

# IBIS Open Forum Minutes

Meeting Date: **June 7, 2013**

Meeting Location: **Teleconference**

## VOTING MEMBERS AND 2013 PARTICIPANTS

Agilent	Radek Biernacki*, Pegah Alavi, Heidi Barnes, Fangyi Rao*, Colin Warwick*, Tarun Kalwani
Altera	David Banas*, Hsinho Wu
ANSYS	Luis Armenta, Ben Franklin, Dan Dvorscak, Steve Pytel*
Applied Simulation Technology	Fred Balistreri, Norio Matsui
Cadence Design Systems	Terry Jernberg, Joy Li, Yingxin Sun, Ambrish Varma*, Kevin Yao, Brad Brim*
Ericsson	Anders Ekholm, Martina Fiammengo
Foxconn Technology Group	(Sogo Hsu)
IBM	Greg Edlund, Adge Hawes*, Dale Becker
Intel Corporation	Michael Mirmak*, Mohammad Bapi, Stewart Gilbert, Ravindra Rudraraju
IO Methodology	Lance Wang*
LSI	Brian Burdick, Sarika Jain, Xingdong Dai*
Maxim Integrated Products	Hassan Rafat*, Mahbubul Bari*, Ron Olisar
Mentor Graphics	Arpad Muranyi*, Ed Bartlett, Vladimir Dmitriev-Zdorov
Micron Technology	Randy Wolff*
Signal Integrity Software	Walter Katz*, Mike LaBonte*, Mike Steinberger, Todd Westerhoff*
Synopsys	John Ellis, Ted Mido, Scott Wedge, Rinsha Reghunath
Teraspeed Consulting Group	Bob Ross*, Tom Dagostino
Toshiba	(Yasumasa Kondo)
Xilinx	(Raymond Anderson)
Zuken	Masaud Raeisi, Reinhard Remmert, Michael Schaeeder, Alfonso Gambuzza

## OTHER PARTICIPANTS IN 2013

ARM	(Vipul Patel)
Bayside Design	Elliot Nahas
Computer Simulation Technology	Heiko Grubrich
ECL Advantage	Thomas Iddings
Freescale	Jon Burnett
Granite River Labs	Vamshi Kandalla, Miki Takahashi
Hewlett-Packard	Yongjin Choi, Ting Zhu
Huawei Technologies	(Jinjun Li)
Infineon Technologies AG	(Christian Sporrer)
KEI Systems	Shinichi Maeda
Molex	Davi Correia

National Instruments	Lee Mohrmann
Nokia Siemens Networks GmbH	(Eckhard Lenski)
Nvidia	Eric Hsu
Qualcomm	Scott Powers
QLogic	James Zhou
TechAmerica	(Chris Denham)
Teradyne	Raymond Yakura
Texas Instruments	(Pavani Jella)
Université de Brest	Mihai Telescu
University of Illinois	Tom Comberiate, José Schutt-Ainé, Xu Chen
Vitesse Semiconductor	Sirius Tsang
ZTE	(Huang Min)

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
June 28, 2013	205 475 958	IBIS

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

<https://ciscosales.webex.com/ciscosales/j.php?J=205475958>

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

NOTE: "AR" = Action Required.

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## INTRODUCTIONS AND MEETING QUORUM

Michael Mirmak declared that a quorum was reached and the meeting could begin.

Steve Pytel introduced himself. He is the Signal Integrity product manager at ANSYS. Xingdong Dai introduced himself. He is a systems engineer within the SerDes group at LSI. He is the new primary contact for LSI instead of Brian Burdick.

### **CALL FOR PATENTS**

Michael Mirmak called for any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.1, Touchstone 2.0 or ICM 1.1 specifications. No patents were declared.

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

Randy Wolff called for comments regarding the minutes of the May 15, 2013 IBIS Summit meeting at SPI-E. He also called for comments regarding the minutes of the May 17, 2013 IBIS Open Forum teleconference. Both sets of minutes were approved without changes.

### **OPENING OF OFFICER ELECTIONS**

Michael Mirmak noted that we conducted elections during this meeting since we did not host a DAC IBIS Summit.

