



## IBIS Open Forum Minutes

Meeting Date: **May 23, 2014**

Meeting Location: **Teleconference**

### VOTING MEMBERS AND 2014 PARTICIPANTS

Agilent Technologies	Radek Biernacki*, Nilesh Kamdar, Colin Warwick, Graham Riley, Pegah Alavi, Fangyi Rao, Heidi Barnes, Dimitrios Drogoudis
Altera	David Banas*, Kundan Chand, Hsinho Wu
ANSYS	(Steve Pytel)
Applied Simulation Technology	Fred Balistreri, Norio Matsui
Cadence Design Systems	Ambrish Varma, Brad Brim, Joy Li, Kumar Keshavan, Ken Willis, Yingxin Sun, Joshua Luo, John Phillips
Ericsson	Anders Ekholm, Zilwan Mahmod
Foxconn Technology Group	(Sogo Hsu)
Huawei Technologies	Jinjun Li, Xiaoqing Dong, Zanglin Yuan, Han Li
IBM	Adge Hawes*
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Jon Powell, Riaz Naseer Udy Shrivastava, Mustafa Yousuf, Jimmy Jackson Pietro Brenner
IO Methodology	Lance Wang*, Michelle Coombs
LSI (Avago)	Xingdong Dai, Min Huang, Anaam Ansari, Brian Burdick
Maxim Integrated Products	Hassan Rafat
Mentor Graphics	Arpad Muranyi*, John Angulo, Fadi Deek, Chuck Ferry Thomas Groebli
Micron Technology	Randy Wolff*
Qualcomm	Jaimeen Shah*, Srinivasa Rao*
Signal Integrity Software	Mike LaBonte*, Walter Katz*, Todd Westerhoff, Michael Steinberger
Synopsys	Ted Mido, Scott Wedge
Teraspeed Consulting Group	Bob Ross*, Tom Dagostino, Scott McMorrow
Toshiba	(Yasumasa Kondo)
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)
Zuken	Michael Schaeder, Amir Wallrabenstein, Griff Derryberry Reinhard Remmert

### OTHER PARTICIPANTS IN 2014

Continental Automotive	Catalin Negrea
CST	Stefan Paret
ECL Advantage	Thomas Iddings
Hewlett Packard	Ting Zhu

Instituto de Telecomunicações	Wael Dghais
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Xu Jiang
Mellanok Technologies	Piers Dawe
Nanium	Abel Janeiro
Pangeya	Edgar Aguirre
Proficient Design	Kishor Patel
SAE International	Chris Denham
Technische Universität Hamburg	Torsten Reuschel
University of Illinois	José Schutt-Ainé
Vitesse	Siris Tsang

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 5, 2014	IBIS Summit at DAC – no teleconference	
June 20, 2014	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.

Jaimeen Shah from Qualcomm introduced himself. He is working in a group generating IBIS 4.2 and 5.0 models as well as IBIS-AMI models for DDR, USB and PCI interfaces.

Srinivasa Rao introduced himself. He is an IBIS model developer for Qualcomm in India.

### **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 April 25, 2014 IBIS Open Forum teleconference. The minutes were approved without changes.

### **ANNOUNCEMENTS**

None.

### **CALL FOR ADDITIONAL AGENDA ITEMS**

Bob Ross noted that an AMI model review was conducted recently, so that process worked. Bob requested time to discuss the process for election of officers. Also, he requested time to discuss an additional ibischk bug.

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

Bob Ross reported that currently 17 members have renewed so far for 2014. Qualcomm is a new member and ZTE has rejoined as well. The treasury sits at \$34,983, although some will be spent on the upcoming Summit. There was one new tschk parser and ibischk parser purchase from Zuken. After the DAC IBIS Summit, non-renewing members will be moved to non-voting status.

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

Mike LaBonte reported that the Stanford email server's reputation has decreased from SPAM, so some emails sent out by the list have not been delivered to users. He is working with eda.org support about this. Also, a small issue with the Mentor email server is being debugged.

Mike reported changes on the web page. Lynne Green offered to donate training materials. They are in a format that she is converting to PDF files. She sent the first files that he has tested. The rest of the files will be uploaded soon. Mike is trying to figure out where to put them. He is going to see how they would look if put on the wiki page.

Michael Mirmak mentioned bug tracking and wondered about use of Mantis, as we are getting more complicated bugs that need more documentation. Mike said he could start with ibischk bugs in Mantis. Michael also mentioned wanting to track non-BIRD issues such as typos seen in the specification. Mike thinks he could accommodate an issues tracking section of Mantis too.

