

IBIS Open Forum Minutes

Meeting Date: **June 24, 2011**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2011 PARTICIPANTS

Agilent	Radek Biernacki*, Fangyi Rao, Amolak Badesha
AMD	Nam Nguyen*
Apple Computer	(Matt Herndon)
Applied Simulation Technology	Norio Matsui
Cadence Design Systems	Terry Jernberg*, Ambrish Varma, Dennis Nagle, Martin Biehl, Yukio Masuko
Cisco Systems	Syed Huq, Mike LaBonte, Luis Boluna, Ashwin Vasudevan, Zhiping Yang
Ericsson	Anders Ekholm
Freescale	(Jon Burnett)
Green Streak Programs	Lynne Green
Huawei Technologies	Xiaoqing Dong
IBM	Adge Hawes*, Greg Edlund*
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Udy Shrivastava
IO Methodology	Lance Wang*
LSI	Brian Burdick
Mentor Graphics	Arpad Muranyi*, Ed Bartlett, Vladimir Dmitriev-Zdorov, Steve Kaufer, Chuck Ferry
Micron Technology	Randy Wolff, Andrea Spiezia, Roberto Izzi, Aniello Viscardi, Giovanni Guerra, Francesco Madonna, Giuseppe Fusillo
National Semiconductor	Hsinho Wu, Pegah Alavi, John Goldie
Nokia Siemens Networks GmbH	Eckhard Lenski*
Signal Integrity Software	Walter Katz*, Todd Westerhoff, Mike Steinberger, Barry Katz
Sigrity	Raymond Chen, Kumar Keshavan, Yingxin Sun
Synopsys	Andy Tai, Ted Mido, Scott Wedge
Teraspeed Consulting Group	Bob Ross*, Kellee Crisafulli, Tom Dagostino, Scott McMorro
Texas Instruments	Casey Morrison, Alfred Chong
Xilinx	(Raymond Anderson)
ZTE	(Huang Min)
Zuken	(Michael Schaefer)

OTHER PARTICIPANTS IN 2011

AET	Mikio Kiyono
Altera	Hui Fu, Zhuyuan Liu, Julia Nekrylova

Ansys (Ansoft Corporation)	Samuel Martens
Avago	Weiping He, Minh Quach, Sari Tocco
Bayside Design	Elliot Nahas
Broadcom	Mohammad Ali
CST	Martin Schauer
Exar Corporation	Helen Nguyen
Granite River Labs	Johnson Tan, Mike Engbretson, Quintin Anderson
High Speed Design Center	Ben Chia
ICT-Lanto	Steven Wong
JEITA	Atsushi Ishikawa
KEI Systems	Shinichi Maeda
Maxim Integrated Products	Hassan Rafat
Mindspeed	Jeff Li, Lyn Wang
NetLogic	Ryan Coutts, Antonis Orphanou
Oracle	Gustav Blando
Politecnico di Torino	Igor Stievano, Stefano Grivet-Talocia
Pristine Signals	AbdulRahman (Abbey) Rafiq
QLogic	David Choe
Renesas Electronics	Takuji Komeda
Samsung Electronics	Il Seong
Siemens	Manfred Maurer
Simberian	Yuriy Shlepnev
ST Microelectronics	Fabio Brina, Alan Smith
TechAmerica	(Chris Denham)
Thales Communication	Alexandre Amedeo, Cyrip Chastang
Toshiba	(Yasumasa Kondo)
University of Illinois	Jose Schutt-Aine
University of L'Aquila	Danilo di Febo
Vitesse Semiconductor	Siris Tsang
Independent	Yoichi Niioka

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	Meeting Number	Meeting Password
July 15, 2011	203 207 201	IBIS

For teleconference dial-in information, use the password at the following website:

<https://cisco.webex.com/cisco/j.php?J=203207201>

All teleconference 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, 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

NOTE: "AR" = Action Required.

