IBIS Open Forum Minutes

Meeting Date: **September 06, 2019**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2019 PARTICIPANTS

ANSYS	Curtis Clark*, Marko Marin, Miyo Kawata
	Toru Watanabe, Akira Ohta
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	[Brad Brim], Ambrish Varma, Ken Willis
	Yingxin Sun, Zhen Mu
Cisco Systems	(Stephen Scearce)
Dassault Systemes (CST)	Stefan Paret, Longfei Bai
Ericsson	Anders Ekholm, Anders Vennergrund, Felix Mbairi
	Hui Zhou, Inmyung Song, Mattias Lundqvist
	Wenyan Xie, Zilwan Mahmod
GLOBALFOUNDRIES	Steve Parker*
Google	Zhiping Yang, Songping Wu
Huawei Technologies	Antonio Ciccomancini
Futurewei Technologies	Albert Baek
IBM	Michael Cohen*, Greg Edlund
Infineon Technologies AG	Anke Sauerbrey, Pietro Brenner, Francesco Settino
Instituto de Telecomunicações	(Abdelgader Abdalla)
Intel Corporation	Hsinho Wu*, Michael Mirmak*, Nhan Phan
	Kinger Cai, Eddie Frie, Wendem Beyene
	Yuanhong Zhao
Keysight Technologies	Radek Biernacki*, Hee-Soo Lee, Stephen Slater
	Jian Yang, Ming Yan, Pegah Alavi
Maxim Integrated	Joe Engert, Yan Liang, Charles Ganal
Mentor, A Siemens Business	Arpad Muranyi*, Raj Raghuram, Weston Beal
	Vladimir Dmitriev-Zdorov, Mikael Stahlberg
	Todd Westerhoff, Ed Bartlett, Nitin Bhagwath
Micron Technology	Randy Wolff*, Justin Butterfield
NXP	(John Burnett)
SiSoft (MathWorks)	Mike LaBonte*, Graham Kus, Walter Katz*
SPISim	Wei-hsing Huang*
Synopsys	Ted Mido, Adrien Auge, John Ellis, Sam Sim
	Scott Wedge
Teraspeed Labs	Bob Ross*
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)

| Zuken | Michael Schäder |
| Zuken USA | Lance Wang* |

OTHER PARTICIPANTS IN 2019

Apollo Giken Co.	Satoshi Endo
AVL	Wolfgang Röhrner
Carleton University	Ram Achar
Continental	Stefanie Schatt
Hitachi	Norio Chujo
IO Methodology	[Lance Wang]
John Baprawski, Inc.	John Baprawski
Hamburg University of Technology	Til Hillebrecht
KEI Systems	Shinichi Maeda
Marvell	Johann Nittmann
OmniVision	Sirius Tsang
Politecnico di Torino	Stefano Grivet-Talocia, Paolo Manfredi Alessandro Zanco
Qualcomm	Kevin Roselle
Raytheon	Joseph Aday
Renesas	Genichi Tanaka
Ricoh Co.	Kazuki Murata
SAE ITC	(Jose Godoy)
Seagate	Alex Tain
Signal Metrics	Ron Olisar
Silvaco Japan Co.	Yoshiharu Furui
Socionext	Megumi Ono, Motoaki Matsumura, Yuji Nakagawa
STMicroelectronics	Olivier Bayet, Aurora Sanna
Toshiba	Imi Hitoshi
Toshiba Electronic Devices & Storage Corp.	Atsushi Tomishima
Université de Bretagne Occidentale	Mihai Telescu
University of Cassino	Antonio Maffucci
University of Toronto	Fadime Bekmambetova
University of Zagreb	Adrijan Baric

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
September 27, 2019	624 227 121	IBISfriday11

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

http://tinyurl.com/IBISfriday

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
Curtis Clark declared that a quorum was reached.

CALL FOR PATENTS
Randy Wolff called for declaration of any patents or pending patents related to the IBIS, IBIS-ISS, ICM, or Touchstone 2.0 specifications. No patents were declared.

