IBIS Open Forum Minutes

Meeting Date: **October 8, 2021**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2021 PARTICIPANTS

ANSYS	Curtis Clark*, Wei-hsing Huang
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	Zhen Mu*
Celestica	(Sophia Feng)
Cisco Systems	(Stephen Scearce)
Dassault Systemes (CST)	Stefan Paret, David Duque, Longfei Bai
Ericsson	(Guohua Wang)
Google	Zhiping Yang*, Songping Wu
Huawei Technologies	(Hang (Paul) Yan)
Infineon Technologies AG	(Christian Sporrer^)
Instituto de Telecomunicações	(Abdelgader Abdalla)
Intel Corporation	Hsinho Wu*, Michael Mirmak
Keysight Technologies	Radek Biernacki*, Fangyi Rao, Pegah Alavi, Todd Bermensolo, Majid Ahadi Dolatsara*
Luminous Computing	David Banas
Marvell	Steve Parker
MathWorks (SiSoft)	Mike LaBonte*, Walter Katz*
Maxim Integrated	Tushar Pandey, Pawan Sai, Yan Liang
Micron Technology	Randy Wolff*, Justin Butterfield, Aniello Viscardi, Akshay Shivaji Chaudhari, Dragos Dimitriu
MST EMC Lab	Chulsoon Hwang*, Anfeng Huang, Yifan Ding
NXP	Jon Burnett
SerDesDesign.com	(John Baprawski)
Siemens EDA (Mentor)	Arpad Muranyi*, Weston Beal
Siemens AG	Franz Pfleger, Sebastien Kollinger
STMicroelectronics	(Gerard Mas)
Synopsys	Ted Mido*, Andy Tai
Teraspeed Labs	Bob Ross*
Xilinx	(Romi Mayder)
ZTE Corporation	Bowen Shen, Changgang Yin, Dongdong Ye Liqiang Meng, Xiaoxuan Liu
Zuken	Michael Schäder, Chithrupa Ramesh
Zuken USA	Lance Wang^

OTHER PARTICIPANTS IN 2021

Achronix Semiconductor	Hansel Dsilva
Analog Devices	Patrick DeRoy
ATE Service Corporation	Yutaka Honda
AVL Software and Functions	Wolfgang Röhrner

Ciena	Taha Kheyar, Kaisheng Hu
Continental Automotive	Julnar Musmar, Stefanie Schatt
De Montfort University (IEEE EMC)	Alistair Duffy
Elite Material Co.	Nick Huang
Extreme Networks	Robert Haller
Hamburg University of Technology	Cheng Yang
IT-Beratung-Maurer	Manfred Maurer
Kandou Bus	Sherman Chen
KEI Systems	Shinichi Maeda
Mercury Systems	Vincent Tam
Microchip Norway	Lars Snith

Politecnico di Torino	Stefano Grivet-Talocia, Paolo Manfredi
	   Alessandro Zanco, Felipe Treviso
	   Marco Destefano, Riccardo Trinchero
	   Tomasso Bradde

RTC	Ken Whigham
Simberian	Yuriy Shlepnev
Teradyne	Tao Wang
University of Illinois, Urbana	Jose Shutt-Ainé, Xinying Wang

In the list above, attendees at the meeting are indicated by *. Those submitting an email ballot for their member organization for a scheduled vote 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 connection information for future IBIS teleconferences is as follows:

Microsoft Teams meeting
Join on your computer or mobile app
Click here to join the meeting

Join with a video conferencing device
106010980@teams.bjn.vc
Video Conference ID: 114 666 897 5
Alternate VTC dialing instructions

Or call in (audio only)
+1 267-768-8015,554664847#   United States, Philadelphia
Phone Conference ID: 554 664 847#
Find a local number | Reset PIN
Learn More | Meeting options

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 had been reached. Majid Ahadi Dolatsara introduced himself. Majid had started at Keysight Technologies in 2021to work on IBIS-AMI modeling. He had worked as an engineer for 8 years, mostly working on serdes channels.

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 September 17, 2021, IBIS Open Forum teleconference. Curtis Clark moved to approve the minutes. Radek Biernacki seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.
1. Randy Wolff to send email ballot for 2022 membership dues vote [AR]
   Randy said this was done.
2. Randy Wolff to schedule vote for BIRD214 [AR]
   Randy said this was done.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

None.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that cash flow for 2021 was $26,843 and the total adjusted balance for 2021 was $30,193. We had 29 members, with a voting quorum of 8. A $311 web hosting payment had been reimbursed since the prior meeting. One new half-year membership was possible, although not very likely. An early 2022 $900 membership was in process and would be paid later in the month. No new Summit expenses were anticipated. A full payment of $17,500.00 for ibischk7 version 7.1.0 was expected in 2021.

