



## IBIS Open Forum Minutes

Meeting Date: **May 1, 2015**

Meeting Location: **Teleconference**

### VOTING MEMBERS AND 2015 PARTICIPANTS

Altera	[David Banas], Masashi Shimanouchi, Hsinho Wu*
ANSYS	(Steve Pytel), Curtis Clark*
Applied Simulation Technology	Fred Balistreri, Norio Matsui
Avago Technologies	Minh Quach, Leif Zweidinger
Cadence Design Systems	Brad Brim*, Joshua Luo, Ken Willis, Joy Li, Ambrish Varma
Cisco Systems	David Siadat, Rockwell Hsu, Bidyut Sen
Ericsson	Anders Ekholm
Huawei Technologies	Xiaoqing Dong
IBM	Adge Hawes*, Luis Armenta
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Todd Bermensolo, Nhan Phan
IO Methodology	Lance Wang*
Keysight Technologies	Radek Biernacki*, Pegah Alavi, Colin Warwick
	Jian Yang, Nicholas Tzou, Heidi Barnes, Dave Larson
	Kyla Thomas
Maxim Integrated Products	Mahbubul Bari, Don Greer*, Joe Engert
Mentor Graphics	Arpad Muranyi*, Ed Bartlett, Vladimir Dmitriev-Zdorov
Micron Technology	Randy Wolff
Qualcomm	Senthil Nagarathinam, Kevin Roselle
Signal Integrity Software	Mike LaBonte*, Walter Katz*, Todd Westerhoff
	Mike Steinberger
Synopsys	Ted Mido, Rita Horner, William Lau, Scott Wedge
	Michael Zieglmeier
Teraspeed Labs	Bob Ross*, Tom Dagostino
Toshiba	(Yasumasa Kondo)
Xilinx	(Raymond Anderson)
ZTE Corporation	(Min Huang), Tao Guo*
Zuken	Michael Schaeder, Markus Buecker, Griff Derryberry

### OTHER PARTICIPANTS IN 2015

Bayside Design	Elliot Nahas
Continental Automotive	Felix Goelden, Markus Bebendorf
CST	Stefan Paret
Freescale	Jon Burnett
Galbi Research	Dave Galbi
Independent	Tim Wang Lee
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Xu Jiang

Raytheon  
SAE International  
Simberian  
Vitesse  
ZI Consulting

Joseph Aday  
Chris Denham  
Yuriy Shlepnev  
Siris Tsang  
Iliya Zamek

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
May 13, 2015	European IBIS Summit at SPI – no teleconference	
May 22, 2015	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 a.m. to 9:55 a.m. 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.

---

## **INTRODUCTIONS AND MEETING QUORUM**

Michael Mirmak declared that a quorum was reached and the meeting could begin. Mike LaBonte agreed to take minutes.

## **CALL FOR PATENTS**

Michael Mirmak called for any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.1, IBIS 6.0, Touchstone 2.0, IBIS-ISS 1.0 or ICM 1.1 specifications. No patents were declared.

## **REVIEW OF MINUTES AND ARS**

Mike LaBonte called for comments regarding the minutes of the April 10, 2015 IBIS Open Forum teleconference. Arpad Muranyi moved to approve the minutes. Radek Biernacki seconded the motion. No one objected. The minutes were approved without changes.

Mike reviewed ARs from the previous meeting. These included:

1. Mike LaBonte will look into attachment archiving on freelists.org.  
Mike said this had been done. Attachments were found to be archived, but there was an issue when trying to download them. The files would download with a filename that was not the original filename and would have a .bin extension. This has been reported to Freelists and they are working on it.
2. Michael Mirmak will create a draft 4 of the Policies and Procedures document.  
Michael said this has been done.
3. Michael Mirmak will check with UBM about possible room arrangements for a DesignCon 2016 IBIS Summit meeting on Friday or during the conference as well as co-sponsorship.  
Michael said this was still in progress and would be discussed today.
4. Mike LaBonte will discuss in the next Quality task group meeting making a list of DLL checks that could be done by the IBISCHK parser.  
Mike said this has not been fully discussed yet and would be scheduled for the next meeting.
5. Bob Ross will update the status of BUG161 on the website.  
Bob said this was done.

## **ANNOUNCEMENTS**

None.

## **CALL FOR ADDITIONAL AGENDA ITEMS**

Bob Ross noted that BIRD175 has been submitted and will be introduced. Also, IBISCHK BUG162 has been submitted and needs to be classified.

