# IBIS Open Forum Minutes

Meeting Date: **December 2, 2016**
Meeting Location: **Teleconference**

**VOTING MEMBERS AND 2016 PARTICIPANTS**

| | |
|---|---|
| ANSYS | Curtis Clark*, Toru Watanabe, Miyo Kawata |
| Broadcom (Avago Technologies) | Bob Miller* |
| Cadence Design Systems | Ken Willis, Brad Brim*, Aileen Chen, Lanbing Chen |
| | Zhiyu Guo, Mohan Jiang, Rachel Li, Ping Liu |
| | Haisan Wang, Yitong Wen, Clark Wu, Dingru Xiao |
| | Benny Yan, Haidong Zhang, Wenjian Zhang |
| | Zhangmin Zhong, Hui Wang, Jinsong Hu, Wei Dai |
| | Rong Zhang, Kent Ho, Skipper Liang, Jack Lin |
| | Candy Yu, Morihiro Nakazato, Takuya Moriya |
| Cisco Systems | Giuseppi Selli, Brian Baek, Hannah Bian, Tonghao Ding |
| | Amanda Liao, Cassie Yan |
| CST | Stefan Paret |
| Ericsson | Anders Ekholm, David Zhang, Zilwan Mahmod |
| | Guohua Wang |
| GLOBALFOUNDRIES | Steve Parker* |
| Huawei Technologies | Yuanbin Cai, Haiping Cao, Zhenxing Hu, Peng Huang |
| | Xusheng Liu, Longfang Lv, Guanjiang Wang |
| | Chen Yu, Cheng Zhang, Gezi Zhang, Zhengyi Zhu |
| | Fangxu Yang, Huajun Chen, Xiao Peng |
| | Zhengrong Xu, Xianbiao Wang, Lin Shi |
| | Hongcheng Yin |
| IBM | Adge Hawes, Luis Armenta*, Trevor Timpane |
| Infineon Technologies AG | (Christian Sporrer) |
| Intel Corporation | Hsinho Wu*, Mohammad Bapi, Michael Mirmak* |
| | Masahi Shimanouchi, Todd Bermensolo, Zao Liu |
| | Gong Ouyang, Udy Shrivastava, Gianni Signorini |
| | Richard Mellitz, Youqing Chen, Jennifer Liu |
| | Luping Liu, Bruce Qin, Yuyang Wang, Denis Chen |
| | Jimmy Hsu, Thonas Su, Morgan Tseng |
| IO Methodology | Lance Wang* |
| Keysight Technologies | Radek Biernacki*, Heidi Barnes, Jian Yang, Fangyi Rao |
| | Stephen Slater, Pegah Alavi, Edwin Young |
| | Mitsuhara Umekawa, Hiroaki Sasaki |
| Maxim Integrated | Yan Liang, Don Greer, Thinh Nguyen, Joe Engert |
| | Hock Seon, Ahmed Gendy |
| Mentor Graphics | Arpad Muranyi*, Vladimir Dmitriev-Zdorov, John Angulo |

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| | Mikael Stahlberg, Kenji Kushima |
| Micron Technology | Randy Wolff, Justin Butterfield |
| Micron Memory Japan | Masayuki Honda, Tadaaki Yoshimura, Toshio Oki<br>Mikio Sugawara |
| Signal Integrity Software | Mike LaBonte*, Walter Katz*, Todd Westerhoff<br>Richard Allred |
| Synopsys | Ted Mido*, Kevin Li*, Massimo Prando, Xuefeng Chen<br>Andy Tai, Jinghua Huang |
| Teraspeed Labs | Bob Ross* |
| Xilinx | Masao Nakane |
| ZTE Corporation | Shunlin Zhu, Fengling Gao, Lili Wei, Zhongmin Wei<br>Bi Yi, Changgang Yin, Yang Yang, Xiaoli Yu |
| Zuken | Michael Schaeder, Amir Wallrabenstein<br>Kiyohisa Hasegawa, Kazuki Furukawa |