REVIEW OF MINUTES AND ARS
Randy Wolff called for comments on the minutes of the August 9, 2019 IBIS Open Forum teleconference. Mike LaBonte moved to approve the minutes. Lance Wang seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Randy Wolff to look into IBIS involvement in JEP30 JEDEC standard [AR].
   Randy noted that Micron is a JEDEC member, so he had been able to review the JEP30 documents. He reported that JEP30 is currently published and maintained as a JEDEC-wide project between the JC-11, JC-14, JC-15 and JC-42 Committees. JEP30 establishes the requirements for exchanging part data between part manufacturers and their customers for electrical and electronic products. As one example, the standard could be used to define a part in sufficient detail to enable process efficiencies during the part and product life cycles, i.e., design, purchasing, manufacturing, quality control, test, etc.

   Users of JEP30 create part model XML files defined by the JEP30 XML schema. The XML schema cover the assembly process and electrical, package, and thermal guidelines.   IBIS models are mentioned in the JEP30-E100 document, "Part Model Electrical Guidelines for Electronic-Device Packages – XML Requirements". Simulation models related to the device can be defined, including those of type SPICE, VHDL, Verilog, and IBIS. A URL link to the model or a model file name can be provided, if the model is included along with the XML file.

   IBIS files contain much of the information you might use to construct the XML file to define part numbers, package pinouts, terminal types, and interfaces. It remains to be

seen who will make use of this specification, and if an IBIS model maker might be the one to create the XML file that could accompany the IBIS model.

Mike LaBonte noted that this is the second standard we've seen recently that makes reference to an IBIS file. He noted that IBIS models these days might be .zip archives containing multiple files. He also noted that the referencing standards don't seem to be pursuing plug-and-play with IBIS, that is, they are only referencing a file and not an individual component, pin, etc.

Walter Katz noted the JEDEC standards often provide pin-outs, pin names, etc., so there is an association. Randy agreed, but noted that Mike was correct that JEP30 doesn't really reference any information within the IBIS file(s) and tie it together. The two are kept totally separate. Michael Mirmak asked an overall question, also relevant in the context of IEEE P2401 LPB, is there anything IBIS needs to do in terms of informing JEDEC about any changes in IBIS, so JEDEC can refine their JEP30 specification if they include more IBIS details? Or, if JEP30 isn't including much IBIS detail, do we need to do anything at all? Is there anything we need to do to be more involved with the JEDEC specification? Walter noted that since an IBIS file (or archive) can contain information on multiple components with different footprints, we might want to suggest that JEP30 also include information on the particular component within the IBIS file. Walter suggested this is a level of interaction we should have with other standards bodies. Randy said he would continue to investigate to find out what organizations are involved in creating JEP30, and who would be making use of it [AR]. Then, to Michael and Walter's points, we can see if they'd like more interaction with IBIS.

2. Michael Mirmak to check whether IEEE 2401 is going to be available via the IEEE Get Program [AR].
Michael reported that the short answer is no. There are currently no plans to make it available via the IEEE Get Program. He noted that he had spoken to Stan Krolikoski at DASC. IEEE Get provides a way for the public to access IEEE standards without having to pay the usual fee. That makes the documents more accessible, but the program costs money. Costs are defrayed by other organizations and standards bodies. DASC, for instance, has gotten some things into IEEE Get via payments from Accellera. So far there is no plan to do this for 2401, but it may not have been discussed at all. There are several possible options. Would IBIS be interested, and would it be a good use of our funds? Would JEITA, because of their heavy involvement with 2401, be interested? So far no one is offering to pay for entry to the IEEE Get program. Randy asked if it was easy to find out how much that would cost. Michael said he was working on getting that information, and his general sense was that the cost would be non-trivial [AR].

3. Randy Wolff to send vote solicitation email for DesignCon 2020 IBIS Summit [AR].
Randy reported that this had been done.

4. Randy Wolff to send vote solicitation email for BIRD197.4 [AR].
Randy reported that this had been done.

5. Randy Wolff to send vote solicitation email for BIRD200 [AR].
Randy reported that this had been done.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

Walter Katz noted an email thread on the si-list regarding S-parameter port ordering. Randy Wolff said we would save time later in the meeting to discuss it.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 26 members.

We have $16,368 cash flow for 2019 and a $19,118 adjusted balance for 2019. These numbers were unchanged since the previous meeting. We have one new parser purchase ($3,000) that has yet to be included. We are also expecting a payment from Hauwei for primary sponsorship of the Shanghai IBIS Summit.