WEBSITE ADMINISTRATION

Randy Wolff reported that the Summit and task group pages had been updated. Bob Ross said he had asked STMicroelectronics to join the IBIS email reflector, but it was not obvious on our website how to do so. Randy Wolff showed the IBIS support page, which had links and instructions for that. He suggested adding a New Member page might help. Mike LaBonte suggested having signup links on the home page. Bob Ross agreed that some direct means of signing up should be there. Mike said the support page had the required links. Randy said we should have links for the task groups too.

MAILING LIST ADMINISTRATION

Curtis Clark said the STMicroelectronics member could contact him for signup help. Mailing listing operation had been going smoothly.

LIBRARY UPDATE
Randy Wolff said Zhiping Wang and Chulsoon Hwang were working on a GitHub-based model library site. Users could find models more easily, and it would link back to the model providers.

Chulsoon showed a presentation. The GitHub page was titled "I/O Buffer Information Specification". Presentation: There were 4 roles. Public users, Company representatives, IBIS expert collaborators, and Web managers. Company users would need a GitHub account. Public users could not upload files, but they could add issue requests. Collaborators could upload.

Chulsoon showed the GitHub page, which had some example models. Bob Ross said only company people should be able to modify their models. The uploaded files were zip files. Arpad Muranyi asked if only the model owner could be allowed to change it. He also asked if any NDA protections were possible. Chulsoon said anyone could download, and owners could set restrictive permissions, but there was no special provision for handling of NDAs. Randy said any uploaded models would have to be unrestricted. Bob Ross said models should be made public to get feedback. He asked how to download them. Chulsoon showed the Download button for files. There was no button get all files.

Randy asked if a link could be added, so the IBIS Model Library page could link to the GitHub. Bob said that organization would be by company. Randy said models with restricted redistribution rights would not be uploaded. Mike LaBonte asked if they could be posted with a rights document. Randy said there must not be a statement that it must be downloaded from the company's own website. Bob said it should be possible to at least post links. Bob suggested asking some companies to volunteer. Arpad said there were some old models for which the owners no longer cared much, suggesting those might be available for upload. Radek Biernacki felt the effort to modernize library access it seemed to be going in the right direction, particularly the use of roles to control who could modify the models. He said some people had modified original model files and then the modifications were circulated, occasionally turning up with errors.

Radek also asked if there might be a future cost for the site that the IBIS Open Forum would have to bear. Chulsoon said GitHub had paid plans at different price levels, but the page shown was on the free platform. Randy said it seemed like a good start and he hoped to keep working on it.

INTERNATIONAL/EXTERNAL ACTIVITIES
- Conferences
Randy Wolff said EMC+SIPI would be Aug 1-5, 2022, but we had no concrete plans for an associated summit.

- Press Updates
  - Randy Wolff said a Signal Integrity Journal article had been pointed out by Michael Mirmak. "*Back to basics: IBIS/IBIS-AMI and the path to (LP)DDR5*" had been written by HeeSoo Lee and Fangyi Rao, of Keysight Technologies.
    https://www.signalintegrityjournal.com/articles/2020-back-to-basics-ibisibis-ami-and-the-path-to-lpddr5

- Related standards
No report.

SUMMIT PLANNING AND REVIEW
- Virtual Asian IBIS Summit (Japan), Friday, November 12, 2021, 09:00 to 12:00 JST
Randy Wolff said the third announcement would go out that day. He would be submitting a chair's report by video. Six other presentations were planned, four had been reviewed so far. Any new presentations should be submitted soon, although the program was already full. Bob Ross said there were 8 presentations.

The summit was co-sponsored by the JEITA EC Center, IBIS Open Forum, ANSYS, Apollo, Keysight Technologies, Ricoh, Toshiba, and Zuken.

- Virtual Asian IBIS Summit (China), Friday, November 19, 2021, 09:00 to 13:00 CST
Randy Wolff said it would be late in the evening for those in the U.S. Bob Ross said Lance Wang had been contacting people for presentation commitments. Bob had been contacting university people in China, and probably could add three more presentations if needed. Those would be live presentations. No presentations had yet been scheduled.

Arpad asked if the earthquake in Japan might have an impact. Ted Mido felt the earthquake damage was not too bad.