Bob Ross noted that everyone online was a member and could vote for officers. He reported that the slate of officers currently nominated for the election was:

Chair – Michael Mirmak  
Vice Chair – Lance Wang  
Secretary – Randy Wolff, Chetham Kumar  
Webmaster – Mike LaBonte  
Postmaster – Mike LaBonte  
Model Librarian – Anders Ekholm

Bob added that voting for contested positions would be done by email to preserve confidentiality. Bob asked companies with multiple attendees to choose a single person to send their vote in by email. Bob and Radek Biernacki then requested that each voter send them a test email and confirmed their receipt.

Bob opened nominations for Chair. Besides Michael, there were no other nominations. Bob moved to elect Michael as Chair. Radek seconded the motion. There were no objections.

Bob opened nominations for Vice Chair. Besides Lance, there were no other nominations. Bob moved to elect Lance as Vice Chair. Brad Brim seconded the motion. There were no objections.

Bob opened nominations for Secretary. There were no further nominations. The candidates were Chetham Kumar of NXP, India and Randy Wolff of Micron. Email voting ensued.

### **MISCELLANY/ANNOUNCEMENTS**

None.

## **CALL FOR NEW ISSUES**

None.

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

Bob Ross reported that 20 members have renewed so far. An additional \$1000 was received for Summit support so far. There is one pending renewal, and we will probably have more joins later this year.

## **WEB PAGE AND MAILING LIST ADMINISTRATION**

Mike LaBonte reported that he made modifications to a Perl script that looks at .docx files used for BIRDS to ignore changed text. He also created a 'terms of use' document that should be reviewed by the board. He also found that no other sites on eda.org have a 'terms of use' posted. He created one for IBIS that covers the web page and the mailing list.

He also worked on a list of what we have currently for BIRD and BUG tracking systems. The list included a breakdown of what other software options will provide us. He will report on this further at the next meeting.

Michael Mirmak asked if Mike wanted to talk about using a wiki for our website. Mike noted that he would like to look more offline before talking about the possibility further.

## **MODEL LIBRARY UPDATE**

No update.

## **IBIS AFFILIATIONS**

Michael Mirmak noted that he is deferring this topic until the next meeting.

## **INTERNATIONAL/EXTERNAL ACTIVITIES**

- Conferences

The 22<sup>nd</sup> IEEE Workshop on Electrical Performance of Electronic Packaging and Systems (EPEPS 2013) will be held October 27-30, 2013 in San Jose, California. There may be content related to IBIS modeling. More information is available at:

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

- Press Update

No update.

## **SUMMIT PLANNING AND STATUS**

Michael Mirmak reported that we have a tentative set of dates and locations planned for the Summit series in Asia. In Japan, we plan to have a half day summit in Yokohama on November 22<sup>nd</sup>. The Shanghai Summit will be on November 14<sup>th</sup> or 15<sup>th</sup>. The Parkyard hotel is a possible

location. The Summit in Taipei will be held November 18<sup>th</sup> or 19<sup>th</sup>. We are interested in co-sponsorship. Michael asked that potential sponsors contact the IBIS Open Forum board for more details. Calls for papers will go out in late August.

### **QUALITY TASK GROUP**

Mike LaBonte reported they are reviewing ibischk source code issues and reviewing a document about the ibischk messages and what they mean. They may look at some code compilation issues soon. Mike noted that Bob Ross has the source code, but he does not. Mike requested that IBIS consider giving him a copy of the source code for use on this project. The task group continues meeting Tuesdays at 8:00 a.m. PT.

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

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

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

Arpad Muranyi reported that the group is meeting regularly on Tuesdays at 12:00 p.m. PT. In the last two meetings they discussed three BIRDS submitted recently for votes. He is hoping to move on to dependency tables, backchannel support and other topics of discussion.

Task group material can be found at:

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

### **INTERCONNECT TASK GROUP**

Michael Mirmak reported that the group is meeting regularly on Wednesdays at 8:00 a.m. PT. They are currently looking at the division of on-die, buffer and package nodes. More BIRDS besides BIRD161 may come out of the EMD discussions as it gets finalized.