Bob noted an accounting error had led to IBM paying its membership dues twice. Bob and Michael Cohen are looking into it. Bob also noted that he is following up on other payments.

WEBSITE ADMINISTRATION

Steve Parker noted that all meeting minutes, etc., are posted on the website and up to date. There is one issue with building the table for the Interconnect task group minutes, but the minutes are posted. Steve thanked Mike LaBonte for covering for him while he was on vacation and handling 14 separate requests. Bob Ross noted that there had been a request to add a Known Issues document for version IBIS 7.0. Mike noted that this was something that would go under the IBIS7.0 directory, and that he had forwarded it to Steve. Steve said he would add the Known Issues document for IBIS 7.0 [AR].

MAILING LIST ADMINISTRATION

Mike LaBonte noted that he had unsubscribed a few addresses that were bouncing, which was normal. He noted that approximately one week earlier all @altera.com addresses had started bouncing. He noted that we have five people subscribed with @altera.com addresses, and Intel's servers are now rejecting them. He will have to drop those five addresses and wait for the people to re-subscribe. Hsinho Wu noted that this was likely why he hadn't received the IBIS Open Forum agenda email. He said he would re-subscribe and let other @altera.com subscribers know.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

EDI CON is a web-based conference held September 10-12, 2019. The third day has some SI/PI content with some prominent experts giving presentations. More information is available at:

https://www.edicononline.com/

- Press Update
Nothing new was reported.

- Related standards
IEC 63055/IEEE 2401, JEITA "LPB"
Michael Mirmak reported that the latest revision of this LSI, package, board unified standard had completed the balloting phase. The ballot had closed with unanimous approval. It is now in the comment resolution period. Depending on the comments received, that phase might go very quickly or might go through as many as three or four more iterations until things are resolved. Michael said that by the next IBIS Open Forum meeting we will know whether it is going through another ballot cycle. He noted that he thought the voting form strongly implied that comments were really only associated with rejection. He said that he may talk to DASC about changing the form so that it's clear that comments can be provided along with acceptance. He said that as soon as JEITA publishes the list of comments received, he can report back to us.

SUMMIT PLANNING AND STATUS
- Asia Summits

At the previous Open Forum meeting, Bob Ross introduced a new sponsorship policy for the summits in Shanghai and Taipei. The official IBIS Open Forum Summits will end earlier than they have in the past, and after the summits have officially closed we will permit vendor-specific presentations. Presentations during the official summits are still required to be vendor-neutral. The sponsorship levels for the Shanghai and Taipei summits are:

Bronze($500): A vendor table but no vendor-specific presentation after the summit.
Silver($1,000): A vendor table and a 15-minute vendor-specific presentation after the summit.
Gold($1,500): A vendor table and a 30-minute vendor-specific presentation after the summit.
Platinum($2,000): A vendor table and a 45-minute vendor-specific presentation after the summit.

Shanghai (November 1, 2019):
Bob Ross noted that we had sent out the first notice with four sponsors. Huawei is the primary sponsor, and ANSYS, Synopsys, and ZTE are also sponsors. One of the sponsors has said that they will provide a vendor-specific presentation.

Taipei (November 4, 2019):
Bob noted that we had sent out the first notice, and that Synopsys is a sponsor. There are several other sponsors pending.

Tokyo (November 8, 2019):

Bob noted that the announcement for Tokyo would go out that day. No sponsors will be listed in the initial announcement, as they are to be reported later. This will be a half-day summit. He noted that Randy Wolff had learned that the program in the morning will be an IBIS update for JEITA, and presumably this will include IBIS 7.0. The IBIS summit will be in the afternoon.

Bob and Randy noted that vendor presentation information will not be published in the booklet. We can decide later how to publish that information, perhaps simply stating in the summit agenda that vendor presentations by sponsors x, y, z, will follow the summit.

- DesignCon 2020 Summit

Bob moved to schedule a vote to hold an all-day summit at DesignCon 2020 on Friday, January 31, 2020 at a cost not to exceed $10,000. Radek Biernacki seconded. There were no objections.

