



## IBIS Open Forum Minutes

Meeting Date: **October 2, 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
CST	Stefan Paret*, Matthias Troescher
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
	Gianni Signorini
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, Joe Rayhawk
	Yan Liang*
Mentor Graphics	Arpad Muranyi*, Ed Bartlett, Vladimir Dmitriev-Zdorov
Micron Technology	Randy Wolff*
Signal Integrity Software	Mike LaBonte*, Walter Katz, Todd Westerhoff
	Mike Steinberger
Synopsys	Ted Mido*, Rita Horner, William Lau, Scott Wedge
	Michael Zieglmeier, Joerg Schweden
Teraspeed Labs	Bob Ross*, Tom Dagostino
Toshiba	(Yasumasa Kondo)
Xilinx	(Raymond Anderson)
ZTE Corporation	(Min Huang), Tao Guo
Zuken	Michael Schaefer, Markus Buecker, Griff Derryberry
	Ralf Bruening

### OTHER PARTICIPANTS IN 2015

Bayside Design	Elliot Nahas
Continental Automotive	Felix Goelden, Markus Bebendorf, Sebastian Groener
	Stefanie Schatt
eASIC	David Banas
Freescale	Jon Burnett

Galbi Research	Dave Galbi
Independent	Tim Wang Lee
Instituto de Telecomunicações	Wael Dghais
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Xu Jiang
Leading Edge	Pietro Vergine
Politecnico di Torino	Stefano Grivet-Talocia
Qualcomm	Senthil Nagarathinam, Kevin Roselle
Raytheon	Joseph Aday
SAE International	Chris Denham
Siemens AG	Boris Kogan, Michael Flint
Simberian	Yuriy Shlepnev
Technische Universität Hamburg-Harburg	Jan Preibisch
Vitesse	Siris Tsang
ZI Consulting	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
October 23, 2015	205 475 958	IBIS
October 28, 2015	IBIS Summit at EPEPS – no teleconference	

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**

Randy Wolff declared that a quorum was reached and the meeting could begin.

## **CALL FOR PATENTS**

Mike LaBonte called for declaration of 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 September 11, 2015 IBIS Open Forum teleconference. Mike LaBonte moved to approve the minutes without changes. Curtis Clark seconded the motion. There were no objections, so the minutes were approved.

Randy reviewed ARs from the previous meeting.

1. Mike will check in with the DesignCon organizers for another update [AR].  
Mike reported that this was done.
2. Mike will announce the IBIS 6.1 specification ratification once the final document is cleaned up [AR].  
Mike reported that this was done.

## **ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS**

None.

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

Bob Ross reported that membership stands at 24 members. The treasury balance is \$66,086. Recent changes include receiving \$2,000 in sponsorship income and making an estimated payment of \$5,403 for the Shanghai Summit hotel. He is expecting \$500 more of sponsorship for EPEPS, but this hasn't been reported by SAE yet.

## **WEBSITE ADMINISTRATION**

Mike LaBonte reported that changes reflecting ratification of IBIS 6.1 have been made. He updated mentions of the latest specification version on the website to "6.1". Mike noted that two PHP-based sites, a wiki and a Mantis bug-tracker page that were experiments for website upgrades, are potential security risks. There are many break-in attempts each day, especially for the wiki page, and the PHP version is not getting updated regularly enough to stay secure. Mike is going to archive the sites and remove them. For anyone interested in seeing the pages, the Mantis page is at <http://www.eda.org/ibis-mantis> and the wiki page is at <http://www.eda.org/ibis/wiki/>.

## **MAILING LIST ADMINISTRATION**

Curtis Clark reported that there were two email addresses that went stale, so he removed them

from the list. He hasn't seen further problems with yahoo.com email addresses, so this issue appears to be fixed.

## **LIBRARY UPDATE**

Mike LaBonte will check with Anders Ekholm to see if he has finished the library update, and if it needs to be posted [AR].

