) Xu
STMicroelectronics	(Anil Kalra), Antonio Girardi, Giacomo Bernardi, Roberto Izzi, Akhilesh Chandra, Davide Tonietto*, Essaid Bensoudane*
Synopsys	Ted Mido, Xuefeng Chen, Changlei Zhang
Teraspeed Consulting Group	Bob Ross*, Tom Dagostino
Texas Instruments	Otis Gorley, Richard Ward, Bonnie Baker
Toshiba	Yoshihiro Hamaji, Yasumasa Kondo, Atshshi Osaki Nonyasu Yoshikawa, Toshihiro Tsajimura
Xilinx	Bruce Bandeli, David Banas*
ZTE	Songrui Chen, Xianhui Hu, Wei Jia, Dongfeng Sun Changjun Wang, Ying Xiong, Shenglong Yang Yanfeng Yu, Xiaojun Zhou, Shunlin Zhu
Zuken	Michael Schaefer, Ralf Bruening, John Berrie, Shigeru Hayashi, Hirohiko Matsuwawa

#### **OTHER PARTICIPANTS IN 2007**

74ze Engineering	Linc Jepson
AcconSys	David Lan, Suny Li, Jianfeng Tan, Jiangtao Wu, Frank Xiao
Alcatel Shanghai Bell	Wei Li, Lifan Sun
Altera	Hui Liu, Zhe Lin, Ravindra Gali, Salman Jiva
Apache Design Solutions	(Ji Zheng)
Applied Telisis, Inc. (ATI)	Vladimar Mandrusov
ATE Service Corporation	Yutaka Honda
Canon	Seiji Hayashi, Shoji Matsumoto, Tatsuo Nishino, Sakuragi Takamasa, Haruka Watanabe, Nobuaki Yamashita
Cavium Networks	Johann Nittmann
CEC Huada Electronic Design	Weiwei Liu
China Integrated Circuit	Jingcheng Luo
ChipX	Jay Hidy, Oren Dvir
Cybernet Systems	[Kazuhiki Kusunoki], Masahito Kobayashi, Junko Kuriyama
Datang Mobile	Fanjie Meng, Hongying Li, Hongwei Wang
EDN China	Frank Yao
EE Times Japan	Norihiro Satsukawa

EFM  
EMC Technology  
Enterasys  
Extreme Networks  
Force10 Networks  
Free Electron Software  
Fujitsu Limited  
  
GEIA  
Gnovo Technologies  
Hangzhou H3C Technologies  
Hewlett Packard  
Huawei 3Com  
  
Huawei Technologies  
  
IMECAS  
IVIS Co.  
Infineon  
Japan Aviation Electronics Industries  
JEITA  
Juniper Networks  
Kawasaki Microelectronics  
Leventhal Design  
LHWT Microelectronics  
Lynguent  
Motorola  
National Institute of Applied Science (INSA)  
National Instruments  
Netlogic  
NEC Electronics Corporation  
  
NESA  
Northrop Grumman  
Nortel Networks  
Nuova Systems  
NVIDIA Corporation  
NXP  
Optimal Corporation  
Politecnico di Torino  
Renesas Technology  
Samsung  
Sedona International

Ekkehard Miersch  
Michael Liu, Feng Lu, Changzheng Yang  
Robert Haller  
Kevin Ko  
Robert Badal  
Al Davis  
Kouichiro Asoh, Tetsuya Inoue, Toshiro Sato,  
Fujimori Shogo, Wasaki Tosaka  
(Chris Denham)  
Harris Ma  
Chunbao Yan  
Shafiq Rahman  
Junjun Cui, Zhenyu Liu, Jun Mao, Bao Wang,  
Kai Xie, Haitao Zhang  
ChunXing Huang, Bob He, Tao Guan, Peng Hu,  
Xiangzhong Jiang, Meidan Liu, Haiyan Yu  
Yunfeng Wang  
Hiroyuki Mashima  
Christian Sporrer  
Hiroaki Ikeda  
  
Atsushi Ishikawa  
Raul Lozano  
Hiroyuki Sato, Takashi Kawahara  
Roy Leventhal  
Jiahui Wang  
[Andrew Levy]  
Hong Chen, Haiying Jiang, Daniel Tang  
Etienne Sicard  
  
Lee Maixman  
Eric Hsu  
Takeshi Watanabe, Hock Seow, Huy Tran,  
Itsuki Yamada  
Edward Sayre  
Dusan Radosevic  
Jingxin Bian, Feng Shi  
Zhiping Yang, Lin Shen  
Jing (Jane) Zhang  
[H N Sudarshan]  
Marc Kowalski  
Igor Stievano, Michelangelo Bandinu  
Takuji Komeda  
Sang-Soo Park  
Joe Socha

Sharp	Tetsuo Iwaki
Shizu Technology	Zuofu Qi
Siemens AG [1]	[Eckhard Lenski], Manfred Maurer
Sony Corporation	Toshiro Honda, Keisuke Matsunami
Shu Zi Tai He	Chunyu Zhao
Sun Microelectronics	Leon Yang
Tiburon Design Automation	Patrick O'Halloran
Via Technologies	Jimmy Hsu
White Electronics Designs	John Perez
Xyratex	Paul Levin, Joseph Chan
Zuken Support and Service	Seikou Go, Tomotaka Unose

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
December 21, 2007	1-866-432-9903	121978860

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.

