



IBIS Open Forum Minutes

Meeting Date: **March 10, 2017**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2017 PARTICIPANTS

ANSYS	Curtis Clark*, Toru Watanabe
Applied Simulation Technology	(Fred Balistreri)
Broadcom	Bob Miller*
Cadence Design Systems	Brad Brim*, Sivaram Chillarige, Debabrata Das Ambrish Varma
Cisco Systems	(Bidyut Sen)
CST	Stefan Paret, Matthias Troescher
Ericsson	Zilwan Mahmod
GLOBALFOUNDRIES	Steve Parker*
Huawei Technologies	(Jinjun Li)
IBM	Luis Armenta*, Adge Hawes*, Greg Edlund
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Hsinho Wu*, Eddie Frie Signorini Gianni, Barry Grquinovic
IO Methodology	Lance Wang*
Keysight Technologies	Radek Biernacki*, Pegah Alavi, Fangyi Rao Stephen Slater, Jian Yang
Maxim Integrated	Joe Engert, Don Greer, Yan Liang, Hock Seow
Mentor Graphics	Arpad Muranyi*, Nitin Bhagwath, Praveen Anmula Fadi Deek, Raj Raghuram, Dmitry Smirnov Bruce Yuan
Micron Technology	Randy Wolff*, Justin Butterfield
Qualcomm	Tim Michalka, Kevin Roselle
Raytheon	Joseph Aday
Signal Integrity Software	Mike LaBonte*, Walter Katz*, Todd Westerhoff
Synopsys	Kevin Li, Ted Mido*, John Ellis, Scott Wedge
Teraspeed Labs	Bob Ross*
Xilinx	(Raymond Anderson)
ZTE Corporation	(Shunlin Zhu)
Zuken	Ralf Bruening

OTHER PARTICIPANTS IN 2017

Accton	Raul Lozano
ASUS	Nick Huang, Bin-chyi Tseng
eASIC	David Banas

Extreme Networks	Bob Haller
Independent	Dian Yang
John Baprawski, Inc.	John Baprawski
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Maryam Shahbazi, Dinh Tran
SAE International	(Logen Johnson)
Signal Metrics	Ron Olisar
SPISim	Wei-hsing Huang
Toshiba	Yasuki Torigoshi

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
March 31, 2017	624 999 876	IBISfriday11

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

<http://tinyurl.com/zeulerr>

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.

NOTE: "AR" = Action Required.

INTRODUCTIONS AND MEETING QUORUM

Mike LaBonte 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 6.1, 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 on the minutes of the February 17, 2017 IBIS Open Forum teleconference. Randy noted an email comment from Radek Biernacki that he had made a comment during the BIRD147.6 discussion, not Mike LaBonte. Walter Katz moved to approve

the minutes with the noted change. Radek Biernacki seconded the motion. There were no objections.

Randy Wolff reviewed ARs from the previous meeting.

1. Mike LaBonte to update web page copyrights for 2017 [AR].
Mike reported this as done.
2. Mike LaBonte to add Raytheon to member pages with logo [AR].
Mike reported Raytheon was added to the roster and poster page. A logo was requested but they have not sent an image yet.
3. Mike LaBonte to discuss reconvening of Editorial task group with Michael Mirmak [AR].
Mike reported this as done.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

Mike LaBonte announced that he needed to leave the meeting after the first hour and Michael Mirmak would host in his absence.

Bob Ross noted that there was planned discussion on the selection of BIRDS for the next release of IBIS.

Bob noted that he'd like the vote on BIRD147.6 to occur before Mike and Walter Katz needed to leave the meeting.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 25 members. 12 members have paid so far for 2017 dues. Our account balance is at \$6,338 for 2017. Actual cash flow of \$4,638 has been collected in 2017. Bob reported there is a pending \$2,500 parser license payment from Intel. All the DesignCon expenses are taken care of. We'll expect to make a payment for the European IBIS Summit of about \$1,600 in the next few weeks.

WEBSITE ADMINISTRATION

Mike LaBonte reported that only membership status changes and copyright notices have been made on the website.

MAILING LIST ADMINISTRATION

Curtis Clark reported one subscriber email to IBIS-ATM list went stale, but otherwise there is nothing further to report.