## **INTERNATIONAL/EXTERNAL ACTIVITIES**

### **- Conferences**

The Si2Con conference will be held Tuesday, October 6, 2015 in Santa Clara, California. There may be some overlap with Interconnect modeling between IBIS and Si2. More information is available at:

<https://www.si2.org/?page=2129>

### **- Press Update**

An article written by Mike LaBonte titled "What you need to know about IBIS 6.1" was published on the EDN website on September 22, 2015. The article can be found at the following link:

<http://www.edn.com/design/systems-design/4440405/What-you-need-to-know-about-IBIS-6-1>

Bob Ross mentioned an article written by Bonnie Baker titled "Complete the simulation of your ADC with IBIS" was published on the EDN website on May 1, 2015. The article is linked at:

<http://www.edn.com/electronics-blogs/bakers-best/4439345/Complete-the-simulation-of-your-ADC-with-IBIS->

## **SUMMIT PLANNING AND STATUS**

### **- EPEPS Summit Planning**

EPEPS is taking place October 25-28, 2015 in San Jose, CA. Wednesday, October 28 will be a Summit in the afternoon at the DoubleTree by Hilton hotel. The meeting will be in the San Juan room. Keysight Technologies, Mentor Graphics and Synopsys are sponsors. Bob Ross noted that about 9 papers are scheduled. The agenda for the IBIS Summit is listed in the EPEPS conference program. The IBIS Summit is also mentioned on the front page of the EPEPS website. Bob encouraged attendees to register with Mike LaBonte.

The website for Electrical Performance of Electronic Packages and Systems is:

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

### **- Asian IBIS Summit (Shanghai)**

The Shanghai meeting will be held Monday, November 9, 2015 at the Parkyard hotel. Huawei Technologies is the major sponsor along with co-sponsors Cadence Design Systems, IO Methodology, Keysight Technologies, Synopsys, Teledyne LeCroy and ZTE Corporation so far. Lance Wang reported that he is starting to receive sponsorship money.

- Asian IBIS Summit (Taipei)

The Taipei meeting will be held Friday, November 13, 2015 at the Sherwood hotel. IO Methodology, Keysight Technologies and Synopsys are sponsors so far.

- Asian IBIS Summit (Tokyo)

The Tokyo meeting will be held Monday, November 16, 2015. Bob Ross reported that JEITA is taking care of all sponsorships and will provide a list later. JEITA has made the room arrangement already and is taking care of registrations. The cutoff for attendance is 130 people. Fujimori-san and Bob are the main contacts. A JEITA class on basic IBIS will be held in the morning before the Summit and is open to all IBIS summit attendees to attend.

- DesignCon IBIS Summit

DesignCon will be held January 19-21, 2016. Friday, January 22, 2016 is scheduled for the Summit meeting. Mike LaBonte contacted the DesignCon organizers for an update. They will provide a room for an all-day meeting. A barter agreement is being worked on. DesignCon is asking for some promotional materials to be distributed by IBIS. Bob Ross noted that DesignCon will not have any presentations on Friday. The official link for DesignCon will need to be published somewhere on our website. Bob noted several IBIS-AMI related presentations for DesignCon already. Bob reported that \$5,304 was spent on the Summit in 2015. Costs might increase in 2016 if we have more attendees. Sponsorship in 2015 was only \$1250, so more sponsorship would be good. Bob suggested an upper limit of spending as \$7,000.

Bob moved to hold an IBIS Summit at DesignCon on January 22, 2016. Randy Wolff seconded the motion. The vote passed with the following vote tally:

Altera – yes  
ANSYS – yes  
CST – yes  
IO Methodology – yes  
Keysight – yes  
Maxim – yes  
Mentor – abstain (temporary phone connection issue)  
Micron – yes  
SiSoft – yes  
Teraspeed – yes

- European IBIS Summit at SPI

Bob Ross reported that we are in discussions with the IEEE Workshop on Signal and Power Integrity (SPI) organizers about sponsorship and co-hosting of an IBIS Summit with the SPI event. The Summit would take place on May 11, 2016 in Turin, Italy. The SPI organizers have asked IBIS to be an official sponsor of SPI and pay for the meeting room. The requested amount is 1,200 Euros. Taking into account VAT and the exchange rate, this is about \$1,640. Bob suggested an upper spending limit of about \$1,800. Bob expects about 20 attendees. The meeting would be a half-day meeting. Mike LaBonte expressed concerns with making sure there are one or two IBIS officers that could attend to run the meeting. Radek Biernacki asked what the affiliation is of IBIS with SPI. Bob noted that SPI is similar to EPEPS, with some of the

same attendees. Bob noted that the reason that SPI is requesting more sponsorship is due to IEEE asking for additional sponsorship for the workshop.

Stefan Paret commented that he thought the IBIS Summit meeting at SPI he attended in 2015 was a very useful meeting. It was good outreach to companies that use IBIS models but had not been involved with IBIS before.