The roll call vote tally was:

ANSYS – yes
Cadence – yes (by email)
GLOBALFOUNDRIES – yes
Google – yes (by email)
IBM – yes
Infineon – yes (by email)
Intel – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
SPISim – yes
Synopsys – yes (by email)
Teraspeed Labs – yes
Zuken – yes

The roll call vote concluded with a vote tally of Yes – 15, No – 0, Abstain – 0. The vote passed.

QUALITY TASK GROUP

Mike LaBonte reported that the group is meeting on Tuesdays at 8:00 a.m. PT. The group continues to focus on ibischk 7.0. Mike noted that one other topic is a potential IBIS ISS parser (as described in the previous meeting's Advanced Technology Modeling update). The group has been discussing it and has come up with a request for quote. This will be sent to the ibischk developer, but not until ibischk 7.0 is done and approved.

The Quality task group checklist and other documentation can be found at:

ADVANCED TECHNOLOGY MODELING TASK GROUP

Arpad Muranyi reported that the group meets on Tuesdays at 12:00 p.m. PT. The group had recently been discussing Walter Katz's proposal for enhancing the AMI back channel interface (BCI) to work in statistical mode. Because Walter had suggested this might have some interaction with the DC_Offset BIRD (BIRD197.4), it was given priority and the DC_Offset BIRD was set aside temporarily. Walter noted that part of the discussion for BCI for statistical mode will involve developing a DDR5 DQ Write protocol. At that point, it would be desirable to get additional memory and controller vendors involved. The group is looking for any IC vendors working on DDR5 I/O buffers or controllers to be part of the discussion.

Arpad noted that the group had reviewed a draft BIRD198.1 created by the authors in response to the group's feedback on BIRD198. Walter had suggested that there might be a simpler way to meet the BIRD's objectives, and he had agreed to draft a simpler proposal for the group to review. Arpad noted that the authors had seen the minutes from the ATM meeting and were waiting for feedback and for Walter's proposal. These are currently informal preliminary discussions with the authors, and their email communications are sent directly to Arpad, Randy Wolff, and Mike LaBonte.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group meets at 8:00 a.m. PT on Wednesdays. The group had been focusing on the EMD proposal, which is an electrical module description protocol that is a successor to EBD. He noted that Walter Katz had led the effort for the latest drafts and revisions, and the proposal is on draft 17. Technical changes are beginning to wind down. There are still some open discussions on signal_name and terminal_type to ensure that the scopes of EMD, EBD and IBIS are clear. The proposal should be moving into a more editorial phase soon. This should ultimately result in submission of a BIRD for IBIS 7.x. After this proposal is completed, or perhaps in parallel, the group will also be taking up Touchstone enhancements (see New Administrative Issues below).

Arpad Muranyi asked if there was a rough timeline for introducing a version of IBIS containing EMD capability. Michael expected the next several meetings would still be dedicated to technical content discussions, and he noted that there was some concern that a full top-to-bottom review should occur after that. So, technical review should finish sometime early in the fourth quarter. Walter said we would know more once we get to the comment resolution phase. Depending on the comments received, that could be quick or very slow. Randy Wolff noted that there is a lot of interest in getting EMD approved and supported. It will allow a lot more packaging and board interconnect options than are available with BIRD189.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Michael Mirmak reported the task group remains suspended.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES

Walter Katz noted that he and Arpad Muranyi had contributed to an si-list email thread on Touchstone® enhancements, specifically S-parameter port order naming. Walter shared his most recent email in the thread. It noted that the discussion fell into three areas:

1. Literally, the order of the ports in an sNp (e.g., NFNF, NNFF).
2. Information on each port (e.g., port names, near end far end, differential associations, power and ground, and multi-drop port activity).
3. The graphic symbol used in the schematic (e.g., the way the ports appear on the symbol). Walter noted that no one agrees on this and the port order in the file itself.

Walter's email proposed a solution. He said IBIS could define a standard text format that documents the information about the ports of a Touchstone file. However, he didn't think IBIS should be involved in decisions about port ordering or graphic symbols. We could attempt to provide enough port information in the file to allow users and EDA tools to generate symbols according to their desired schema. Walter said IBIS might consider a new email forum or task group to resolve these issues.