INTRODUCTIONS AND MEETING QUORUM

No new participants.

CALL FOR PATENTS

Michael Mirmak called for any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.0, Touchstone 2.0 or ICM 1.1 specifications. No patents were declared.

REVIEW OF MINUTES AND ARS

Michael Mirmak called for comments regarding the minutes of the June 3, 2011 IBIS Open Forum Summit. The minutes were approved with no changes. An objection was raised to considering the minutes of the June 7, 2011 IBIS Open Forum teleconference, as the minutes had not been distributed to the IBIS mailing list nor had official approval been received from TechAmerica. Consideration of the June 7 minutes was deferred until the next teleconference.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that Ansys, ARM and Toshiba had been removed from the official membership roster due to lack of response regarding renewal. The tally of membership stands at 27, with certain members listed based on evidence of their intent to pay. The IBIS budget requires 31 members to avoid a deficit this year, assuming no other income.

WEB PAGE UPDATES

No update.

MAILING LIST ADMINISTRATION

No update.

MODEL LIBRARY UPDATE

No update.

MISCELLANY/ANNOUNCEMENTS

None.

OPENS FOR NEW ISSUES

Bob Ross noted that BIRDs 136, 137, 138 and 139 had been announced since the agenda was distributed. Bob also suggested that the priorities of IBIS as an organization be discussed, should time permit.

Arpad Muranyi noted that, at the DAC IBIS Summit, he had received a request to make his recent webinar on IBIS available through the IBIS website. He stated that a direct posting would not be possible, but linking to it would be. Bob added that the key problem is posting of vendor-specific material, with advertisements, marketing data collection and other mentions of vendor products. If this could be removed, linking may be possible. Arpad replied that he had no objections to the concerns Bob raised. As the webinar was an updated version of the presentation already available on the IBIS website, he dropped his request. Bob suggested that the webinar could be re-presented as an IBIS Summit topic or as another special presentation.

INTERNATIONAL/EXTERNAL ACTIVITIES

- DASC

Michael Mirmak noted that the next DASC meeting would be held on August 4. At Michael's request, the DASC will discuss how IEEE and international standardization through IEC work, with presentations by Dennis Brophy and Victor Berman. The meeting would be an ideal time to raise IEC process issues.

The DASC file and e-mail archive may be found at:

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

- P1735 Encryption

No update. The IEEE Study Group on Encryption web reflector archives are found at:

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

- VHDL-AMS Table-Driven Models

Arpad Muranyi noted that the team is making good process, with questions being address on how the calling syntax interface should work. The team is on-schedule, as the original plan was to complete work in a year's time. Arpad will attempt to provide an additional update for the next teleconference meeting.

More information can be found at:

http://www.eda.org/twiki/bin/view.cgi/P10761/ProjectsArea#Table_driven_Modeling_Champion_J

- Conferences

Bob Ross noted that the EPEPS (Electrical Performance of Electronic Packaging and Systems) will be held October 23-26 in San Jose, California but will not feature an official IBIS presence. The event will take place too close to the IBIS Summits planned for Asia.

More information can be found at:

<http://epeps.ece.illinois.edu/>

- EDAPS (Electrical Design of Advanced Packaging & Systems) will be held December 12-14 in Hangzhou, PRC. More information can be found at:

<http://www.edaps2011.org>

EMCCompo2011, the 8th International Workshop on Electromagnetic Compatibility of Integrated Circuits, will be held in Dubrovnik, Croatia, November 6-9, 2011. Organizers of the event have contacted the IBIS Open Forum to see if there is interest in having a tutorial session on IBIS. More information can be found at:

<http://www.emccompo2011.org>

Bob added that IBIS participation is not planned for either of the other two events above, though individual papers and discussion on IBIS are encouraged. These are events with refereed submissions, with deadlines either pending or already passed.