Bob Ross moved to hold a Summit meeting at SPI on May 11, 2016 with a spending limit of \$1,800. Randy Wolff seconded the motion. The vote passed with the following vote tally:

Altera – yes  
ANSYS – yes  
CST – yes  
IO Methodology – yes  
Keysight – yes  
Maxim – yes  
Mentor – yes  
Micron – yes  
SiSoft – yes  
Teraspeed – yes

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 is meeting on Tuesdays at 8:00 a.m. PT. They have been discussing the ibischk6 parser development. They have also been discussing the user guide document to accompany the parser. It is planned to publish the user guide as a work-in-progress, as more comments could be clarified in it.

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. The group is discussing IBIS-AMI Model Specific parameters and information to put in the specification to indicate if a specific parameter may not be supported in all EDA tools. The group plans to discuss ground in the specification. The group is also waiting on a backchannel BIRD update from Cadence.

Task group material can be found at:

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

### **INTERCONNECT TASK GROUP**

Mike LaBonte reported that the group is meeting on Wednesdays at 8:00 a.m. PT. The group is discussing syntax options for Terminal rules and is reviewing some diagrams.

Task group material can be found at:

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

### **EDITORIAL TASK GROUP**

No update.

Task group material can be found at:

[http://www.eda.org/ibis/editorial\\_wip/](http://www.eda.org/ibis/editorial_wip/)

### **NEW ADMINISTRATIVE ISSUES**

- Second revision of IBIS Policies and Procedures

Mike LaBonte noted that a Draft Review 2 of the IBIS Policies and Procedures document is linked on the IBIS webpage. Mike reviewed some of the changes from the previous draft. Many changes are minor such as changing references to "Membership Companies" to "Member Organizations". The description of the Treasurer duties was updated. A clarification was made to the voting procedure. A financial practices section was added and is still being discussed to determine a specific spending limit that requires a vote for approval.

Mike noted that no change has been made since the September 11, 2015 IBIS Open Forum teleconference. The document may be updated after further discussions with SAE.

### **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.

#### **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 reported that he expects the first code release to happen next week. The code will need to be checked out before being officially released. One issue that arose was whether in checking the package model matrices, if the code needed to do full matrix inversion as mentioned in the specification or just to do simpler checks. A practical issue is an upper limit to the matrix size that could be inverted. Radek Biernacki felt that full matrix inversion goes beyond the intent of the parser and is better left to individual EDA tools. Bob noted that a check for negative diagonal entries of inductance will be done by the parser. Bob recommended just doing the simpler tests in the parser. If needed, more rigid tests could be added in a future parser release.

#### **NEW TECHNICAL ISSUES**



None.

## **NEXT MEETING**

The next IBIS Open Forum teleconference meeting will be held October 23, 2015. The following IBIS Open Forum teleconference meeting will be held November 20, 2015. The IBIS Summit at EPEPS will be held October 28, 2015. No teleconference will be available for the Summit meeting.

Radek Biernacki moved to adjourn. Curtis Clark seconded the motion.

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## **NOTES**

IBIS CHAIR: Mike LaBonte

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This meeting was conducted in accordance with ANSI guidance.

All inquiries may be sent to [ibis-info@freelists.org](mailto:ibis-info@freelists.org). Examples of inquiries are:

- To obtain general information about IBIS.
- To ask specific questions for individual response.
- To subscribe to the official [ibis@freelists.org](mailto:ibis@freelists.org) and/or [ibis-users@freelists.org](mailto:ibis-users@freelists.org) email lists (formerly [ibis@eda.org](mailto:ibis@eda.org) and [ibis-users@eda.org](mailto:ibis-users@eda.org)).
- To subscribe to one of the task group email lists: [ibis-macro@freelists.org](mailto:ibis-macro@freelists.org), [ibis-interconn@freelists.org](mailto:ibis-interconn@freelists.org), or [ibis-quality@freelists.org](mailto:ibis-quality@freelists.org).
- To inquire about joining the IBIS Open Forum as a voting Member.
- To purchase a license for the IBIS parser source code.
- To report bugs or request enhancements to the free software tools: ibischk6, tschk2, icmchk1, s2ibis, s2ibis2 and s2iplt.

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)

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>

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	July 31, 2015	August 21, 2015	September 11, 2015	October 2, 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	X	-
Cisco Systems	User	Inactive	-	-	-	-
CST	User	Inactive	-	X	-	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	-
IO Methodology	User	Active	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	X
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.