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

Bob Ross reported that there has been no change since the last meeting. We have 16 paid members so far this year. The treasury balance stands at \$55,139, and one parser sale is still pending. Bob will continue sending reminders to unpaid members (AR). Michael Mirmak asked about the current count of members in good standing. Bob said we have 24 members in good standing until the end of May, at which time only paid members will be in good standing.

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

Mike LaBonte reported that the transition of email lists from eda.org to freelists.org still appears to be going smoothly. Mike reported a number of small issues to Freelists, and they seem to be responding well. The [IBIS Support web page](#) has been updated with information on the new lists as well as archives for the old lists. Other web pages have been updated as well, where they refer to email lists.

Michael Mirmak asked if, now that we have transitioned our email to a new server, there were any options for moving to a more modern website. Mike said the current eda.org server would not be suitable because any files managed by the server would be insecure and accessible to the other groups that share eda.org. Mike took an AR to investigate our options.

## **LIBRARY UPDATE**

No update.

## **INTERNATIONAL/EXTERNAL ACTIVITIES**

### **- Conferences**

The 19th IEEE Workshop on Signal and Power Integrity (SPI 2015) will be held in Berlin, Germany, from May 10-13, 2015. An IBIS Summit meeting will be held in conjunction with this Workshop. The technical program has been announced. There is one IBIS related presentation in the workshop. More information is available at:

<http://www.spi2015.org/>

### **- Press Update**

None.

## **ORGANIZATIONAL ACTIVITIES**

### **- Policies and Procedures Call for Vote**

Michael Mirmak gave an overview of the history and terms of the new Policies and Procedures document, which is intended to replace our existing Charter. The new document will allow more freedom to change our procedural rules such as waiting periods ahead of votes. A vote to approve this document requires a 2/3 quorum, 16 members.

Michael noted that the number of members attending the call plus emailed votes did not meet the quorum.

Bob Ross suggested extending the vote period. He knew of two companies that might submit votes. Bob suggested we could use the new rules for executing officer elections. Arpad Muranyi asked how many officer votes we usually get.

Michael said the original charter called for 2/3 quorum. Quorum for any other business is 5. The new Policies and Procedures establishes a quorum requirement for regular business at 25% of membership, which evaluates to 6 right now. The quorum for policy changes is still 2/3 of membership.

Bob moved to extend the deadline for voting one more week to May 8, combining votes from today and by email. Radek seconded the motion. No one objected.

Michael noted that we have not yet had a motion to accept the document. Radek moved to conduct a vote of approval for the proposed Policies and Procedures today and to count email votes as previously approved. Bob seconded the motion. Michael clarified that a Yes vote is to

approve to Policies and Procedures, No to not approve, or abstain to register no preference. A roll call vote was conducted with the following results:

Altera	Yes
ANSYS	Yes
Applied Simulation Technology	
Avago Technologies	
Cadence Design Systems	Yes
Cisco Systems	
Ericsson	
Huawei Technologies	
IBM	Yes
Infineon Technologies AG	
Intel Corp.	Yes
IO Methodology	Yes
Keysight Technologies	Yes
Maxim Integrated Products	Yes
Mentor Graphics	Yes
Micron Technology	Yes, by email
Qualcomm	
Signal Integrity Software	Yes
Synopsys	Yes, by email
Teraspeed Labs	Yes
Toshiba	Yes, by email
Xilinx	
ZTE	Yes, by WebEx chat
Zuken	

There were 15 Yes votes, zero No votes, and zero abstentions. Michael Mirmak said the motion had not yet passed.

Bob moved to use the new Policies and Procedures procedure for officer elections. Michael said if the current Policies and Procedures vote fails quorum, this motion becomes null and void. If the vote meets quorum but fails to pass, then the motion stands. Bob said we have always allowed email votes with a returning officer, despite the provisions of our charter.

Bob moved to begin voting for officer elections May 17. Mike LaBonte seconded the motion. No one objected. Michael asked for a returning officer volunteer, explaining that this is a person who is not an IBIS officer, but receives and tallies votes for the officer elections. Bob nominated Radek Biernacki. Radek agreed. Arpad seconded the nomination. No one objected. Radek will serve as returning officer for the officer elections.

Mike asked if 2/3 of members must vote Yes to pass organization changes, or if almost half of the voters could vote No, as long as there are 2/3 voting. Michael Mirmak said the charter is not clear on that. Bob read the charter and found that it does require 2/3 approval.