---

## INTRODUCTIONS AND MEETING QUORUM

Essaid Bensoudane and Davide Tonietto from STMicroelectronics introduced themselves. They develop SerDes models and are interested in the BIRD104 discussion.

## 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 the organization stands at 30 paid members, with IBM having

rejoined IBIS. The exact budget status is still unclear, due to pending updates from the GEIA, but IBIS is expected to have between \$620 and \$2000 extra revenue for the year (see below).

### **REVIEW OF MINUTES AND ARS**

Michael Mirmak called for comment regarding the minutes of the November 2, 2007 IBIS Open Forum teleconference. The minutes were approved without changes.

### **WEB PAGE UPDATES**

Syed Huq reported that he updated the roster to add IBM. He also noted that the virtual membership poster has been updated to remove older logos. Bob Ross invited IBM to submit a logo. Arpad Muranyi requested that the web pages be reorganized to make finding key documents easier (for example, he noted that the Cookbook is filed in a location that is non-intuitive). Syed stated that he will update the members on the web page designs during the next Summit meeting.

### **MAILING LIST ADMINISTRATION**

Bob Ross reported that everything is running normally.

### **MODEL LIBRARY UPDATE**

Lance Wang reported that library enhancements were posted at the end of October, featuring updated links and graphics.

### **PRESS UPDATE**

Bob Ross reported no major IBIS-related press items.

### **MISCELLANY/ANNOUNCEMENTS**

Michael Mirmak reminded the attendees that the IBIS Open Forum continues to look for online meeting and collaboration technology options for future teleconferences. He noted Syed Huq had demonstrated Cisco's MeetingPlace software, which features local telephone numbers in a variety of cities worldwide where IBIS member companies are located.

### **OPENS FOR NEW ISSUES**

Bob Ross requested that the budget be discussed.

### **INTERNATIONAL/EXTERNAL PROGRESS**

No major DASC issues to report. The DASC website may be found at:

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

Syed Huq reported that encryption study group has been assigned a number of documents by the VSI Alliance. These are visible on-line, through the study group's e-mail reflector. The IEEE DASC Study Group on Encryption website is found at:

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

## **IEC APPROVAL ACTIVITIES**

No update.

## **SUMMITS**

### **- Design Con Planning**

DesignCon 2008 will be held February 4-7, 2008 at the Santa Clara convention center. The IBIS Summit is now scheduled for Thursday, February 7, 2008. Syed Huq is the main contact for the event. Michael Mirmak noted that all contracts with IEC for display booth space, a conference room and co-sponsorship have been completed. Bob Ross noted that at least five presentations have been added to the program, not including Syed Huq's web page update. A conference schedule has been published at the following link:

<http://www.designcon.com/2008/conference/schedule.html>

A call for papers will be issued shortly. Cisco is officially sponsoring this summit, though other sponsors are encouraged.

Michael added that the traditional Magnolia and Cypress rooms will not be available on February 7, due to a change in contract between the hotel and the IEC, without an additional fee. The IEC DesignCon organizers have offered to provide a free room inside the Convention Center on that day for the IBIS Summit. Hotel conference rooms can be obtained, but only on other days that week. After a brief discussion, the team agreed that the Summit will stay on Thursday, but will move inside the Convention Center.

### **- DATE Planning**

The DATE conference will be in Munich, Germany March 10-14, 2008. The Summit is scheduled for Thursday, March 13. Bob mentioned that organizing a meeting room and other logistics are still in progress. Eckhard Lenski noted that the meeting will be shorter than in previous years, to avoid conflicting with a PCB technology seminar.

### **- Other Summits**

Bob Ross noted that discussions continue regarding holding a summit in Taiwan, including possible dates for a summit in Taipei. The event is likely to take place in Q3 or Q4, with support from Intel and Zuken. Bob is contacting some EDA vendors regarding their interest and support.

Sponsorship opportunities for the DesignCon 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 addressed, over the past two meetings, the 21 suggestions provided by JEITA. The contributions and attendance of Kazuyoshi Shoji of Hitachi were specifically appreciated. The group continues to meet every Tuesday at 11:00 AM US Eastern Time. Current discussion topics include static and dynamic overshoot and receiver thresholds.