Michael Mirmak asked if we might want to solicit and handle feedback in the Interconnect task group. Walter proposed that current IBIS participants knew a lot about this subject, but not enough. We could come up with a proposal for the format and contents of data that we think should go with ports, then we could post the proposal for discussion. We might create a new email forum for that purpose. In the meantime, we could send an email to si-list asking people to follow the progress.

Mike LaBonte noted that Interconnect is probably the right place to handle this. He said if it weren't too urgent, then Interconnect could focus on it once EMD was completed. He noted that part of this project would involve soliciting feedback from people who aren't regular IBIS participants. If we are going to make progress, we will need a place to store presentations, work in progress, etc. This could likely be handled in Interconnect, or we could create a new task group and mailing list, but a mix of an existing task group and a new mailing list might not work.

Bob Ross noted that IBIS mailing lists are typically closed (you must subscribe in order to post). He noted that the si-list has over 4000 subscribers, but discussions often dwindle before actionable progress is made. For progress to be made, we will need to reign in the discussion using an existing task group or a new one. He noted that port ordering might be standards dependent, e.g., IEEE P370 might specify one way, and another standard another way. This

should not be specified by IBIS. Radek Biernacki agreed and said this was technology dependent. He also agreed with Walter that IBIS should focus on item 2 and not touch items 1 and 3. Arpad agreed and said we can't make a standard for port ordering or schematic symbols because there are so many possibilities that work for different people. We need to cleverly find a way to specify the information needed and allow these different habits and preferences to co-exist. He said he liked the subcircuit wrapper idea Walter had proposed.

Walter shared an earlier email he had sent to si-list. He had noted that the port ordering struggle between NFNF and NNFF proponents was a visceral struggle, and no one should expect a winner to emerge. The talk of port ordering was really about ordering in the subcircuit that uses the S-parameters. Walter noted that he had proposed three options to pursue, but his email had garnered no responses. Arpad noted that he had also posed questions to which no one had responded. He said that discussions often devolved into, "I like it this way for reasons xyz". No one had yet addressed the question of how to solve the underlying issues. He said he was unsure how many people responding to the si-list thread would join a group attempting to iron out the details.

Mike suggested we set aside one of the Wednesday Interconnect meetings to talk about Touchstone and send an invitation to the si-list. Walter agreed and said we might come up with a schedule for which Interconnect meetings would focus on Touchstone and advertise it. Michael noted that he would put it on the agenda for the next Interconnect task group meeting. In that meeting the normal participants could strategize on how to organize and pursue the discussions, then an announcement could be made once we were ready.

Arpad suggested that for any meetings to be successful we would have to be ready for more than simply discussing the previous week's emails. We need some technical ideas for how the issues could be resolved. Without that, he feared conversations would again devolve into people staking out what they like and why. He said we understand the problems and disconnects already, and we need to focus on how to solve them. Mike said it would be helpful to have a presentation to start. Walter volunteered to present some approaches. He noted that his tool attempted to determine near and far end connectivity automatically, created a .ports file to capture the information, and ultimately wrapped it in a SPICE subcircuit for use in the schematic. He noted it could be a starting point, and didn't handle power and ground, multi-drop, etc., but we could expand it to add other functionality.

Arpad noted that he was also aware of at least two or three different comment syntaxes that were used to embed information on port names, orders, etc., within the Touchstone header section. He said he would like to have a discussion on how to handle these challenges. Walter noted that EDA companies would usually prefer that whatever solution they had already implemented was adopted. But he noted that we could see what EDA companies had done. He said he would share what his tool did, and he noted that the problem was pretty straight forward and there was at least one other format that did the same thing. He said that he'd be happy to use that format too, or let other people use what his tool did.

Michael reiterated that at the following Interconnect meeting the regular participants would come up with a strategy. Once they decided on an approach for holding the discussions, they could put out an announcement to si-list, etc. Walter, Mike, Arpad and Bob agreed.