The task group documents can be found at:

[http://www.eda.org/ibis/interconnect\\_wip/](http://www.eda.org/ibis/interconnect_wip/)

### **CLOSING OF OFFICER ELECTIONS AND RESULTS ANNOUNCEMENT**

Bob Ross announced that the email vote for the Secretary position resulted in Randy Wolff being elected.

Bob opened nominations for Webmaster. Besides Mike LaBonte, there were no other nominations. Bob moved to elect Mike LaBonte as Webmaster. Radek Biernacki seconded the motion. There were no objections.

Bob opened nominations for Postmaster. Besides Mike LaBonte, there were no other nominations. Bob moved to elect Mike LaBonte as Postmaster. Brad Brim seconded the

motion. There were no objections.

Bob opened nominations for Model Librarian. Besides Anders Ekholm, there were no other nominations. Bob moved to elect Anders Ekholm as Model Librarian. Radek Biernacki seconded the motion. There were no objections.

## **NEW ADMINISTRATIVE ISSUES**

None.

### **BIRD145.3: CASCADING IBIS I/O BUFFERS WITH [EXTERNAL CIRCUIT]S USING THE [MODEL CALL] KEYWORD**

Arpad Muranyi noted that the only changes to the BIRD at this time were to reformat the BIRD to the IBIS 5.1 format.

Bob Ross noted that he had one comment but he would prefer to talk about it further in the ATM committee. Walter Katz suggested that this BIRD be discussed in the Interconnect task group since they are discussing on-die interconnect modeling.

Walter moved to table the BIRD for discussion and move discussion to the Interconnect task group for further review. Ambrish Varma seconded the motion. There were no objections.

### **BIRD154.1: USING IBIS-AMI LEAF LABELS IN LIST PARAMETERS**

Bob Ross commented that this BIRD adds additional rules to the parser, so it will require a parser update.

Walter Katz moved to vote on inclusion of the BIRD in the next version of IBIS. Brad Brim seconded the motion. There were no objections. The vote passed with the following vote tally:

Agilent – yes

Altera – yes

ANSYS – yes

Cadence – yes

IBM – yes

Intel – yes

IO Methodology – yes

LSI – yes

Maxim – yes

Mentor Graphics – yes

Micron – yes

SiSoft – yes

Teraspeed – yes

### **BIRD156.2: IBIS-AMI EXTENSION FOR MID-CHANNEL REDRIVER**

Arpad Muranyi noted that the BIRD was discussed in the ATM task group, and they discovered a couple of editorial changes and one technical change that were needed.

Fangyi Rao noted that he added two sentences to the 'Step 8b, Retimer' section. These sentences describe how to sample the logic level of the analog stimulus, converting it to a digital stimulus by comparing the analog stimulus to Rx\_Receiver\_Sensitivity. The logic levels in volts are also defined.

Arpad Muranyi moved to approve BIRD156.3 for inclusion in the next version of IBIS. Steve Pytel seconded the motion. Ambrish Varma moved to vote by acclamation. There was no second. The vote passed with the following vote tally:

Agilent – yes  
Altera – abstain  
ANSYS – yes  
Cadence – yes  
IBM – yes  
Intel – yes  
IO Methodology – yes  
LSI – abstain  
Maxim – yes  
Mentor Graphics – yes  
Micron – yes  
SiSoft – yes  
Teraspeed – yes

Walter Katz added that he made a statement in the ATM meeting on Tuesday that he'd like in the minutes. SiSoft noted that they would like to see Rx\_Noise added to redrivers in the future, and they will work on a BIRD for introduction post IBIS 6.0.

### **BIRD158.3: AMI TOUCHSTONE ANALOG BUFFER MODELS**

Arpad Muranyi noted that this BIRD allows Touchstone files to be used for the Tx and Rx analog models in IBIS AMI. There has been a lot of controversy over this BIRD in the task group discussions.

