



## IBIS Open Forum Minutes

Meeting Date: **April 10, 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)
Zuken	Michael Schaefer, 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 1, 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.

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## **INTRODUCTIONS AND MEETING QUORUM**

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

## **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**

Randy Wolff called for comments regarding the minutes of the March 20, 2015 IBIS Open Forum teleconference. He noted that Arpad Muranyi requested some clarifications by email. In

the Editorial task group report, Arpad clarified that we hope to release a specification by summer with the 9 BIRDS and have maybe another version of the specification by the end of the year with the big BIRDS (package, back channel, etc...). Also, the chair and chief editor of the task group were to be decided in the first meeting. Regarding the comment "Arpad suggested caution" in the New Technical Issues discussion, Arpad clarified that Walter said something along the lines that EDA vendors could decide to do whatever they wanted with informative items in the specification. This is what he responded to, saying that we need to be careful because the EDA vendor and model maker might have different assumptions.

The minutes were approved with the noted changes.

Randy reviewed ARs from the previous meeting. These included:

1. Mike LaBonte will create the new lists soon and add a few volunteers for testing. Mike confirmed this was completed.
2. Mike questioned whether any eda.org auto-responses should even contain the new addresses. He will seek advice from eda.org support personnel on that. Mike reported on this later in the meeting.
3. Mike LaBonte will add Michael Mirmak as an alternate ibis-backchannel list administrator. Mike confirmed this was done.
4. Walter's "Normative and Informative" presentation will be posted with the minutes. Mike confirmed this was done.
5. Michael Mirmak will make the BUG159 changes. Michael confirmed this was done.
6. Michael Mirmak will make the BUG160 changes. Michael confirmed this was done.

## **ANNOUNCEMENTS**

None.

## **CALL FOR ADDITIONAL AGENDA ITEMS**

Bob Ross asked for time to discuss BUG161 for IBISCHK6.

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

Bob Ross reported that we hold steady at 24 voting members. 16 are currently paid for 2015. The treasury is at \$55, 139 with one additional membership and \$2000 from ZTE for the Asian IBIS Summit sponsorship included. One IBISCHK6 parser sale is in progress.

Bob noted that it is time to start sending emails to unpaid members to remind them to make payments.

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

Mike LaBonte reported that we decided to move two primary mailing lists [ibis@eda.org](mailto:ibis@eda.org) and [ibis-users@eda.org](mailto:ibis-users@eda.org) email lists to [ibis@freelists.org](mailto:ibis@freelists.org) and [ibis-users@freelists.org](mailto:ibis-users@freelists.org). New lists on freelists were created with the same subscribers as the eda.org lists. After today, sending emails to eda.org lists results in getting an "end of life" message. Mike is sending emails to the

freelists lists welcoming people to the new lists after enabling them. Then he'll send emails to a sample of people to check that everything is working properly. He plans to send the next Summit announcement to the new lists on April 15. He won't close the old lists until everything is verified as working with the new lists. If anything is sent to the old lists they will get an autoreply of how to get to the new lists and subscribe. People should receive emails from freelists.org within a week. He suggested setting email filters to eda.org to freelists.org. He also needs to review the website and make changes to the emails listed on the website. Bob Ross reminded Randy Wolff to make similar changes to the minutes. ibis-info, ibis-request, ibis-bug and icm-bug eda.org emails are still in use and only send emails to a few specific officers. There could be a migration of these at some point.

Michael Mirmak asked if the email archives will be maintained on eda.org. He also asked about attachments on freelists. Mike responded that archives will be frozen and maintained. Freelists has a much better archive system, and we can set the policy on attachments to whatever we want. We can control attachments with limits on message size. Our task group lists allow attachments currently. He is thinking of settings that allow for up to 1MB attachments. He is not sure if attachments are archived, so he will check into this (AR). Bob Ross noted that attachments such as .zip might not be received by all list members. Mike added that larger attachments will be held up, and the administrators can decide to let the email go through.

## **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. Bob Ross noted that 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.

### **-DASC**

Michael Mirmak reported that IEEE DASC met last week. IEEE has revised their patent and IT policies. There is a patent policy announced at the beginning of every meeting. The P1735 encryption standard was approved at the end of 2014. Minor issues were noted in the documentation that IEEE is dealing with now. We should consider a presentation from someone on the P1735 committee to see if IBIS can make use of the features.

## **ORGANIZATIONAL ACTIVITIES**

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

Michael Mirmak said we are seeking comments on the new Policies and Procedures document that will succeed our current charter. Some comments were received by Radek Biernacki. The

word “invested” will be changed to “vested”. A draft 4 will be created by Michael (AR).

Radek Biernacki moved to schedule the document for a vote at the next IBIS Open Forum teleconference. Bob Ross seconded the motion. There were no objections.

Bob Ross noted that we need to solicit votes by email to help ensure the 16 vote minimum needed for approval. Randy Wolff will help Michael track email votes.

The draft Policies and Procedures document is available for review at:

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

## **SUMMIT PLANNING AND STATUS**

### **- EPEPS Summit Planning**

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 EPES.

