IBIS Open Forum Minutes

Meeting Date: December 1, 2017
Meeting Location: Teleconference

VOTING MEMBERS AND 2017 PARTICIPANTS

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Broadcom	[Bob Miller], (Cathy Liu)
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	Ambrish Varma, Kumar Keshavan, Ken Willis
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	Ping Liu, Feng Miao, Zuli Qin, Haisan Wang
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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
December 15, 2017	624 227 121	IBISfriday11

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

   http://tinyurl.com/y7yt7buz

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
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 6.1, Touchstone 2.0, IBIS-ISS 1.0 or ICM 1.1 specifications.

Arpad Muranyi noted that Ken Willis of Cadence mentioned a patent in the IBIS ATM task group meeting on November 21, 2017. The patent number was 9798848. Mike noted he talked with SAE to get formal guidance about patents. Mike shared a presentation from SAE including IP policies. Jose Godoy mentioned that the IP policies across the SAE committees are the same, and SAE is doing some research on the patent.

REVIEW OF MINUTES AND ARS
Randy Wolff called for comments on the minutes of the October 27, 2017 IBIS Open Forum teleconference. Walter Katz moved to approve the minutes. Curtis Clark seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Mike LaBonte to fix the link to the TSIRD web page [AR].
    Mike reported there is a link on the home page now.
2. Mike to add the EPEPS minutes link to the web page [AR].
    Mike reported this as open.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**
Bob Ross noted he plans to make a motion related to IBIS dues for 2018. He also plans to make a motion related to the European IBIS Summit in 2018.

MEMBERSHIP STATUS AND TREASURER'S REPORT
Bob Ross reported that we are at 26 members. Our account balance is at $20,928 for 2017. Actual cash flow of $19,178 has been collected in 2017. The decrease from the last report was due to payments to Mike LaBonte for web hosting and the Asian IBIS Summits in Shanghai and Taipei. There is also an outstanding payment owed to Bob for the EPEPS Summit of $1,439. There is also an expected end of the year charge from SAE of about $2,000. So, expected cash flow for the year is about $17,450.

Bob noted that the current yearly dues for 2017 were $900. We need to establish the fee for 2018 so that invoices can go out soon. Bob proposed keeping the dues at $900 for 2018. However, we don't know If SAE will charge IBIS a yearly fee, so we should set the dues and let SAE work with the income we are anticipating without additional information from SAE. Bob moved to schedule a vote to fix dues at $900 per member for 2018. Walter Katz seconded the motion. There were no objections.

WEBSITE ADMINISTRATION

Mike LaBonte reported that there was a request from DesignCon to pass on promotional material including the discount to sign up. There is an agreement to pass three DesignCon emails through the list. So, a banner for DesignCon is now on the home page.

Mike noted we do not have a document available nor linked on the web page for submitting change requests for IBIS-ISS. Mike plans to create a page and document. Mike proposed creating a template document and have it reviewed by the Interconnect task group. Mike suggested calling the document an ISSIRD. Michael Mirmak asked what the process was for using this document. Bob Ross noted you need to mention the proposed change and the reason for the change. Michael clarified he was asking the process for choosing and approving the name of the document. Mike noted there is not an official process for choosing the name. Walter Katz suggested calling all the documents BIRDs and having a distinction within the document for the specification they relate to. Arpad Muranyi noted the "B" is for buffer, so it may not be appropriate. Bob suggested not spending time on old documents.

MAILING LIST ADMINISTRATION

Curtis Clark reported there have not been any significant issues to report. There have been a few drops and adds.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences
None.

- Press Update
None.

- Related standards
IEC 63055/IEEE 2401, JEITA "LPB". Mike LaBonte noted there is a JEITA standard called LPB that is a set of file formats, and IBIS is a part of it included in methods of describing chips, packages, and boards. The component section makes reference to IBIS models. Mike was approached by people from JEITA at the IBIS Summit in Japan. They asked about improvements to die capacitance modeling and are interested in the BIRD189 work. To view the standard, you must have access through IEEE Standards membership.