Walter Katz noted there is a trend in the industry to generate Touchstone .s4p models for modeling of insertion loss and return loss of Tx and Rx circuits. SiSoft proposed this methodology to allow for model creators to use these .s4p models in IBIS-AMI. Walter noted that BIRD160 can accomplish the same thing, but it requires a lot more syntax overhead than BIRD158. Walter felt this was to IBIS' advantage to include this methodology in the specification.

Radek Biernacki noted that he felt the cause was for a good reason, but felt there were still technical details to be finalized. Ambrish Varma added that he had more fundamental issues with this BIRD, feeling that there was no way of knowing if this approach was extensible to

future Tx and Rx circuits. Todd Westerhoff objected to Ambrish's statement, noting that they simply disagree about this issue.

David Banas asked for clarification. Emails seem to suggest that one BIRD is only changing the Model\_Specific section and one is changing the Reserved\_Parameters section. Arpad noted that BIRD158.3 adds Reserved\_Parameters to the AMI file. When you see them in the AMI file, the tool will automatically resort to using the predefined circuit shown in the BIRD, overriding anything else. BIRD160 does not required Reserved\_Parameters in the AMI file or any parameters in the AMI file. It can contain all the parameters within subcircuits pointed to in [External Circuit]. Todd commented that SiSoft has a template that has been used for many years implementing what is seen in BIRD158.3. BIRD160 can be successful but is cumbersome and may cause problems. Radek noted that he agreed with Todd but felt there were unresolved issues still.

David asked why BIRD158.3 uses Reserved\_Parameters. Walter responded that the BIRD relies on Model\_Specific parameters currently, but they chose to use Reserved\_Parameters to create a standard approach for using these models. David added that this does impose a modeling approach on all EDA vendors to support. Walter noted that this won't be in IBIS 6.0, but the market may demand this approach, and we will have to wait and see if that is the case.

#### **BIRD125.1: MAKE IBIS-ISS AVAILABLE FOR IBIS PACKAGE MODELING**

Discussion was tabled.

#### **BIRD128: ALLOW AMI\_PARAMETERS\_OUT TO PASS AMI\_PARAMETERS\_IN DATA ON CALLS TO AMI\_GETWAVE**

Discussion was tabled.

#### **BIRD131: IBIS-AMI REPEATERS**

Bob Ross moved to un-table BIRD131 and BIRD153.1. Radek Biernacki seconded the motion. There were no objections.

Arpad Muranyi moved to vote to reject BIRD131 since it is already included in BIRD156.2 which was voted on today. Bob seconded the motion. Arpad moved to vote by acclimation. Bob seconded the motion. There were no objections, so the BIRD was rejected.

#### **BIRD147: BACK-CHANNEL SUPPORT**

Discussion was tabled.

#### **BIRD150: IBIS-AMI NEW RESERVED PARAMETERS FOR DEPENDENCY TABLES**

Discussion was tabled.



### **BIRD153.1: PARAMETER TREE KEYWORD**

Bob Ross moved to vote to reject BIRD153.1. It is substantially included in BIRD160, and other text should be re-written. Steve Pytel seconded the motion. Bob moved to vote by acclamation to reject the BIRD. Steve Pytel seconded the motion. There were no objections, so the BIRD was rejected.

### **BIRD155: NEW AMI API TO RESOLVE DEPENDENT MODEL PARAMETER**

Discussion was tabled.

### **BIRD157: PARAMETERIZE [DRIVER SCHEDULE]**

Discussion was tabled.

### **BIRD161.1: SUPPORTING INCOMPLETE AND BUFFER-ONLY [COMPONENT] DESCRIPTIONS**

Discussion was tabled.

### **IBIS SPECIFICATION CHANGE STATUS**

Michael Mirmak noted that the document will be updated after today's BIRD votes.

The document is available at the following link:

<http://www.eda.org/ibis/docs/ibis-version-change-strategy-v2p9.pdf>

### **CLOSURE OF IBIS 6.0: SCHEDULE AND NEXT STEPS**

Michael Mirmak noted that IBIS 6.0 will close out with the BIRDs voted on today. We will be moving to a six month release schedule, and we will need to discuss the specification numbering.