## **MODEL LIBRARY UPDATE**

No update.

## **INTERNATIONAL/EXTERNAL ACTIVITIES**

### **- Conferences**

The 23<sup>rd</sup> Conference on Electrical Performance of Electronic Packaging (EPEPS) will be held October 26-29, 2014 in Portland, Oregon. There is usually some IBIS and/or signal integrity related material. More information is available at:

<http://epeps.org>

### **- Press Update**

None.

## **SUMMIT PLANNING AND STATUS**

### **- European IBIS Summit Review**

The Summit took place after the SPI event on May 14, 2014 in Ghent, Belgium. Zuken was the main sponsor. Randy Wolff reported that there were 17 attendees from 13 organizations. There were good presentations on alternative IBIS algorithms, IBIS-AMI validation, package modeling, the ibisinf utility, the ibischk5/6 specification document, and the IBIS version release schedule. Wael Dghais was very interested in behavioral buffer modeling alternatives that could be enhancements to IBIS. Randy encouraged him to introduce his ideas to the IBIS ATM task group. There was general support for releasing the IBIS specification updates once per year. José Schutt-Ainé of University of Illinois asked about obtaining an ibischk parser license, and he expressed interest in the proposal to change the IBIS membership dues structure for a combined parser license and dues payment.

### **- DAC IBIS Summit**

DAC is June 1-5, 2014 in San Francisco, CA. An IBIS Summit meeting is scheduled for June 5, 2014 all day. Michael Mirmak reported that something like 70 attendees have signed up through the DAC registration, although he thinks not all those people will actually attend. Bob noted that he is seeing 100 attendees with the latest update from DAC organizers. There is room for 2-3 more presentations. There are about 7 scheduled so far. Logistics have been taken care of except for the final food count. Michael is planning to arrange for 50 people for the food arrangements. He asked attendees submitting presentations to submit them more than a week before the event so they can be reviewed. Bob Ross noted that JEITA requested doing a presentation, making the total 8 so far. Bob suggested we use the simpler sign-in sheet to make registrations easier. He questioned making printed copies of the presentations unless Michael wanted to do so. Mike LaBonte suggested at least printing agendas. Bob noted that for foreign attendees, having printed copies or booklets can be very helpful for them to follow the presentations. Michael said he would make some limited copies of the presentations.

Michael noted that it is getting close to the time to start planning the Asian IBIS Summits. He encouraged members to email him if they had suggestions for meeting locations and dates. Bob added that Friday, November 21 was requested by JEITA for the Japan Summit in Yokohama.

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 they continue to work on the ibischk document to release it roughly along with ibischk6. A presentation on the document was given at the European IBIS Summit, and a similar presentation will be given at the DAC IBIS Summit. There is still some cleanup to do on the text going into the document. The group is still meeting on Tuesdays at 8:00 a.m. PT. It has been only Mike and Bob Ross for some time. He encouraged other people to join.

Michael Mirmak asked if this document will be something we should vote on. Mike wasn't sure if it needed to be voted on. He felt it was more of an extensive readme document. Bob Ross felt it was something we can vote on, similar to the Quality specification. Lance Wang agreed that we should treat it as an official document and link it on the website with a disclaimer. Michael noted that it should be a living document that will be updated regularly, and we should figure out how to update it without requiring frequent votes.

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 main discussion topic is BIRD147 on backchannel modeling and another proposal from SiSoft. He encouraged IC vendors to express their opinion on which proposal they prefer. The group is planning a vote on the two proposals in the meeting next Tuesday.

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 moving forward with a proposal from Walter Katz for interconnect modeling of package and on-die interconnect. BIRD writing is in process. The group is meeting Wednesdays at 8:00 a.m. PT.

Task group material can be found at:

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

### **NEW ADMINISTRATIVE ISSUES**

Bob Ross noted that an IBIS-AMI model was reviewed a few months ago. He distributed it to several companies for review, and some responses were made to the model creator. One issue was that it was designed for the IBIS 5.0 parser, so Bob commented that it would be good to update it for IBIS 5.1 rules.

Michael Mirmak noted that we traditionally have had a DAC Summit meeting where we elect officers in a live vote. We did not conduct the vote live last year since we did not have a DAC IBIS Summit. Bob noted that we do not have very many active members attending DAC. Even if there are attendees from member companies, they may not be the active IBIS participants. Bob asked for help from someone not running for election to compile votes including online voting before the Summit meeting. David Banas offered to help. Michael noted that we should allow online voting for one week before the event. Bob noted that Tuesday evening, June 3 will need to be the deadline for online votes. Write-in candidates will need to be allowed for the online ballot as well as nominations at the DAC IBIS Summit meeting. Michael noted that we need to allow some time for nominations. Bob also noted that only votes from paid members will count.