LIBRARY UPDATE

Mike LaBonte noted a query in the last month about adding information to the library page on the availability of IBIS-AMI models from various vendors. Mike wasn't sure of any IBIS-AMI models freely available for download. Bob Ross noted that if some exist that notes could be added to the page.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

EDI-CON will be held in Boston on September 11-13, 2017. A Summit at this event is under consideration.

- Press Update

None.

- Related standards

Michael Mirmak reported he attended the IEEE DASC meeting at DVCon 2017. The P2401 standard is going active soon with a revision to the original document and extension to cover entire systems. Meetings will start next month. Some monitoring of this standard or invitation to a Summit for a presentation would be helpful. The chairman, Tanaka-san, is interested in interactions with IBIS.

SUMMIT PLANNING AND STATUS

- SPI 2017 IBIS Summit

The European IBIS Summit at SPI will be held on Wednesday afternoon, May 10, 2017. Bob Ross reported that we are moving forward with planning. The first announcement went out. We have a backup plan in case none of the IBIS officers can attend. Bob plans to contact potential sponsors. Mike LaBonte noted that the wrong year was mentioned in the announcements. Also, the airport noted for Milan is not the closest airport. (This is the recommended airport for international arrivals, about 57km away, with convenient bus or train service to Baveno – according to the Venue section on the SPI2017 site.) Another airport may be noted in a future announcement. Mike added that Michael Schaefer of Zuken has offered to run the meeting.

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. The group's discussion has focused on IBISCHK issues.

The IBISCHK6 user guide work in progress can be reviewed at:

http://www.ibis.org/ibischk6/ibischk_6.1.3_UserGuide_wip1.pdf

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

http://www.ibis.org/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 recently discussed the next IBIS version and what BIRDs should be included in the various options. The group is also still discussing redriver flow corrections and single ended application of IBIS-AMI modeling.

Task group material can be found at:

http://www.ibis.org/macromodel_wip/

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group has been suspended since the release of BIRD189. There has been some email discussion on updates to a new revision including addition of some new images. There are images submitted from Randy Wolff and Michael to review. Mike LaBonte thought that we may need another meeting to discussion the issues. Michael will look into scheduling another meeting [AR].

Task group material can be found at:

http://www.ibis.org/interconnect_wip/

EDITORIAL TASK GROUP

Michael Mirmak reported that the group remains suspended. Meetings take place at 8:00am PT on Fridays that the IBIS Open Forum does not meet. There has been discussion on inclusion of various BIRDs in the next release of IBIS. Mike LaBonte noted he sent out updates to two figures that need to be discussed. Updates to other figures might all be included in a new BIRD.

Task group material can be found at:

http://www.ibis.org/editorial_wip/

NEW ADMINISTRATIVE ISSUES

- Second revision of IBIS Policies and Procedures

Mike LaBonte reported that the latest revision of the IBIS Policies and Procedures document was submitted to SAE for legal review. Mike has received no word on this from SAE.

Mike also reported that our SAE representative Logen Johnson told us we will have a new representative, Thomas Munns. This is related to a planned move of IBIS under a different branch of SAE.

The document can be found at:

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

BIRD147.6: BACK-CHANNEL SUPPORT

Radek Biernacki noted that one paragraph was removed from the previous version in the “other notes” of the BCI_Training_UI section.

Radek moved to vote on approval of BIRD147.6. Bob Miller seconded the motion. There were no objections.

Arpad Muranyi asked how the training pattern was specified. Bob Miller noted this is left up to the protocol definition. Bob Miller assumed that the EDA tool could provide user support to specify the protocol if it wasn't defined. The tool could choose any pattern it likes unless the protocol specifies something different. Bob Ross noted that only approved protocols have the IBIS tag on them.

The roll call vote tally was:

ANSYS – yes
Broadcom – yes
Cadence – yes
GLOBALFOUNDRIES – yes
IBM – yes
Intel – yes
IO Methodology – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes

The roll call vote concluded with a vote tally of Yes – 13, No – 0, Abstain – 0. The motion passed and the BIRD was accepted.