Michael Mirmak noted that an email announcement calling for emailed officer votes will have to be sent on the opening day of voting, May 17. Bob moved that conditional upon approval of the

new Policies and Procedures, that announcement could be sent May 8. Radek asked if this motion is needed. Michael said the call for vote date had not yet been specified. Radek seconded the motion. No one objected. Michael will send a call for officer election votes by email either May 8 or May 17, depending on the outcome of our Policies and Procedures vote (AR).

The draft Policies and Procedures document is available at:

<http://www.eda.org/ibis/policies/>

## **SUMMIT PLANNING AND STATUS**

### **- SPI Summit Planning**

Michael Mirmak said an IBIS Summit meeting will be co-located with the SPI conference in Berlin, Germany on May 13, 2015. The meeting agenda will be sent May 6. Lance Wang reported that 15 people plan to attend. Bob Ross said we typically have about 20 planned attendees in advance of the event. Randy Wolff will be giving an IBIS chair presentation and a report on Interconnect Task Group activities. Bob said we have 5 presentations and could use another. Michael Mirmak thanked the 5 co-sponsors, ANSYS, CST, Mentor Graphics Corporation, Synopsys and Zuken.

### **- EPEPS Summit Planning**

Michael Mirmak reported EPEPS is taking place October 25-28, 2015 in San Jose, CA. October 28 would be the date for the Summit if it takes place. We will need to discuss at a later time if an IBIS Summit will be held at EPEPS. Bob Ross said we have so far deferred the decision. It falls in the midst of the three Asian summits, which keep us busy. Arpad Muranyi asked if EPEPS might change their meeting to an earlier date. Bob felt that this was unlikely. He said we are only considering an EPEPS summit this year because EPEPS is being held in the San Jose area. Next year it will not.

Michael said announcements for an EPEPS summit would begin Sep 2, by our normal schedule, so we must decide by August. He suggested we still should try to decide by June. Bob noted we should give EPEPS organizers early notice of our decision if possible. Mike LaBonte asked if we should collect more information such as an expected attendee count to help decide. Bob said he had polled companies and there is some interest. Bob himself can attend, although it is not a good time of year for him. Michael Mirmak asked about reopening the poll. Bob felt that would not be worthwhile.

Electrical Performance of Electronic Packages and Systems:

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

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

## **QUALITY TASK GROUP**

Mike LaBonte reported that the group has mostly discussed IBISCHK bug and development issues. They have developed HTML versions of the IBISCHK source code, with hyperlinks to help navigate to where message strings are printed, to speed up work on the documented list of message strings.

The group is meeting on Tuesdays at 8:00 a.m. PT.

The IBISCHK6 User Guide work in progress can be reviewed at:

[http://www.eda.org/ibis/ibischk6/ibischk\\_6.0.0\\_UserGuide\\_wip1.pdf](http://www.eda.org/ibis/ibischk6/ibischk_6.0.0_UserGuide_wip1.pdf)

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. They have been discussing PAM4, AMI Directionality, and back-channel issues.

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 on Wednesdays at 8:00 a.m. PT. They are finalizing an interconnect BIRD that will address package improvements and on-die interconnects. This is mostly completed. There are issues concerning ideal ground nodes and package test waveforms.

Task group material can be found at:

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

### **EDITORIAL TASK GROUP**

Michael Mirmak reported that the group is meeting on Fridays at 8:00 a.m. PT, with the exception of the weeks when Open Forum meetings are held in the same time slot. There is an IBIS 6.1 draft posted for review. Small issues have been corrected.

### **NEW ADMINISTRATIVE ISSUES**

Bob Ross noted that another Policies and Procedures vote email had just been received. Xilinx voted yes by email. Michael Mirmak said this gave us 16 Yes votes, so the Policies and Procedures vote has passed.



### **BIRD175: EXTENDING IBIS-AMI FOR PAM4 ANALYSIS**

Michael Mirmak said BIRD175 had been received from Walter Katz. Walter showed a short presentation introducing the BIRD. Showing a PAM4 eye diagram, Walter said this modulation allows twice as many bits per UI. The BIRD authors are from SiSoft, Keysight, Avago and Xilinx. The BIRD changes were summarized on the last slide. It introduces new Reserved\_Parameters for modulation type, voltage thresholds, and timing offsets. Walter asked people to review the BIRD for discussion in the next Open Forum meeting. Bob said it was his understanding that there are no concerns for this BIRD. Michael Mirmak said it would be eligible for a vote in our next meeting. He noted that 3 minor typos had been found in the BIRD.