- Press Update

Bob Ross noted that EDN included an article mentioning IBIS in its May 26 edition on page 26. The article is "Beyond the data sheet with IBIS" by Bonnie Baker and is linked at:

http://www.edn.com/article/518226-Beyond_the_data_sheet_with_IBIS.php

IEC APPROVAL ACTIVITIES

No update.

TECHAMERICA UPDATE

Michael Mirmak reported that no new information was available on the new budget reserve. Bob Ross requested further information on whether this was an actual bank account or simply a line item in the budget.

Bob also requested an update of the IBIS KAVI membership, individual by individual, to ensure a match between the on-line roster, the poster and other aspects of the IBIS webpages. Michael Mirmak replied that the Board can make this a separate discussion.

KAVI members' login is at:

<http://workspace.techamerica.org/apps/org/workgroup/ibis-members>

SUMMIT STATUS

- DAC IBIS Summit

Michael Mirmak summarized the June 7 IBIS Summit held during the Design Automation Conference (DAC) in San Diego, CA on June 7. 20 people representing 17 organizations attended. Michael thanked Mentor Graphics, a key sponsor responsible for the meeting room and refreshment logistics, plus the attendees and presenters. He also noted that the elections resulted in a slightly changed Board, with Mike LaBonte now also serving as webmaster. Michael thanked the outgoing board for its service, particularly Syed Huq, the outgoing webmaster. Bob Ross noted that Syed has been probably the longest-serving board member of IBIS, having been part of the board continuously from 1996 through 2011.

- IBIS Summits in Asia

Bob Ross noted that the Shanghai IBIS Summit is scheduled for Tuesday, November 15. A room has been reserved and substantial support for the event already has been noted there. The event date for Tokyo has not been settled. The event in Hsinchu has been moved to Taipei due to lack of room availability. However, due to the precarious financial situation of IBIS, having a third summit at all is in doubt. A room is being held for Monday, Nov. 21 in Taipei. If the room deposit is made, IBIS needs about US \$3500 in additional sponsorship to make the events work. The Japan event cannot be held after the 21st, due to US holiday conflicts.

Michael Mirmak asked whether a room in Japan would be available on the 17th or 18th. Bob replied that yes, facilities in Tokyo are usually available on a flexible schedule. The room is at JEITA headquarters in Tokyo and, as two people from JEITA attended the IBIS Summit at DAC, we would like to reciprocate with an official event.

Michael asked whether the Taipei event would be more feasible if more money comes in from sponsors. Bob replied that this was true and that, if we defer on a November Taipei event, we would bank the money and get more aggressive regarding an event in the February/March timeframe.

Michael suggested a contingent commitment immediately, hinging on a reply from one of the key sponsors from the previous year's Taipei event who has yet to reply regarding support for a 2011 event. The date and logistics will be closed by the Board offline.

Sponsorship opportunities for all upcoming IBIS summits are available, with sponsors receiving free mentions in the minutes, agenda, and other announcements. This includes upcoming events in Asia. Contact the IBIS Board for further details.

IBIS QUALITY TASK GROUP

Bob Ross reported that the group is closer to releasing a BIRD to address BUG104, likely by the next teleconference.

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

http://www.eda.org/ibis/quality_wip/

IBIS MODEL REVIEW TASK GROUP

No update.

ADVANCED TECHNOLOGY MODELING TASK GROUP

Arpad Muranyi reported that additional correction BIRDs are expected in the near future. Analog packaging and jitter dependency BIRDs are under continuing discussion.

Task group material can be found at:

http://www.eda-stds.org/ibis/macromodel_wip/

INTERCONNECT TASK GROUP

Michael Mirmak reported weekly meetings continue on IBIS-ISS. A review draft 1.3 has been generated based on previous task group comments and will be discussed at the next meeting. Bob Ross added that the team is likely to release version 1.3 to the Open Forum for official consideration.