BIRD158.3: AMI TOUCHSTONE ANALOG BUFFER MODELS

Bob Ross noted that there is a version 158.4 in progress. Radek Biernacki added that there is ongoing discussion in the ATM task group. Bob stated that the BIRD discussion can be closed at the next ATM task group meeting and a new draft submitted before the next Open Forum meeting. Michael Mirmak asked if time would be reserved in the ATM task group for discussion of this and other pending BIRDS eligible for vote. Mike LaBonte commented that time could be reserved for discussion.

BIRD186.1: FILE NAMING RULES

Bob Ross moved to schedule a vote on BIRD186.1 in the next meeting. Bob Miller seconded the motion. There were no objections.

BIRD187.2: FORMAT AND USAGE OUT CLARIFICATIONS

Michael Mirmak reported that there was a BIRD187.3 draft submitted to the ATM task group for review. If it gets discussion time in the next ATM meeting, then it should be up for discussion in the next Open Forum meeting.

BIRD189: INTERCONNECT MODELING USING IBIS-ISS AND TOUCHSTONE

Michael Mirmak reported that there is an issue about terminations addressed in the next revision as well as some changes to images. A revision BIRD189.1 is in progress.

Walter Katz noted he felt the functionality of the BIRD was complete, and he encouraged IC vendors to review the BIRD to make sure it meets their package modeling requirements.

NEXT RELEASE OF IBIS DISCUSSION

Walter Katz stated that BIRDS 158.3, 186.1 and 187.2 are close to being completed and voted on. BIRD189 needs further review and feedback from IC vendors. We are close to having all the BIRDS we are working on be finished with the exception of BIRD189. This group needs to make a recommendation soon to the Editorial task group with a list of BIRDS for inclusion in a next release of IBIS. Mike LaBonte noted that this list should be put together and voted on. Any BIRDS on this list must be approved through votes.

Arpad Muranyi noted we have a twofold question. There is not only a discussion of which BIRDS to include but also whether we release a minor version followed by a major version of the specification or release just a major version. Michael Mirmak suggested this be handled in two motions. The first should be a decision of the next version of IBIS. The second motion is which BIRDS to include.

Walter asked about the status of BIRD181.1. Mike noted this is tabled. Bob Ross added that it needs further review in the Editorial task group. There may be one or two more BIRDS needed to go along with BIRD181.1.

Bob commented that he has been trying to get a version 6.2 released for various reasons, but he is leaning towards supporting a 7.0 release to include the backchannel support and file naming changes. A new round of funding will need to happen to support parser changes.

Bob noted that due to the quantity of additions from the interconnect BIRD, a parser might take 6 months to develop. Paying for the parser is a major concern of his.

Radek Biernacki noted that file naming consequences will not be a major parser change. Bob responded that he wants file naming to be part of a major release because it is so different from conventions in the 6.1 release. Radek commented that the interconnect BIRD and the redriver flow BIRD could be included in the following release past the next one, and these are major changes. Michael Mirmak noted that the ATM task group plans further discussions. Bob stated that the assumption of the interconnect BIRD is to put it in some later version than we are discussing, since we have a list of nearly ready BIRDS. His original proposal to include BIRD181.1 might add some significant delay. Arpad noted that if we have to split the list of BIRDS into multiple versions of IBIS, then we need to prioritize which BIRDS we want first. Bob

noted that we also have a potential C_comp BIRD to include. Randy Wolff commented that the C_comp BIRD could be finished for inclusion in a release along with BIRD189.

Michael thought that we should form a strategic plan for IBIS major features to be included in future releases. Bob noted that there could be new features such as the proposal from Arpad and Randy in the DesignCon Summit. Michael noted that we should look at existing BIRD proposals.

Arpad asked if we could pick the most important BIRDS from the list for inclusion in the next release. Michael commented that some are not completed. Bob noted that most are close to being finished. If we want to include BIRD181.1 in the next release, then we will need to focus on it. Arpad asked about dependencies. Bob Miller clarified that BIRD147.6 relies upon BIRD186.1, so there is a dependency there. Bob Ross noted that BIRD181.1 is related to BIRD189. BIRD189 does need BIRD181.1 changes in the specification.

Michael asked if there was any desire to submit an upcoming version of IBIS for standardization. Bob did not think this was a consideration at this time. Parser issues are a main focus in determining the next version.

Arpad asked if we could plan for a major release along with incremental parser releases to support specification changes over time. Bob did not think we should have technical changes in the specification that are not immediately supported by the parser.