## OTHER PARTICIPANTS IN 2016

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|---|---|
| AAT | Sam Liu |
| A&D Print Engineering Co. | Minoru Hasegawa |
| Abeism Corporation | Nobuyuki Kiyota |
| AET | Shigekazu Hino |
| Alcatel-Lucent | Yishan Li, Yiqing Mao |
| AMD Japan | Tadashi Arai |
| Apollo Giken Co. | Satoshi Endo, Naoya Iisaka, Toshiki Tamura |
| ASUSTek Computer | Nick Huang |
| Aurora System | Dian Yang |
| Avant Technology | Jyam Huang, Chloe Yang |
| BasiCAE Software Technology | Darcy Liu |
| Canon Components | Takeshi Nagata |
| Canon | Kengo Umeda, Syoji Matsumoto |
| Casio Computer Co. | Yasuhisa Hayashi, Ikuo Imada |
| Celestica | Allen Wang, Vincent Wen |
| Cybernet Systems | Hideto Ishikura, Shiho Nagae, Takayuki Tsuzura |
| Denso Corp. | Koji Ichikawa |
| Digital Corp. | Hiroaki Fujita |
| eASIC | David Banas |
| Edadoc | Deheng Chen, Hong Zhang |
| Eizo Corp. | Yu Yamada |
| FiberHome Technologies | Yejing Jia |
| Foxconn Electronics | Gino Chen, Ryan Hou, Mandy HY Su |
| Fuji Xerox Manufacturing Co. | Rumi Maeda |
| Fujitsu Advanced Technologies | Shogo Fujimori |
| Fujitsu Interconnect Technologies | Masaki Kirinaka, Akiko Tsukada |
| Fujitsu Ltd. | Kohichi Yoshimi |
| Fujitsu Semiconductor | Hirokazu Yamazaki |

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| Ghent University | Paolo Manfredi |
| Gigabyte Technology | Chris Tsai, CJ Wang |
| Global Unichip Japan | Masafumi Mitsuishi |
| Gowin Semiconductor | Xiaozhi Lin, Qi Zhou |
| H3C | Bin Chen, Mao Jun, Xing Hu |
| Hamamatsu Photonics | Akahiro Inoguchi |
| Hamburg University of Technology | Jan Preibisch, David Dahl |
| Hanghou Hikvision Digital Technology | Wenquan Hu |
| Hewlett Packard Enterprise | Passor Ho, Corey Huang, Hellen Lo |
| HGST | Satoshi Nakamura |
| Hisilicon | Wei Zhen, |
| Hitachi | Kimihisa Handa |
| Hitachi Kokusai Electric | Katsuya Konno |
| Hitachi ULSI Systems Co. | Sadahiro Nonoyama |
| IB-Electronics | Makoto Matsumuro |
| Independent | Carl Gabrielson |
| Info TM Microelectronics | Aofeng Qian |
| Institut Supérieur des Sciences Appliquées et de Technologie de Sousse | Wael Dghais |
| Inventec | Zhong Peng |
| Japan Electronics Packaging and Circuits Association | Yukio Masuko |
| Japan Radio Co. | Hiroto Katakura |
| JEITA | Yosuke Kanamaru |
| John Baprawski, Inc. | John Baprawski |
| JVC Kenwood Corp. | Takuo Fujimura, Hidetoshi Suzuki, Masayuki Kurihara |
| KEI Systems | Shinichi Maeda |
| Keyence Corp. | Tomo Uchida |
| Lattice Semiconductor | Dinh Tran, Maryam Shahbazi |
| Leading Edge | Pietro Vergine |
| Lenovo | John Lin, Alan Sun |
| Lite-On Technology | Steven Chen, Steven CH Chen, Sam Lyu |
| Marvell | Jie Pan, Weizhe Li, Liang Wu, BL Qian, Fang Lv |
| MathWorks | Mike Mulligan, Corey Mathis |
| MD Systems Co. | Hideaki Kouzu |
| Megachips Corp. | Kosuke Egami |
| Modech | Tomo Koba |
| Monsoon Solutions | Nathan Hirsch |
| Mostec | Ninghua Li, Kaihe Zhang |
| Murata Manufacturing Co. | Satoshi Arai |
| Nanya Technology Corp. | Chiwei Chen, Andy Chih, Taco Hsieh, Jordan Hsu Andre Huang, Raphael Huang, George Lee, Allen Zuo |
| NEC Engineering | Masahiko Kuroda |
| NEC Magnus Communications | Toshio Saito |