Bob Ross asked if the author is planning to attend DesignCon. Mike will find out, as there are three key people related to the standard [AR]. Bob also noted the syntax contained combinations of languages including HTML, Verilog A, and SPICE. The way any standard gains traction is if companies adopt it and put it in their products. Mike noted JEITA, Toshiba, Cadence, and Murata are the main companies involved in the standard. There is an LPB forum meeting coming up in February where they will push for more progress. Walter Katz noted that

BIRD189 should address many of their issues, and maybe we should send the BIRD to them once we are finished. He also thought the on-die capacitance they are interested in is decoupling for power supplies.

SUMMIT PLANNING AND STATUS
- Asian IBIS Summit (Shanghai) Review
An IBIS Summit was held at the Parkyard Hotel Shanghai from 8:30 a.m. to 5:00 p.m. on Monday, November 13, 2017. Mike LaBonte reported that the meeting went well. The meeting ended close to the expected time, although we could have had one more presentation. About 107 people representing 33 organizations attended. Huawei was the primary sponsor, and Cadence, IO Methodology, Mentor, a Siemens Business, MostecEDA (SPISim), Synopsys, Teledyne-LeCroy, and ZTE Corporation were additional sponsors.

- Asian IBIS Summit (Taipei)
An IBIS Summit was held at the Sherwood Hotel from 9:00 a.m. to 4:30 p.m. on Wednesday, November 15, 2017. There were about 62 attendees from 28 organizations. There were similar presentations to those given in Shanghai. IO Methodology, Peace Giant Technology (SPISim), and Synopsys were sponsors.

- Asian IBIS Summit (Tokyo)
An IBIS Summit was held at the Akihabara UDX Bldg. from 12:30 p.m. to 5:00 p.m. on Friday, November 17, 2017. Mike noted the morning was a workshop hosted by JEITA about power-aware IBIS. The Summit portion went well. Mike met the new JEITA leadership. There were about 108 attendees representing 65 organizations. JEITA and IBIS Open Forum were organizational sponsors. Other sponsors were ANSYS, Cadence Design Systems, Cybernet Systems, Keysight Technologies, Ricoh, Toshiba Corporation, and Zuken.

- DesignCon 2018
DesignCon will be held in Santa Clara, CA on January 30 through February 1, 2018. An IBIS Summit will be held on Friday, February 2, 2018 from 8:00 a.m. to 5:00 p.m. The room is TBD. Mike has asked for details on the room. The room may be in the convention center or the hotel. We are looking for sponsors. Lance Wang will receive registration emails. Presentation submissions should be sent to Mike. Bob noted the first announcement should go out today. Mike took an AR to send out the DesignCon announcement. Bob noted the catering costs were larger the year we went through the Hyatt hotel, so he prefers we reserve a room through DesignCon and not through the hotel. Bob projects 50-60 attendees.

- European IBIS Summit at SPI 2018
SPI 2018 will be held in Brest, France on May 22 through May 25, 2018. Bob noted we have held IBIS meetings in Europe for about 20 years. Originally these meetings were affiliated with DATE, but now they are affiliated with an IEEE workshop. Bob moved to schedule a vote to hold an IBIS Summit on May 25, 2018 at SPI with costs not to exceed $2,500. Michael Mirmak seconded the motion. There were no objections. Bob noted that Zuken is supportive of the Summit, as in the past. It is likely that Lance and Mike will attend.

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 topic of discussion has been the IBIS parser. There have been some discussions of preparations and planning related to IBIS 7.0 even though the BIRD set is not finalized and the specification has not been approved. For IBIS 6.1, they began some prep work in advance, and that helped get IBISCHK out sooner. There may be some discussions coming up related to implementing an IBIS-ISS parser. Mike noted the parser agreement documents put together by Bob are quite thorough.