QUALITY TASK GROUP
Mike LaBonte reported that the group meets on Tuesdays at 9:00 a.m. PT. The group continues to oversee the next ibischk release, ibischk7.1.0. Mike said he had discovered that only the most recent of the makefiles included with the source code distribution could be used to produce a correct ibischk executable. Makefiles for prior versions of ibischk would not compile, because the source code did not have the conditional code sections to support every prior version. He said Bob Ross was working to ensure that all prior source distributions were uploaded to a safe location that was accessible by IBIS officers. Arpad Muranyi asked if the code could be fixed to support all versions. Mike said many more conditional code sections would need to be added, and the code would become harder to read. Arpad suggested removing the older makefiles. Bob said people should only be building the latest, anyway. Mike agreed, saying ibischk did a good job of supporting older IBIS versions. Radek Biernacki agreed the older makefiles could be eliminated.

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 the agenda was light. IBIS 7.1 had to be released so that new BIRDs could refer to it. They had discussed GDDR6x and AMI GetWave enhancements. A presentation by Vladimir Dmitriev-Zdorov about accounting for reflections had been discussed. Randy Wolff invited people to bring in any new topics they had.

Task group material can be found at:

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

INTERCONNECT TASK GROUP
Randy Wolff reported that the Interconnect task group remained suspended. Its former time slot was being used by the Editorial task group.

Task group material can be found at:

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

EDITORIAL TASK GROUP
Randy Wolff reported the group was meeting on Wednesdays at 8:00 a.m. PT.
They were working on table updates related to whether parameters were required. Other changes were for consistent use of "time domain", and correctly specifying the allowed combinations of terminals. He said the draft would be released very soon. Arpad hoped to discuss it in an Open Forum meeting soon, and have it passed by the end of the year. Randy hoped for some announcement at the upcoming summits.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES
Randy Wolff said Bob Ross had previously moved to continue dues at $900, or $450 for half year memberships. Arpad asked if that was a change. Randy said no, it was the same cost as for this year. Bob Ross moved to vote to maintain dues at $900, $450 for half year and academic memberships. He also noted that we had an early $900 renewal motivating the vote. Walter Katz seconded the motion.

Without objection, Randy conducted a roll call vote. The motion passed with 12 Yes votes, no No votes, and no abstentions.

ANSYS	Yes
Cadence Design Systems	Yes
Google	Yes
Infineon Technologies AG	Yes (by email)
Intel Corporation	Yes
Keysight Technologies	Yes
MathWorks	Yes
Micron Technology	Yes
Siemens EDA	Yes
Synopsys	Yes
Teraspeed Labs	Yes
Zuken USA	Yes (by email)

BIRD215: Back-channel Statistical Optimization Editorial Update
Randy Wolff showed the BIRD. He said this added editorial changes to BIR201.1. Flow definitions had been expanded by the Editorial Task Group, and the BIRD captured those. Arpad Muranyi asked if it would supersede BIRD201.1. Randy said it would. Arpad asked if BIRD201.1 had previously been approved. Randy said it had. Randy briefly described the changes. Mike LaBonte asked why unchanged tables had been included in the BIRD. Randy said it was easier to include the full content of changed sections, rather than just individual changes.

Arpad Muranyi moved to vote on the BIRD in the next Open Forum meeting. Bob Ross seconded. There were no objections.

Bob said there was bi-directional linkage, and BIRD201.1 would have a note added that it had been superseded. Radek Biernacki asked if there also needed to be a vote to include it in 7.1. Randy felt that would not be necessary. The Editorial Task Group had already made the editorial change, and the new BIRD was to capture that. Bob said the vote could have both actions, accepting the new BIRD and including it in IBIS 7.1. Arpad amended his motion to have both. Radek seconded.

Randy Wolff to schedule vote for BIRD215 [AR]

BIRD214: CHANGE "BIT_TIME" TO "SYMBOL_TIME"
Randy Wolff showed the BIRD. Arpad Muranyi said it was a simple editorial change to keep up with multi-level keywords in IBIS. With PAM4, and PAMn in the works, it would be better to use "symbol time" consistently, and not use "bit time" for NRZ. He asked if the BIRD might be included in IBIS 7.1. Randy said that was intended, so a vote would include that. Radek Biernacki said some underscores were absent in his document. Randy said those sometimes were invisible on-screen depending on the zooming, but they were present in the document.