Task group material can be found at:

http://www.eda.org/ibis/interconnect_wip/

IBIS EDITORIAL TASK GROUP

Michael Mirmak reported that the Editorial team has been made into an official task group. Bob Ross added that three separate tasks related to IBIS 5.1 are underway: a total, thorough review of a reformatted IBIS specification; a complete revision of the IBIS-ATM Task Group changes (Section 6c and Section 10); addition of a few of the latest BIRDs.

The current IBIS 5.0 reformatting documentation can be reviewed at the following new location:

http://www.eda.org/ibis/editorial_wip/

The old link is being maintained, to avoid breaking existing references:

http://www.eda.org/ibis/reformat_wip/

NEW ADMINISTRATIVE ISSUES

None.

BIRD116: ADD IBIS-ISS TO [EXTERNAL MODEL] AND [EXTERNAL CIRCUIT] AS A SUPPORTED LANGUAGE

Arpad Muranyi moved that BIRDs 116 through 129 be tabled. Radek Biernacki seconded the

motion. No objections were raised.

BIRD117.3: PARAMETERIZE A_TO_D AND D_TO_A CONVERTERS

Tabled.

BIRD118.2: ANALOG PARAMETER ASSIGNMENTS

Tabled.

BIRD121: IBIS-AMI NEW RESERVED PARAMETERS FOR DATA MANAGEMENT

Tabled.

BIRD122: IBIS-AMI NEW RESERVED PARAMETERS FOR ANALOG MODELING

Tabled.

BIRD123.1: IBIS-AMI NEW RESERVED PARAMETERS FOR JITTER/NOISE

Tabled.

BIRD124: IBIS-AMI NEW RESERVED PARAMETERS FOR DEPENDENCY TABLES

Tabled.

BIRD125: MAKE IBIS-ISS AVAILABLE FOR IBIS PACKAGE MODELING

Tabled.

BIRD127: IBIS-AMI TYPOGRAPHICAL CORRECTIONS

Tabled.

BIRD128: ALLOW AMI_PARAMETERS_OUT TO PASS AMI_PARAMETERS_IN DATA ON CALLS TO AMI_GETWAVE

Tabled. Walter Katz noted that the BIRD description was incorrect in the published agenda.

BIRD129: ADD “POLARITY” ARGUMENT TO D_TO_A CONVERTERS

Tabled.

BIRD130: CROSSTALK CLARIFICATION WITH RESPECT TO AMI

Arpad Muranyi noted that, per Adge Hawes's request, no existing models would be broken if

"number_of_rows " is used. Adge Hawes added that he performed a very basic test himself and is satisfied that his concerns from previous meetings are closed.

Bob Ross moved that BIRD130 be approved. Arpad Muranyi seconded. The motion passed with the following votes:

Agilent - yes
AMD - yes
Cadence - yes
IBM - yes
Intel - yes
IO Method - yes
Mentor - yes
Nokia - yes
SiSoft - yes
Teraspeed - yes

BIRD 131: IBIS-AMI REPEATERS

Bob Ross moved that BIRD131 be tabled. Arpad Muranyi seconded. No objections were raised.

BIRD132: CLARIFICATION OF THE TABLE FORMATION FOR IBIS_AMI

Bob Ross noted that some newly introduced BIRDS may impact the text of this BIRD. Arpad Muranyi agreed. No further discussion was held on the BIRD.

BIRD133: MODEL CORNER C_COMP

Bob Ross noted that some alternatives to this BIRD have been discussed, but not formally approved. The whole point of the BIRD is to solve a general IBIS problem, not an IBIS-AMI-specific problem. Bob added that C_comp alignment should be based on silicon PVT alignment and resolving this issue solves many, many other problems in IBIS. Arpad Muranyi asked which version is targeted to include the BIRD. Bob responded that he hoped to see the text in 5.1. Arpad asked where the BIRD should be discussed. Bob replied that the IBIS Open Forum teleconference meeting was appropriate, though the ATM task group briefly discussed this and may have viewed it in an IBIS-AMI context. Arpad noted that this was not the intent of the ATM task group, but AMI impacts would be a natural focus. Bob replied that the language discussing the BIRD over e-mail had an AMI-specific direction.