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| NEC Space Technologies | Syuichi Koreeda |
| Nikon Corporation | Manabu Matsumoto |
| Northrup Grumman | Alex Golian |
| Novatek | Vincent Lin, Willy Lin |
| Nvidia Corp. | Norman Chang, David Chen, Chihwei Tsai, Ann Yen |
| NXP | Jon Burnett |
| Oki Electric Industry Co. | Atsushi Kitai |
| Panasonic Corp. | Kenichi Hirano |
| Panasonic Industrial Devices, Systems and Technology Co. | Kazuki Wakabayashi, Yoshihide Komatsu |
| Peace Giant Corp. | Walter Huang, Jimmy Liu |
| Pegatron Corp. | Aje Chang, Stanley Chu |
| Politecnico di Torino | Claudio Siviero, Stefano Grivet-Talocia, Igor Simone Stievano |
| Pulax Corp. | Masataka Wada |
| Qualcomm Technologies | Guobing Han, Irwin Xue |
| Quanta Computer | Eriksson Chuang, Scott CH Lee |
| Rambus | John Yan |
| Raytheon | Joseph Aday |
| Renesas System Design Corp. | Kazunori Yamada, Hiroyoshi Kuge, Masaru Enomoto |
| Ricoh Company | Shigeru Toyazaki, Yasuhiro Akita, Kazumasa Aoki Takuya Kitsukawa, Masahiko Banno Yoshikazu Tadokoro |
| Ricoh Industry Co. | Kohji Kurose, Yuji Hara |
| Rohm Co. | Noboru Takizawa |
| SAE International | (Logen Johnson) |
| SAIC Motor Corp | Weng Yang |
| Saxa | Takayuki Ito |
| Shanghai Zhaoxin Semiconductor | Jude Ji |
| Shenzhen Zhongzeling Electronics | Nick Huang |
| SILABTECH | Biman Chattopadhyary |
| Silicon Motion Technology | Matt Lin |
| Silvaco Japan Co. | Yoshihiko Yamamoto |
| Signal Metrics | Ron Olisar |
| SiGuys | Donald Telian |
| SMICS | Sheral Qi |
| Socionext | Shigeru Nishio, Hajime Omi, Kazuo Toda Yumiko Sugaya, Yu Kamata |
| Sohwa & Sophia Technologies | Tomoki Yamada |
| Sony Corporation | Hiroaki Ammo |
| Sony Global Manufacturing & Operations Corp. | Taichi Hirano, Hayato Takeuchi, Mizue Yamaguchi Akira Matsuda |
| Sony LSI Design | Takashi Hasegawa, Toru Fujii |
| SPISim | Wei-hsing Huang |
| Spreadtrum Communications | Junyong Deng, Steven Guo, Baoping Bian |

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|---|---|
| | Yanbiao Chu, Nikki Xie, Zhi Wang |
| STMicroelectronics | Fabio Brina, Olivier Bayet |
| Technoprobe | Alberto Berizzi, Lorenzo Bernasconi, Simona Cucchi |
| Tektronix Co. | Hitoshi Hatakeyama |
| Teledyne LeCroy | Denny Li, Yifeng Wu |
| Toshiba Corp. | Satoshi Minewaki, Yasuki Torigoshi, Hitoshi Imi |
| Toshiba Information Systems Corp. | Yasuyuki Inaba, Satoshi Yamaguchi, Masashi Hirai |
| Toshiba Memory Systems Co. | Kanehara Kenichi, Kouichi Ookawa |
| Toshiba Microelectronics Corp. | Jyunya Masumi |
| TSG Co. | Keiichi Hanada |
| Université de Bretagne Occidentale | Mihai Telescu |
| Vendorchain | Jun Zhao, Jing Luo, Dong Lei |
| VIA Labs | Sheng-yuan Lee |
| VIA Technologies | Terence Hsieh, Jerry Hsu, Justin Hsu |
| WADOW Corp. | Kazuhiko Kusunoki |
| Winbond Electronics | Albert Li |
| Xpeedic Technology | Max Cang, Mingcan Zhao, Zhouxiang Su, Rui Wang<br>Qionhui Gui, Wenliang Dai, Yuqing Shen<br>Haitao Zhang, Rick Chang, Zachary Su |
| Zhejiang Uniview Technologies | Weiqi Chen, Jiayun Dai |

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 16, 2016 | 623 668 275 | IBISfriday11 |

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

https://sae.webex.com/sae/j.php?MTID=m4d8ccc152fbad40525f12983b3b80505

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.