### **- SPI Summit Planning**

Michael Mirmak said the next IBIS Summit meeting will be co-located with the SPI conference in Berlin, Germany on May 13, 2015. Lance Wang noted that 14 people are registered so far. Bob Ross noted he is contributing a presentation. Randy Wolff said that he can do a Chair’s presentation and potentially a presentation on the Interconnect proposal. The sponsors are ANSYS, CST, Mentor Graphics Corporation, Synopsys and Zuken. Michael Mirmak expressed our appreciation for the sponsors. The third call for papers will go out April 15.

### **- DesignCon 2016 Summit Planning**

Randy Wolff reported that he learned in the Technical Program Committee teleconference meeting recently that DesignCon is not planning to take place on Friday, shortening the conference to three days. We probably won’t get a room paid for by UBM on Friday. Michael asked if we could consider a Tuesday or Thursday overlapping with some DesignCon content. Michael took the AR to check with UBM about possible room arrangements Friday or during the conference as well as co-sponsorship.

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 made some progress on the IBISCHK6 User Guide. They have also been discussing bugs related to IBISCHK6. They are reviewing documents related to the IBISCHK6.0.2 update. In the last meeting, David Banas demonstrated his Python based code for running IBIS-AMI models. They are wondering if it could be used as another reference platform or added to IBISCHK to do some minimal extra checks of IBIS-AMI models. Michael Mirmak asked if a DLL parser could be created. Could the task group make a list of checks needed for DLLs? Mike took the AR to discuss this in the next meeting. 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 a PAM4 proposal and a BIRD draft clarifying the [Define Package Model] section. Also, an AMI directionality BIRD and backchannel and repeater BIRDs have been discussed recently. Bob Ross added that a C\_comp BIRD was discussed as well. Arpad noted that David Banas may be invited to present on his Python code in a future meeting.

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. Most issues have been resolved with the package and on-die interconnect BIRD. Statistical analysis for parameters will not be added at this time. Editorial cleanup of the BIRD will begin soon.

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. A draft IBIS 6.1 specification has been created and is being reviewed. BIRD172.2 is under discussion. A final version of the draft specification is awaiting introduction and approval of the [Define Package Model] update BIRD. Arpad Muranyi is planning to discuss the BIRD in the ATM task group meeting on Tuesday and vote on forwarding it to the Open Forum.

### **NEW ADMINISTRATIVE ISSUES**

None.

### **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**

Mike LaBonte introduced BUG161. Legal use of a Reserved Word as a Model\_Specific parameter name creates unrelated Error messages. Specifically, Format and Table cause the errors. Arpad Muranyi questioned if the specification needs to clarify what are Reserved Words. Mike noted that we could clarify this but we probably wouldn't change the rules. This would still be a bug. Radek Biernacki commented that he thought the bug was related to the difference between leaves and branches. Michael Mirmak asked if reserved words are always reserved in all contexts in programming languages. Mike responded that this is not always the case.

Bob Ross felt that we should not change the specification to disallow the use of Format and Table as parameter names under Model\_Specific. Radek noted that he didn't really see this as a bug since it is such an obscure test case. Michael suggested classification of the bug as Moderate severity, Medium priority and Open status. Radek suggested Low priority. Michael asked if this bug is fixable. Radek suggested that the cost may be high. Bob was ok with Low priority but noted that we will ask the parser developer to fix it. The bug was classified as Moderate severity, Low priority and Open status. Bob took the AR to update the status of the bug.

Bob noted that parser development for IBISCHK6.1.0 would include at least 3 bugs and checking related to the [Define Package Model] BIRD.

## **NEW TECHNICAL ISSUES**

Arpad Muranyi introduced the BIRD draft "Power Pin Package Modeling". The BIRD clarifies what EDA software should do with power/gnd pins missing from the [Pin Numbers] list but defined within [Pin Mapping] power/gnd buses for Power Integrity simulation purposes. A new keyword [Merged Pins] is defined. This keyword defines power/gnd pins which are part of a merged net in the package model. Radek Biernacki commented that it was not clear what to do with the case where a pin is not in [Pin Numbers] and not part of a [Merged Pins] list but is part of a bus defined in [Pin Mapping]. Radek will propose additional language before the next ATM meeting.

The BIRD draft is posted at:

<http://tinyurl.com/pcwxo7a>

## **NEXT MEETING**

The next IBIS Open Forum teleconference meeting will be held May 1, 2015. A vote is schedule on the Policies and Procedures document. Email votes will be accepted. The following IBIS Open Forum teleconference meeting will be held May 22, 2015.

Bob Ross moved to assign "Power Pin package Modeling" as BIRD175 and schedule a tentative vote on it for the May 1, 2015 meeting. Arpad Muranyi seconded the motion. There were no objections.

Mike LaBonte moved to adjourn. Radek Biernacki seconded.



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## NOTES

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

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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/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>

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## IBIS – SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	February 6, 2015	February 27, 2015	March 20, 2015	April 10, 2015
Altera	Producer	Active	-	X	X	X
ANSYS	User	Active	-	-	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Avago Technologies	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	-	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	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	-	X
Qualcomm	Producer	Inactive	-	-	-	-
Signal Integrity Software	User	Active	X	X	X	X
Synopsys	User	Active	X	-	X	X
Teraspeed Labs	General Interest	Active	X	X	X	X
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
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.