Arpad moved to move the BIRD discussion to the appropriate e-mail reflector. Radek Biernacki seconded. No objections were raised.

BIRD134: AMI FUNCTION RETURN VALUE CLARIFICATION

Arpad Muranyi noted that no new comments had been received on the BIRD. The BIRD was approved for inclusion in the next version of IBIS with the following votes:

Agilent - yes
AMD - abstains
Cadence - yes
IBM - yes
Intel - yes
IO Method - yes
Mentor - yes
Nokia - yes
SiSoft - yes
Teraspeed - yes

BIRD135: ADD BOOLEAN TO BNF FOR IBIS-AMI

Arpad Muranyi introduced the BIRD, which makes the IBIS-AMI BNF listing complete by including the Boolean type. Michael Mirmak noted an issue in the posted text with quotes appearing as blank boxes. Arpad added that this was a simple editorial BIRD, with no comments or questions received since posting.

Arpad moved to schedule a vote on BIRD135 at the next teleconference. Bob Ross seconded the motion. No objections were raised.

BIRD136: DEFINING RELATIONSHIPS BETWEEN TYPE AND FORMAT

Arpad Muranyi summarized the BIRD text. The BIRD is a collection of non-technical changes, making type and format clearer, correcting editorial issues and adding a table. The BIRD also addresses a question from the parser developer when IBIS 5.0 was initially released. Bob Ross added that the BIRD defines relations that weren't clear before. He suggested holding off on a vote until all BIRDs have been examined for consistency and interaction. Arpad agreed to holding off on a vote until a future meeting.

BIRD137: AMI_PARAMETERS_IN, AMI_PARAMETERS_OUT, MSG CLARIFICATIONS

Arpad Muranyi summarized the BIRD, which makes mostly editorial changes but is in part technical. The text clarifies some issues including the fact that msg was not described at all in IBIS 5.0, including how memory is allocated for it. The BIRD text spells these rules out much more crisply.

Arpad added that this BIRD is "stand-alone" and doesn't depend on others under consideration. Bob Ross agreed, noting that the BIRD wraps up Section 10 changes. Radek Biernacki noted that the BIRD refers to empty strings and asked if the text should be more precise as to what it means. Arpad replied that the references should be generally understood and that the text may not require those details.

Michael Mirmak noted that, not being a programmer, he did not know if an empty string is just "", NULL or /n or something else. Radek stated that the empty string is a return pointer to a null-terminator. Therefore this is just a null. Arpad added that an empty string could be a /0 in C or

a """. Radek replied that this confirms the text is written in the context of C.

Arpad moved to schedule BIRD137 for an approval vote during the next teleconference. Walter Katz seconded the motion. No objections were raised.

BIRD138: IBIS-AMI SECTION 6C TABLES UPDATE

Bob Ross introduced BIRD138, which brings the definition of tables for Section 6c into accordance with the expected new parameter AMI_Version. Additionally, a note has been placed in the text regarding use_init_output no longer being valid for IBIS 5.1 and above. Some other editorial changes have been made including the use of "—" instead of "NA", to avoid conflicts with IBIS reserved words. Fully spelled-out column headers have also been added. Bob suggested holding off on voting until the remaining BIRDS for IBIS-AMI are completed.

The BIRD adds some parameters, which implies that augmenting the table is needed. Bob responded that BIRDS 120 and 126 changed the specification and this BIRD captures the changes in the table. Radek Biernacki suggested that this table will not be seen as-is in the next release, as changes will be needed based on other BIRDS.

Arpad Muranyi moved to table the BIRD until all other IBIS-AMI-related BIRDS have been settled. Radek Biernacki seconded the motion.