Arpad Muranyi asked about moving to a naming convention based on year and month release. Michael noted that he would like to see an official proposal on this, and we do need to discuss this further.

Michael also commented that the Editorial task group will need to be reconvened, so he asked for volunteers to be involved in that soon.

### **IBISCHK5 PARSER AND BUG STATUS**

Bob Ross reported that BUG145 was reviewed with the parser developer. There is a typo in a pointer. The bug was classified as annoying severity, low priority and open status. Radek Biernacki noted that this does cause a compiler error only if certain conditionals are changed that end up compiling this portion of the code.

Bob reported that BUG146 was discovered by Arpad Muranyi. The bug shows that a mixture of IBIS 5.0 and 5.1 AMI files called by the top level .ibs file can cause errors, since the parser fails to reset its checking rules from 5.1 to 5.0 rules when checking the 5.0 file. The bug was classified as moderate severity, high priority and open status.

## **V-T TABLES AND OVERCLOCKING IN IBIS-AMI MODELS**

Discussion was deferred due to time limits.

## **NEW TECHNICAL ISSUES**

None.

## **NEXT MEETING**

The next IBIS Open Forum teleconference will be held June 28, 2013 from 8:00 a.m. to 10:00 a.m. US Pacific Time.

Radek Biernacki moved to adjourn. Bob Ross seconded the motion. There were no objections.

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## **NOTES**

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

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

Data Center Platform Applications Engineering

Intel Corporation

FM5-239

1900 Prairie City Rd.,

Folsom, CA 95630

VICE CHAIR: Lance Wang (978) 633-3388

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

President/CEO, IO Methodology, Inc.

PO Box 2099

Acton, MA 01720

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: Anders Ekholm (46) 10 714 27 58, Fax: (46) 8 757 23 40

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

Digital Modules Design, PDU Base Stations, Ericsson AB  
BU Network  
Färögatan 6  
164 80 Stockholm, Sweden

WEBMASTER: Mike LaBonte

[mikelabonte@eda.org](mailto:mikelabonte@eda.org)

IBIS-AMI Modeling Specialist, Signal Integrity Software  
6 Clock Tower Place  
Maynard, MA 01754

POSTMASTER: Mike LaBonte

[mikelabonte@eda.org](mailto:mikelabonte@eda.org)

IBIS-AMI Modeling Specialist, Signal Integrity Software  
6 Clock Tower Place  
Maynard, MA 01754

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

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

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

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

[ibis@eda.org](mailto: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](mailto: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](mailto: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/)  
[http://www.eda.org/ibis/tschk\\_bugs/bugform.txt](http://www.eda.org/ibis/tschk_bugs/bugform.txt)

[icm-bug@eda.org](mailto: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/)  
[http://www.eda.org/ibis/icm\\_bugs/icm\\_bugform.txt](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 – TECHAMERICA STANDARDS BALLOT VOTING STATUS

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

Organization	Interest Category	Standards Ballot Voting Status	April 26, 2013	May 15, 2013	May 17, 2013	June 7, 2013
Agilent Technologies	User	Active	X	-	X	X
Altera	Producer	Inactive	X	-	-	X
ANSYS	User	Active	-	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	-	X	X
Ericsson	Producer	Inactive	-	X	-	-
Foxconn Technology Group	Producer	Inactive	-	-	-	-
IBM	Producer	Active	X	X	X	X
Intel Corp.	Producer	Active	X	-	X	X
IO Methodology	User	Inactive	-	X	-	X
LSI	Producer	Active	-	-	X	X
Maxim Integrated Products	Producer	Inactive	-	-	-	X
Mentor Graphics	User	Active	X	-	X	X
Micron Technology	Producer	Active	X	X	-	X
Signal Integrity Software	User	Active	X	-	X	X
Synopsys	User	Inactive	-	-	-	-
Teraspeed Consulting	General Interest	Active	X	-	X	X
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
Zuken	User	Inactive	-	X	-	-

#### CRITERIA FOR MEMBER IN GOOD STANDING:

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

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- 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.