Michael summarized that Bob and David will send out an announcement that nominations are being accepted, the vote will open for email voting one week before the Summit meeting, and live votes will be accepted at the DAC Summit meeting. Radek noted that voting before the Summit means that any candidates that come forward at the Summit will not be known by people voting online. Michael confirmed that this will be the outcome of the mix of online and live voting when we don't close the nominations before the meeting. The existing board will be officially nominated on the ballot that goes out. Write-in candidates will be considered officially nominated for vote at the DAC IBIS Summit.

Bob moved for the process to be exactly as described above. Radek Biernacki seconded the motion. There were no objections.

#### **BIRD167.1: TABLE CORRECTIONS FOR TX JITTER PARAMETERS AND IGNORE\_BITS**

Michael Mirmak noted that no comments have been received on the BIRD since the last meeting.

Bob Ross moved to vote on the BIRD for acceptance in the next version of IBIS. Michael seconded the motion. There were no objections.

The vote passed with the following vote tally:

Agilent – yes  
Altera – abstain  
IBM – yes  
Intel – yes  
IO Methodology – yes  
Mentor – yes  
Micron – yes  
Qualcomm – yes  
SiSoft – yes  
Teraspeed – yes

**BIRD168: HANDLING OF OVERCLOCKING CAUSED BY DELAY IN WAVEFORM TABLES**

Radek Biernacki noted that he has not received any comments on the BIRD since the last meeting.

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

**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.

**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.

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

Bob Ross introduced BUG155 titled "Warning Message for Vinh < Vinl". The bug was filed by Curtis Clark of ANSYS. Vinh, a subparameter of [Model], should be greater than Vinl, but the parser does not check for this. Michael wondered if this was a check in an earlier version of the parser. Walter Katz felt this should generate an error by the parser. Radek Biernacki felt that we should make this a warning in the parser unless there is language in the specification saying that Vinh > Vinl, in which case it should be an error. Bob favored issuing a warning.

Bob Ross moved to classify BUG155 as enhancement severity, low priority and open status. The parser would issue a warning. Radek Biernacki seconded the motion. There were no objections.

Bob Ross introduced BUG156 titled "Rename string.h and string.c to stringlist.h and stringlist.c." Within the ibischk library there are file names string.h and string.c. There are other C libraries that use these same system names. Michael Schaefer suggested renaming these. Radek Biernacki felt this should be sent to other parser licensees to see if they agree with the fix. Mike LaBonte noted that he looked at the parser files, and he agrees with the issue and the potential fix. Walter Katz questioned the decision to postpone classifying the bug, since it could affect release of the ibischk6 parser.

Walter Katz moved to classify BUG156 as enhancement severity, medium priority and open status. Bob Ross seconded the motion. There were no objections. Bob will ask if we can get this implemented in the ibischk6 parser.

#### **IBISCHK6 PARSER STATUS**

Bob Ross reported that the fourth beta version shipped out, but it has problems. The official release will be delayed until late May or early June to allow for fixes.

#### **NEW TECHNICAL ISSUES**

None.

#### **NEXT MEETING**



The next IBIS Open Forum Summit meeting will be held June 5, 2014 at DAC. There will be no teleconference. The next IBIS Open Forum teleconference meeting will be held June 20, 2014. A vote on BIRD168 is scheduled.

David Banas moved to adjourn. Mike LaBonte seconded the motion. There were no objections.

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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:

[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>

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

## IBIS – SAE STANDARDS BALLOT VOTING STATUS

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

Organization	Interest Category	Standards Ballot Voting Status	Voting Dates			
			April 4, 2014	April 25, 2014	May 14, 2014	May 23, 2014
Agilent Technologies	User	Active	X	X	X	X
Altera	Producer	Active	X	X	-	X
ANSYS	User	Inactive	-	-	-	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	X	-	-
Ericsson	Producer	Inactive	X	-	X	-
Foxconn Technology Group	Producer	Inactive	-	-	-	-
Huawei Technologies	Producer	Inactive	-	-	X	-
IBM	Producer	Inactive	X	-	-	X
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Inactive	-	-	-	X
LSI (Avago)	Producer	Inactive	-	-	-	-
Maxim Integrated Products	Producer	Inactive	-	-	-	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
Qualcomm	Producer	Inactive	-	-	-	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	-	-	-	-
ZTE	User	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

#### INTEREST CATEGORIES ASSOCIATED WITH SAE BALLOT VOTING ARE:

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- 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.