BIRD139: RESERVED_PARAMETERS ORDER

Bob Ross introduced BIRD139, which was initially submitted as a private BIRD, but after discussion in the IBIS-ATM group was formally submitted to the Open Forum. The BIRD puts a constraint on parameter ordering such that the Reserved parameter section must occur first, so that the Version parameter is parsed early in the file. Bob noted that the BIRD text may contain conflicts with BIRD138's explanatory text, regarding which BIRD adds Version.

Arpad Muranyi noted that the "any order" statement has been removed in the published version. He asked whether this can be re-added for other subtrees. Bob Ross replied that this was possible. Arpad suggested that subtrees of "these subtrees" should be noted as legally appearing in any order. Bob replied that the team should expect to see a BIRD139.1 with this change.

Michael Mirmak will fix the posted BIRD text to replace the white boxes with the correct single or double quotation marks.

IBISCHK5 BUG STATUS

Michael Mirmak noted that no new BUG reports have been received. Michael also noted that the parser remains unchanged and no new parser updates have been received. Bob Ross added that he has requested a status update from the developer regarding the error-code table now used for the parser output.

IBIS-ISS SPECIFICATION DRAFT STATUS

Michael Mirmak noted that the IBIS-ISS document status had been discussed earlier in the meeting.

NEW TECHNICAL ISSUES

No new technical issues were raised.

NEXT MEETING

The next IBIS Open Forum teleconference will be held July 15, 2011 from 8:00 to 10:00 AM US Pacific Time. Votes on BIRD135 and BIRD137 are scheduled. Nam Nguyen moved to adjourn and Arpad Muranyi seconded.

NOTES

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

The following e-mail addresses are used:

majordomo@eda.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.org

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

ibis-info@eda.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.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.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.org

To report ibischk parser BUGs as well as tschk2 parser BUGs. The BUG Report Form for ibischk resides along with reported BUGs at:

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

The BUG Report Form for tschk2 resides along with reported BUGs at:

http://www.eda.org/ibis/tschk_bugs/
http://www.eda.org/ibis/tschk_bugs/bugform.txt

icm-bug@eda.org

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

http://www.eda.org/ibis/icm_bugs/
http://www.eda.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.org/ibis/bugs/s2ibis/bugs2i.txt>
<http://www.eda.org/ibis/bugs/s2ibis2/bugs2i2.txt>
<http://www.eda.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.eda.org/ibis>

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

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

To create an account on the TechAmerica KAVI workspace, check out:

<http://workspace.techamerica.org/kwspub/join/>

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IBIS CURRENT MEMBER VOTING STATUS

I/O Buffer Information Specification Committee (IBIS)

Organization	Interest Category	Standards Ballot Voting Status	May 13, 2011	June 3, 2011	June 7, 2011	June 24, 2011
Advanced Micro Devices	Producer	Active	X	X	-	X
Agilent Technologies	User	Active	X	X	X	X
Apple Computer	User	Inactive	-	-	-	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	-	X	X
Cisco Systems	User	Active	X	X	X	-
Ericsson	Producer	Active	-	X	X	-
Freescale	Producer	Inactive	-	-	-	-
Green Streak Programs	General Interest	Inactive	-	-	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
IBM	Producer	Active	X	X	-	X
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Active	X	X	X	X
LSI	Producer	Inactive	X	X	-	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Inactive	-	X	-	-
National Semiconductor	Producer	Inactive	-	-	-	-
Nokia Siemens Networks	Producer	Active	X	X	-	X
Signal Integrity Software	User	Active	X	X	X	X
Sigrity	User	Inactive	-	-	X	-
Synopsys	User	Inactive	-	-	-	-
Teraspeed Consulting	General Interest	Active	X	X	X	X
Texas Instruments	Producer	Inactive	-	-	-	-
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
Zuken	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 TECHAMERICA 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.