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**

Bob Ross reported that he contributed to the analysis of one IBIS model since the last meeting.

### **ADVANCED TECHNOLOGY MODELING TASK GROUP**

Arpad Muranyi reported that the group has been discussing differential pin updates and related differential improvements to the IBIS specification. The next meeting will take place December 4 (combined meeting with the Interconnect Ad Hoc Task Group), with meetings to follow weekly. The next scheduled discussion of differential pin topics is on December 18. Suggestions are welcome then or before the meeting.

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 the group had a meeting this week on November 28. They have completed work on the Touchstone 2.0 draft document and will provide it for consideration by the Open Forum before the next meeting.

Task group material can be found at:

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

### **NEW ISSUES**

Bob Ross raised two budget-related issues. First, excess funds will likely be left unspent at the end of the year without prompt action. Under GEIA rules, these funds – between \$620 and \$2000 -- will not be carried over into next year's budget. To prevent the money being lost, Bob suggested these funds could be spend on pre-payment of DesignCon IBIS Summit meals, as has been done in previous years. Alternately, parser work can be pre-paid for IBISCHK5 or ICMCHK1. In previous years, spending to purchase an Open Forum LCD projector for summits has also been proposed. Bob requested that the IBIS board be authorized to spend these

funds on one or more of the areas suggested. No objections were raised and several statements of support were made.

Second, the budget for next year may not cover an apparent 20% increase in the GEIA funds allocation. This allocation covers expenses, such as legal services and standardization certification, incurred by IBIS as part of an EIA sector. If this increase is accurately reflected in the documents provided by the GEIA, the membership level and dues assumptions (including a possible dues increase) will have to be reviewed.

To address this, Bob requested that, during the next IBIS Open Forum meeting, the membership consider and vote upon the dues for next year. The dues may need to increase to around \$900 per organization per year to cover costs. Michael Mirmak will confirm the budget targets with the GEIA within the next few days.

### **BIRD97.2: GATE MODULATION EFFECT**

Arpad Muranyi reported that there have been no changes to the BIRD in recent weeks. He added that BIRD 98.3 was written with the expectation that BIRD97.2 would be voted down. Since BIRD98.3 was approved at the last meeting and covers the same technical issues, the recommendation was to vote down BIRD97.2.

A motion was made to vote on BIRD97.2 for inclusion in the next version of the IBIS specification. The vote failed with the following vote tally:

Agilent	- abstain
AMD	- no
Cadence	- no
Cisco	- no
Ericsson	- no
Freescale (e-mail)	- yes
IBM	- no
Intel	- no
I/O Methodology	- no
LSI	- no
Mentor Graphics	- no
Micron (e-mail)	- no
Nokia-Siemens Networks	- no
Signal Integrity Software	- no
Sigrity	- no
STMicroelectronics	- no
Teraspeed	- no
Xilinx	- abstain
ZTE	- abstain*

\* two conflicting e-mail votes were received from ZTE, neither from the official listed representatives on the IBIS roster



#### **BIRD104.1: ALGORITHMIC MODELING API (AMI) SUPPORT IN IBIS**

Ambrish Varma noted that only one change had been made in the BIRD since the last meeting: clarification of ANSI 'C' as the C programming language as published in ISO/IEC 9899-1999.

Agilent	- yes
AMD	- yes
Cadence	- yes
Cisco	- abstain
Ericsson	- yes
Freescale (e-mail)	- yes
IBM	- yes
Intel	- yes
I/O Methodology	- yes
LSI	- yes
Mentor Graphics	- yes
Micron (e-mail)	- yes
Nokia-Siemens Networks	- abstain
Signal Integrity Software	- yes
Sigrity	- yes
STMicroelectronics	- yes
Teraspeed	- yes
Xilinx	- yes
ZTE	- abstain*

\* two conflicting e-mail votes were received from ZTE, neither from the official listed representatives on the IBIS roster

Ambrish Varma of Cadence, after the voting was completed, noted the contributions of Michael Mirmak and Bob Ross as reviewers of the final BIRD. He also recognized the support of Texas Instruments in writing the text and testing the BIRD concepts.

Kevin Kramer of IBM observed that IBM has developed a number of models under the standard. While SerDes modeling had previously been performed using a proprietary tool and representation, customer calls for greater interoperability made a standard method highly desirable. IBM will be using the BIRD API method for future modeling efforts.

#### **IBISCHK4 BUG STATUS**

No new BUGs have been filed.

#### **ICMCHK1 BUG STATUS**

Michael Mirmak reported that there is one BUG, but it will not be fixed until the next version of the parser. The next release of the parser will come out once IIRD9 is closed.