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

> http://www.ibis.org/ibischk6/ibischk_6.1.4_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 has been discussing BIRD189 to help finish it up. They plan to continue helping with this topic related to grouping and selection mechanisms to speed up the process with BIRD189 work.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group is meeting at 8:00 a.m. PT on Wednesdays. The group has closed many issues in BIRD189 in the latest draft. The topic for next week is related to groups versus sets, and there are some competing views to discuss. Mike asked if the BIRD draft has some comments related to editorial discussions, would we leave those in there and resolve in interconnect, or expect editorial to deal with it. Michael replied that he expects all the open comments to be resolved in the document before passing the document on.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Michael Mirmak reported that this group remains suspended. Should there be any official document to review such as IBIS 7.0, the task group will resume meetings.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES
Michael Mirmak noted that related to IEEE, there is a system they use called Collabratec, a form of social media. In an effort to assess how many IEIE members have interest in IBIS, he created a group within Collabratec called "IBIS Modeling and Development". It is free to join, and there is not much content there yet. The idea is to get IEEE members connected to IBIS documents and provide another way to answer questions. Michael is the administrator. Bob Ross asked if you have to be an IEEE member to join the group. Michael noted that you must be an IEEE member to join. The site is linked at:

https://ieee-collabratec.ieee.org/app/groups/1878/IBIS-Modeling-and-Development/activities

BIRD165.1: PARAMETER PASSING IMPROVEMENTS FOR [EXTERNAL CIRCUIT]S
Arpad Muranyi introduced the changes. There is no technical change. He redid the statement of the issue to improve the grammar. He also changed page number references relative to the IBIS 6.1 specification. The BIRD has not been discussed for a long time. The BIRD is to improve the parameter passing syntax under [External Circuit] keyword to the [Circuit Call] keyword. The existing syntax is not flexible for parameter passing to unique instances of [Circuit Call]. Parameter passing mechanisms of "Parameters" and "Converter_Parameters" are made available for [Circuit Call]. Walter Katz noted he supports the BIRD, as it is straightforward and fixes an important issue.

Arpad moved to schedule a vote on BIRD165.1. Walter seconded the motion. There were no objections.

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.

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.

BIRD166.4: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW
Discussion was tabled.

BIRD181.1: I-V TABLE CLARIFICATIONS
Discussion was tabled.

BIRD189.4: INTERCONNECT MODELING USING IBIS-ISS AND TOUCHSTONE
Discussion was tabled.

BIRD190: CLARIFICATION FOR REDRIVER FLOW
Discussion was tabled.

IBISCHK6 PARSER AND BUG STATUS

Bob Ross reported no new bugs have been filed. There is work in progress to draft a parser contract for IBIS 7.0. Arpad Muranyi noted he has about 5 potential bugs to file. He sent a test case for Bob to try out related to External Circuits. Bob noted he is overloaded with bug reports to address right now. Michael Mirmak suggested additional volunteers help out. Mike LaBonte will send Arpad an invitation to the Quality task group meeting so he can help review his specific bug reports [AR].

NEW TECHNICAL ISSUES

Mike LaBonte asked if we need a parser for IBIS-ISS. We don't have a resource for a Touchstone parser. We do have a resource for the IBISCHK parser. Mike noted he would consider embedding an IBIS-ISS parser in IBISCHK itself. BIRD189 might require this parsing. Arpad Muranyi noted the existing parser might be sufficient for parsing the ". subckt" line, but going inside the netlists might require a separate parser. Walter Katz noted that every EDA vendor has an embedded SPICE parser, so they don't need additional parsers for SPICE syntax. The only problem is they may give different messages. We might spend many thousands of dollars to parse SPICE netlists. Arpad noted he tended to agree with that.

Michael Mirmak said he could apply the same argument to IBISCHK. The syntax checking is primarily for the model maker, and it is an enforcement mechanism against different interpretations of the IBIS syntax. There would be a single reference to ensure the model is done correctly. Bob Ross added that IBIS-ISS is a subset of HSPICE, so any other SPICE that has different syntax is invalid per IBIS-ISS. Per Walter's point, do we need a parser? Most have HSPICE or vendor-specific SPICE with internal parsers. If we have non-HSPICE syntax in IBIS-ISS then we have no parser to check that syntax. Maybe Synopsys would donate some parser syntax.