Brad Brim asked if the BIRD would support PAM(n), values other than 4. Walter said the Modulation parameter could be extended for other modulations such as duobinary or other PAM formats. Brad said PAM3 is well along, and it probably should be supported. Walter said that PAM3 is equivalent to duobinary. Brad suggested adding that to the BIRD. Walter agreed but asked for help researching and reviewing the changes. He noted that this had been discussed but IC vendors had not indicated a need for anything but PAM4. Michael Mirmak said this would be on the next Open Forum agenda.

PAM4 BIRD175 introduction presentation:

[http://www.eda.org/ibis/minutes/min2015/m050115\\_walterkatz.pdf](http://www.eda.org/ibis/minutes/min2015/m050115_walterkatz.pdf)

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

Discussion was tabled.

### **BIRD128.2: ALLOW AMI\_PARAMETERS\_OUT TO PASS AMI\_PARAMETERS\_IN DATA ON CALLS TO AMI\_GETWAVE**

Discussion was tabled.

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

Discussion was tabled.

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

Discussion was tabled.

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

Discussion was tabled.

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

Discussion was tabled.

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

Discussion was tabled.

#### **BIRD163: INSTANTIATING AND CONNECTING [EXTERNAL CIRCUIT] PACKAGE MODELS WITH [CIRCUIT CALL]**

Discussion was tabled.

#### **BIRD164: ALLOWING PACKAGE MODELS TO BE DEFINED IN [EXTERNAL CIRCUIT]**

Discussion was tabled.

#### **BIRD165: PARAMETER PASSING IMPROVEMENTS FOR [EXTERNAL CIRCUIT]S**

Discussion was tabled.

#### **BIRD166: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW**

Discussion was tabled.

#### **IBISCHK6 PARSER AND BUG STATUS**

Bob Ross said we are waiting for a pending package model BIRD from Arpad Muranyi and Randy Wolff, which might be submitted within two weeks. This BIRD should be included in the current parser development agreement. There will be no IBISCHK versions before 6.1.

Bob also reported that BUG162 has been received from Curtis Clark. Curtis described the bug report, which offers four code cleanup suggestions. One suggestion was to remove out of date CVS \$Header lines, others are related to file includes. Michael Mirmak suggested classifying the bug as annoying severity, low priority and open status. No one objected. Bob will update the bug online (AR).

Bob also noted the developer is aware that there will be additional work, and we need to agree on a new price for the now extended work request.

#### **NEW TECHNICAL ISSUES**

None.

#### **NEXT MEETING**

The next IBIS Open Forum Summit meeting will be held May 13, 2015 at SPI. There will be no teleconference. The next IBIS Open Forum teleconference meeting will be held May 22, 2015. The following IBIS Open Forum teleconference meeting will be held June 12, 2015.

Michael Mirmak will miss the May 22 meeting, so another board member will preside.

Radek Biernacki moved to adjourn. Arpad Muranyi seconded the motion.

---

## 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

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

Principal Engineer, Silicon SI Group Lead, 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 ANSI guidance.

The following e-mail addresses are used:

[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@freelists.org](mailto:ibis@freelists.org) (changed from [ibis@eda.org](mailto:ibis@eda.org), which has been deactivated)

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@freelists.org](mailto:ibis-users@freelists.org) (changed from [ibis-users@eda.org](mailto:ibis-users@eda.org), which has been deactivated)

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/bugsplt.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>

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

## IBIS – SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	February 27, 2015	March 20, 2015	April 10, 2015	May 1, 2015
Altera	Producer	Active	X	X	X	X
ANSYS	User	Active	-	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Avago Technologies	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	X	-	X
Cisco Systems	User	Inactive	X	-	-	-
Ericsson	Producer	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
Keysight Technologies	User	Active	X	X	X	X
Maxim Integrated Products	Producer	Active	X	X	-	X
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	-	X	-
Qualcomm	Producer	Inactive	-	-	-	-
Signal Integrity Software	User	Active	X	X	X	X
Synopsys	User	Active	-	X	X	-
Teraspeed Labs	General Interest	Active	X	X	X	X
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	X
Zuken	User	Inactive	-	-	-	-

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

### 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 SAE 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.