## NEW TECHNICAL ISSUES

Arpad Muranyi raised the issue of specification syntax “cleanliness” discussed during previous Open Forum meetings. He noted that the Advanced Technology Modeling task group has been discussing various options for improved treatment of differential buffers. However, progress in these discussions is often hampered by conflicts between new proposed keywords and existing keywords, or between older assumptions and flexibility added by new syntax. He requested feedback from the participants, noting that he recognized the tension between elegant specification architecture and the urgency to find solutions to current problems.

Todd Westerhoff suggested that older keywords might simply be deprecated in a new version of the specification. Older features would continue to be available in the older versions. Bob Ross disagreed, proposing that backward compatibility meant that older keywords should be available even in newer specification versions. In response, Todd and Michael Mirmak suggested that newer specification versions might simply provide alternate paths for existing features but in a cleaner architecture. So long as the new keywords could support the same kind of designs as older structures, backward compatibility is maintained with minimal additional development costs and a clean specification for future expansion.

Bob and Arpad both agreed that this might be possible, but Bob cautioned that often the “devil is in the details” in trying to duplicate older features in newer structures.

The discussion will be continued in the next Open Forum, as well as in various task group meetings.

## NEXT MEETING

The next IBIS Open Forum teleconference will be held December 21, 2007 from 8:00 AM to 10:00 AM US Pacific Time. Touchstone 2.0 will be introduced for Open Forum consideration. A vote on next year’s membership dues is scheduled.

---

## NOTES

IBIS CHAIR: Michael Mirmak (916) 356-4261, Fax: (916) 377-3788

[michael.mirmak@intel.com](mailto:michael.mirmak@intel.com)

Server Platform Technical Marketing Engineer, Intel Corporation

FM5-239

1900 Prairie City Rd.

Folsom, CA 95630

VICE CHAIR: Syed Huq (408) 525-3399, Fax: (408) 526-5504

[shuq@cisco.com](mailto:shuq@cisco.com)

Manager, Hardware Engineering, Cisco Systems

170 West Tasman Drive

San Jose, CA 95134-1706

SECRETARY: Randy Wolff (208) 363-1764, Fax: (208) 368-3475

[rrwolff@micron.com](mailto:rrwolff@micron.com)

SI Modeling Manager, Micron Technology, Inc.  
8000 S. Federal Way  
Mail Stop: 01-711  
Boise, ID 83707-0006

LIBRARIAN: Lance Wang (978) 633-3388

[lwang@iometh.com](mailto:lwang@iometh.com)

President / CEO, IO Methodology, Inc.  
PO Box 2099  
Acton, MA 01720

WEBMASTER: Syed Huq (408) 525-3399, Fax: (408) 526-5504

[shuq@cisco.com](mailto:shuq@cisco.com)

Manager, Hardware Engineering, Cisco Systems  
170 West Tasman Drive  
San Jose, CA 95134-1706

POSTMASTER: Bob Ross (503) 246-8048, Fax : (503) 239-4400

[bob@teraspeed.com](mailto:bob@teraspeed.com)

Staff Scientist, Teraspeed Consulting Group  
10238 SW Lancaster Road  
Portland, OR 97219

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>

All eda.org documents can be accessed using a mirror:

<http://www.ibis-information.org>

Note that the "/ibis" text should be removed from directory names when this URL mirror is used.

\* Other trademarks, brands and names are the property of their respective owners.

## GEIA STANDARDS BALLOT VOTING STATUS

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

Organization	Interest Category	Standards Ballot Voting Status	September 21, 2007	October 12, 2007	November 2, 2007	November 30, 2007
Advanced Micro Devices	Producer	Active	√	√	√	√
Agilent Technologies	User	Inactive				√
Ansoft	User	Inactive				
Apple Computer	User	Inactive				
Applied Simulation Technology	User	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				
IBM	Producer	Inactive				√
Intel Corp.	Producer	Active	√	√	√	√
IO Methodology	User	Inactive		√		√
LSI	Producer	Active	√	√	√	√
Mentor Graphics	User	Active		√	√	√
Micron Technology	Producer	Active	√	√	√	
Nokia Siemens Networks	Producer	Inactive	√			√
Panasonic	Producer	Inactive				
Samtec	Producer	Inactive				
Signal Integrity Software	User	Active		√	√	√
Sigrity	User	Inactive				√
STMicroelectronics	Producer	Active		√	√	√
Synopsys	User	Inactive				
Teraspeed Consulting	General Interest	Active	√	√	√	√
Texas Instruments	Producer	Inactive				
Toshiba	Producer	Inactive				
Xilinx	Producer	Active	√	√	√	√
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.