BIRD197.4: NEW AMI RESERVED PARAMETERS DC_OFFSET AND NRZ_Threshold

Walter Katz noted that discussion in the ATM task group was ongoing. He said that everyone understands the meaning of the DC_Offset parameter as an input (the mid-point between the initial and final values of the analog channel step response). What had been taking time was deciding on the use for the DC_Offset output value. As part of his work on BCI for statistical, and the DDR5 DQ Write protocol in particular, he thought he'd come up with a well-defined use for the DC_Offset output value. The model could return the voltage value set by the VREFDQ register setting. That is, it could return the value of the actual shift that the Rx waveform undergoes when it passes through the differential amplifier at the Rx. For this reason, Walter had suggested we defer discussion on BIRD197.4

Walter moved to cancel the vote on BIRD197.4 that had been scheduled for today's meeting and to table the BIRD for now. Bob Ross seconded. There were no objections.

BIRD200: C_COMP MODEL USING IBIS-ISS OR TOUCHSTONE

Randy Wolff noted that at the last meeting a vote had been scheduled for the Open Forum meeting on September 27, 2019.

BIRD166.4: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW

Discussion was tabled.

BIRD181.1: I-V TABLE CLARIFICATIONS

Discussion was tabled.

BIRD190: CLARIFICATION FOR REDRIVER FLOW

Discussion was tabled.

BIRD198: KEYWORD ADDITIONS FOR ON DIE PDN (POWER DISTRIBUTION NETWORK) MODELING

Discussion was tabled.

IBISCHK PARSER AND BUG STATUS

Bob Ross reported one new BUG to classify. Bob noted we now have five fully signed ibischk 7.0 parser license agreements. Bob said that we are waiting for another release candidate from the developer, and he felt progress was being made based on the detailed follow up questions from the developer. His best guess was that we are "a couple of weeks" from a release. Radek Biernacki asked if we had provided enough guidance and answered all the developer's questions on Interconnect Model syntax, etc. Bob said we had for now.

Bob and Arpad Muranyi reviewed the new BUG206 – "No Message in [Series Switch Groups] for missing On and Off function table group entries". Arpad said the issue is that if the group

argument is not provided on a [Series Switch Groups] entry, then it should be an error. Bob noted that he had proposed a warning instead of an error because the issue has existed since ibischk 3.0, the spec doesn't explicitly state that the argument is required, and it's a nonsense situation that no one had previously encountered. So, he suggested a warning to flag the issue but ensure that no legacy models suddenly break. Mike LaBonte agreed and said he agreed with classifying it as moderate instead of annoying because it would result in undefined behavior.

Arpad asked if we need a clarification BIRD. Mike LaBonte said it could also be handled in the IBIS 7.0 known issues list. Arpad said he preferred a BIRD to clarify the issue properly. Michael Cohen suggested that we could use a version specific check and call it an error once 7.x appeared, assuming the clarification BIRD were part of 7.x. Arpad agreed and noted that we can generate a warning now and ask the parser developer to make it an error once 7.x is approved.

Bob moved to classify BUG206 as moderate severity and medium priority to be fixed in a future release of ibischk. Arpad seconded. There were no objections.

NEW TECHNICAL ISSUES
None.

NEXT MEETING
The next IBIS Open Forum teleconference meeting will be held on September 27, 2019. A vote on BIRD200 is scheduled for this meeting. The following teleconference meeting is tentatively scheduled for October 18, 2019.

Mike LaBonte moved to adjourn. Lance Wang seconded the motion. The meeting adjourned.

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NOTES

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This meeting was conducted in accordance with SAE ITC guidelines.

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	June 28, 2019	July 19, 2019	August 9, 2019	September 6, 2019
ANSYS	User	Active	X	-	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Inactive	-	X	-	X
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
GLOBALFOUNDRIES	Producer	Active	X	X	-	X
Google	User	Inactive	-	-	-	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	X
Instituto de Telecomunicações	User	Inactive	-	-	-	-
IBM	Producer	Active	X	X	X	X
Intel Corp.	Producer	Active	X	X	X	X
Keysight Technologies	User	Active	X	X	X	X
Maxim Integrated	Producer	Inactive	-	-	-	-
Mentor, A Siemens Business	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
NXP	Producer	Inactive	-	-	-	-
SiSoft	User	Active	X	X	X	X
SPISim	User	Inactive	-	-	-	X
Synopsys	User	Active	-	X	X	X
Teraspeed Labs	General Interest	Active	X	X	X	X
Xilinx	Producer	Inactive	-	-	-	
ZTE Corp.	User	Inactive	-	-	-	-
Zuken	User	Active	-	X	X	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.