Arpad Muranyi move to vote for acceptance of BIRD214 and for incorporating it into IBIS 7.1. Curtis Clark seconded.

Without objection, Randy conducted a roll call vote. The motion passed with 11 Yes votes, no No votes, and no abstentions.

ANSYS	Yes
Cadence Design Systems	Yes
Google	Yes
Intel Corporation	Yes
Keysight Technologies	Yes
MathWorks	Yes
Micron Technology	Yes
Siemens EDA	Yes
Synopsys	Yes
Teraspeed Labs	Yes
Zuken USA	Yes (by email)

Randy Wolff to update BIRD214 status on the website [AR]

BIRD211.3: IBIS AMI REFERENCE FLOW IMPROVEMENTS
Discussion was tabled.

BIRD213: EXTENDING IBIS-AMI FOR PAMn ANALYSIS
Discussion was tabled.

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.

BIRD210: NEW REDRIVER AMI FLOW
Discussion was tabled.

IBISCHK AND TSCHK PARSER AND BUG STATUS
Bob Ross said developer questions about IBISCHK710 continued to be answered. It was taking longer than originally planned. The developer had submitted some bug reports. An early code release had been checked. The final code would take several weeks to check.

There were no new bug reports. It had been decided that BUG224 would result in a warning message, not an error. Bob said the potential passage of BIRD215 would not affect the parser, the changes were purely editorial.

NEW TECHNICAL ISSUES
None

NEXT MEETING
The next IBIS Open Forum teleconference meeting would be held on October 29, 2021. The following teleconference meeting would be for November 19, 2021, per our three-week cadence, but Randy said that would be adjacent to the China summit. He suggested keeping the meeting anyway, because we had votes scheduled. Arpad Muranyi agreed, asking what other dates we could possibly meet. He also wondered if the Editorial Task Group might have IBIS 7.1 ready for one of the upcoming meetings. Radek Biernacki said it usually took more than a single meeting to ratify a new specification, but we might vote in December. The next meetings would be November 19, and one in December.

Arpad Muranyi moved to adjourn. Curtis Clark seconded the motion. The meeting adjourned.

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NOTES

IBIS CHAIR: Randy Wolff (208) 363-1764
rrwolff@micron.com
Principal Engineer, Silicon SI Group, Micron Technology, Inc.
8000 S. Federal Way
P.O. Box 6, Mail Stop: 01-720
Boise, ID 83707-0006

VICE CHAIR: Lance Wang (978) 633-3388
lance.wang@ibis.org
Solutions Architect, Zuken USA
238 Littleton Road, Suite 100
Westford, MA 01886

SECRETARY: Mike LaBonte
mlabonte@mathworks.com
Senior Engineer
1 Lakeside Campus Drive
Natick, MA 01760

TREASURER: Bob Ross (503) 246-8048
bob@teraspeedlabs.com
Engineer, Teraspeed Labs
10238 SW Lancaster Road
Portland, OR 97219

LIBRARIAN: Zhiping Yang (650) 214-0868
zhipingyang@google.com
Sr. Hardware Manager, Google LLC
1600 Amphitheatre Parkway
Mountain View, CA 94043

WEBMASTER: Steven Parker (845) 372-3294
sparker@marvell.com
Senior Staff Engineer, DSP, Marvell
2070 Route 52
Hopewell Junction, NY 12533-3507

POSTMASTER: Curtis Clark
curtis.clark@ansys.com
ANSYS, Inc.
150 Baker Ave Ext
Concord, MA 01742

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	August 19, 2021	August 27, 2021	September 17, 2021	October 8, 2021
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Inactive	-	X	-	X
Celestica	User	Inactive	-	-	-	-
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	X	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
Google	User	Active	-	X	X	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	X
Instituto de Telecomunicações	User	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
Keysight Technologies	User	Active	X	X	X	X
Luminous Computing	General Interest	Inactive	-	-	-	-
Marvell	Producer	Active	-	X	X	-
MathWorks (SiSoft)	User	Active	X	X	X	X
Maxim Integrated	Producer	Inactive	X	-	X	X
Micron Technology	Producer	Active	X	X	X	X
MST EMC Lab	User	Inactive	X	-	-	X
NXP	Producer	Inactive	X	-	-	-
SerDesDesign.com	User	Inactive	-	-	-	-
Siemens EDA (Mentor)	User	Active	X	X	X	X
STMicroelectronics	Producer	Inactive	-	-	-	-
Synopsys	User	Active	X	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 (voting by email counts as attendance)

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.