Walter noted that if a model passes the HSPICE parser, but it contains a feature not found in IBIS-ISS, that would be a problem. We could parse to see if all the elements in the model are supported. Walter proposed we could decide how much it is worth spending on the parser, and ask for bids for that amount. Arpad noted related to Michael's statement that from the model maker's perspective, it would be nice to have a parser. While this is true, it would be advisable for any model maker to try out the model in a simulator. Also related to every simulator having their own parser, most probably started with the source code from the IBIS committee, then made changes in their tools. So there is a little difference there. Bob noted the EDA tool must go in HSPICE emulation mode or co-simulate with HSPICE when working with IBIS-ISS.

Walter proposed we could require any IBIS-file or IBIS-ISS subcircuit must deliver with that model a test case of that model to demonstrate it works in some simulator or test tool. Bob sees this as a reasonable request, but we couldn't go further than that. Walter noted this could be a checklist item, and they could document what tool was used for testing.

Arpad moved to parse just the subcircuit definition line of IBIS-ISS files.

Mike summarized the proposals he had heard:
1. Do nothing at all
2. Model providers provide unit tests on their own
3. Parse just the subcircuit definition lines
4. Parse entire ISS content to syntax check for elements and non-allowed elements
5. Full parser to read info into data structures and memory to make use of it

Walter noted we may want to check parameter passing, and this could be more difficult. Walter clarified the motion as being to enhance IBISCHK to verify the number of terminals match the subcircuit statement, verify no node 0, and make sure parameters are defined in the subcircuit. Arpad asked if we should extend the checks to external circuits. Walter suggested that come later. Bob suggested we defer on parameter checking, as this is adding more significant parser development time.

Mike noted he would tend to reject the motion from Arpad, as there is an official way to address parser issues, and that this topic could be addressed through that procedure. Arpad withdrew his motion.

Arpad noted that in Figure 29 in IBIS 6.1, the text says that there are explicit node names on the figure, and those node names don't have a syntax. This issue will be resolved in IBIS 7.0 with BIRD189, so that drawing should be revisited, either in the BIRD189 text or in an editorial pass. Bob noted this could be a significant change, so it would require a BIRD. Arpad took an AR to look at the text in the figure and determine what is needed for the change.

NEXT MEETING
The next IBIS Open Forum teleconference meeting will be held December 15, 2017. Votes on 2018 membership dues, the European IBIS Summit at SPI, and BIRD165.1 are scheduled. The following IBIS Open Forum teleconference meeting is tentatively scheduled on January 5, 2018.

Michael Mirmak moved to adjourn. Arpad Muranyi seconded the motion. 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/bugsplt.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

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SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	November 13, 2017	November 15, 2017	November 17, 2017	December 1, 2017
ANSYS	User	Active	-	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	X	X	-
Cisco Systems	User	Inactive	X	-	-	-
CST	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	X	-	-	-
GLOBALFOUNDRIES	Producer	Inactive	-	-	-	X
Huawei Technologies	Producer	Inactive	X	-	-	-
IBM	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	-	X	-	X
IO Methodology	User	Active	X	X	-	X
Keysight Technologies	User	Active	-	X	X	-
Maxim Integrated	Producer	Inactive	-	-	-	-
Mentor, A Siemens Business	User	Inactive	X	-	-	X
Micron Technology	Producer	Active	-	-	X	X
NXP	Producer	Inactive	-	-	-	-
Qualcomm	Producer	Inactive	-	X	-	-
Raytheon	User	Inactive	-	-	-	-
SiSoft	User	Active	X	X	X	X
Synopsys	User	Inactive	X	-	-	X
Teraspeed Labs	General Interest	Inactive	-	-	-	X
Xilinx	Producer	Inactive	-	-	X	-
ZTE Corp.	User	Inactive	X	-	-	-
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.