The discussion will be moved to the Editorial task group for further proposal development.

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

Discussion was tabled.

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

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.

BIRD181.1: I-V TABLE CLARIFICATIONS

Walter Katz moved to un-table the BIRD for discussion. Radek Biernacki seconded the motion. There were no objections.

Mike LaBonte noted the BIRD makes changes to the section that introduces the I-V tables. Mike added that Bob Ross found that changes needed to be made to the data derivation methods section and elsewhere. Certain figures also needed to be changed to be consistent with new terminology. Mike thought changes to the data derivation method section should be included in BIRD181.1. Bob commented that the BIRD could be expanded to 30 pages or so, or the changes could be included in multiple BIRDs. Changes ripple through the document. Mike felt that we should move forward and make the changes that are necessary. Figures and some additional text changes could be made into a new BIRD. This can be discussed in the Editorial task group.

Mike asked if any particular task group should look into these changes. Walter Katz responded that the discussion should go to the Editorial task group.

IBISCHK6 PARSER AND BUG STATUS

Bob Ross reported that there are up to five bugs pending, but none are ready for classification.

There is one bug that has existed since day one, but it may be a don't care. The bug is that one can check a null file with no errors. There may be bugs ready to classify by the next meeting.

A release 6.1.4 is needed to address the four open bugs and the upcoming bugs yet to be classified.

Michael Mirmak asked about BUG184. Is the behavior something that will be linked to a BIRD at some point? Bob responded that when we have reserved parameter names, they should not be allowed as Model_Specific parameter names. Michael noted that if the AMI version is updated, a file that had no errors in 5.1 would have errors in 6.1. Bob confirmed that this is the intended outcome. A workaround is to call the file a 6.0 version, and then it would be fine.

NEW TECHNICAL ISSUES

None.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held March 31, 2017. A vote on BIRD186.1 is scheduled. The following IBIS Open Forum teleconference meeting will tentatively be held April 21, 2017.

Arpad Muranyi moved to adjourn. Bob Ross seconded. The meeting adjourned.

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NOTES

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This meeting was conducted in accordance with ANSI guidance.

All inquiries may be sent to info@ibis.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 and/or ibis-users@freelists.org email lists (formerly ibis@eda.org and ibis-users@eda.org).
- To subscribe to one of the task group email lists: ibis-macro@freelists.org, ibis-interconn@freelists.org, or 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.ibis.org/bugs/ibischk/>
<http://www.ibis.org/bugs/ibischk/bugform.txt>

The BUG Report Form for tschk2 resides along with reported BUGs at:

<http://www.ibis.org/bugs/tschk/>
<http://www.ibis.org/bugs/tschk/bugform.txt>

The BUG Report Form for icmchk resides along with reported BUGs at:

<http://www.ibis.org/bugs/icmchk/>
http://www.ibis.org/bugs/icmchk/icm_bugform.txt

To report s2ibis, s2ibis2 and s2iplt bugs, use the Bug Report Forms which reside at:

<http://www.ibis.org/bugs/s2ibis/bugs2i.txt>
<http://www.ibis.org/bugs/s2ibis2/bugs2i2.txt>
<http://www.ibis.org/bugs/s2iplt/bugspl.txt>

Information on IBIS technical contents, IBIS participants and actual IBIS models are available on the IBIS Home page:

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

Check the IBIS file directory on ibis.org for more information on previous discussions and results:

<http://www.ibis.org/directory.html>

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

SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	January 27, 2017	February 3, 2017	February 17, 2017	March 10, 2017
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	X	-	-	X
Cadence Design Systems	User	Active	X	X	X	X
Cisco Systems	User	Inactive	-	-	-	-
CST	User	Inactive	-	X	-	-
Ericsson	Producer	Inactive	-	X	-	-
GLOBALFOUNDRIES	Producer	Active	-	X	X	X
Huawei Technologies	Producer	Inactive	-	-	-	-
IBM	Producer	Active	X	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	Producer	Inactive	-	X	-	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
Qualcomm	Producer	Inactive	-	X	-	-
Raytheon	User	Inactive	-	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
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
Zuken	User	Inactive	-	X	-	-

Criteria for SAE 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 standards 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.