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## INTRODUCTIONS AND MEETING QUORUM

Mike LaBonte declared that Curtis Clark would take the meeting minutes. Curtis Clark 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

Mike LaBonte called for comments on the minutes of the November 4, 2016 IBIS Open Forum teleconference. Bob Ross moved to approve the minutes. Lance Wang seconded the motion. There were no objections.

There were no ARs from the previous meeting to review.

Mike LaBonte noted that minutes for the three Asian IBIS Summits had been sent out. Mike and Radek Biernacki noted that they had been sent out after the agenda for this meeting. Review of these was deferred until the next meeting.

## ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

Bob Ross noted the passing of Lynne Green and described some of her many contributions to IBIS. She served as Vice Chair of the IBIS Open Forum from 2002 to 2004. She worked at many EDA companies and was a constant proponent of IBIS. She taught classes on IBIS and co-authored the book “Semiconductor Modeling: For Simulating Signal, Power, and Electromagnetic Integrity” with Roy Leventhal. Bob noted that she was a great person. He said that the IBIS Board had decided to make a $200 donation to Lynne’s favorite charity. Mike LaBonte concurred. He noted that Lynne was a tireless educator and had donated all of her training materials to the IBIS Open Forum. Bob moved that the IBIS Open Forum officially acknowledges and thanks Lynne Green for her service. Curtis Clark seconded. All were in favor.

Bob Ross noted that he would be introducing a motion to maintain annual dues at $900 for member organizations for 2017.

Michael Mirmak noted that he would have a brief update on DASC.

## MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 22 members. Our account is at $29,504 for 2016. Actual cash flow of $25,193 has been collected this year. We received one new parser payment of $2500. We expect a payment of $2000 to the parser contractor. We expect to pay $6,752 to reimburse Mike LaBonte for Asian Summit expenses. We expect a $200 donation to Lynne Green’s preferred charity.

## WEBSITE ADMINISTRATION

Mike LaBonte reported that the IBIS-ISS specification page now contains a known issues list because a small issue had been reported. With the 2016 Asian Summits completed, the upcoming DesignCon summit is now at the top of the “Upcoming Events” page. The 2017 Asian Summits now appear at the bottom of that page. Mike thanked Bob Ross for his help with the Asian Summits and noted that presentations from them are now available on the website. Mike noted that we had renewed our ibis.org domain registration.

## MAILING LIST ADMINISTRATION

Curtis Clark reported that email lists were working properly. In response to Bob Ross’ question from the November 4, 2016 meeting about the number of subscribers, Curtis reported:

IBIS Open Forum list (ibis): 336 subscribers.
IBIS Users list (ibis-users): 337 subscribers.
IBIS Advanced Technology Modeling Task Group list (ibis-macro): 130 subscribers.

Of the 803 subscriptions to these three lists, there are 453 unique addresses.

## LIBRARY UPDATE

Mike LaBonte reported for Anders Ekholm that Anders had provided a new libraries page. There are no new companies listed on the updated page, but it contains repairs of some stale links and a few detail updates.

## INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

The IEEE conference on Electrical Design of Advanced Packaging and Systems (EDAPS) is in Honolulu, HI December 14-16, 2016. EDAPS covers SI and PI issues, although IBIS does not affiliate with it.

http://edaps2016.org/

- Press Update

None.

- Related standards

None.

- IEEE DASC update

Michael Mirmak reported that DASC recently held their monthly meeting, and the next one is scheduled for January 5, 2017. He said that even though they manage SystemVerilog, VHDL AMS, etc., they have chosen not to meet at DesignCon or DAC. DVCon is now their primary meeting location, though they do have a close relationship to JEITA and occasionally meet in Japan. He said that they are open to attending other conferences if members request it. If you know experts in that area who might be interested in attending DesignCon, let them know that DASC is willing to meet there. Michael said he thought it would be good for IBIS membership to get together with DASC membership. He noted that Stan Krolikoski of DASC is soliciting feedback from their active members.

## SUMMIT PLANNING AND STATUS

- Asian IBIS Summit (Shanghai) review

The meeting took place November 11, 2016 at the Parkyard Hotel. Huawei Technologies was the primary sponsor and additional sponsors included Cadence Design Systems, IO Methodology, SPISim, Synopsys, Teledyne LeCroy, Xpeedic Technology and ZTE Corporation. Mike LaBonte thanked Bob Ross, Lance Wang, and Anders Ekholm for their help organizing the Summits. He noted that Bob had invested significant effort to manage them. Mike said he thought the meeting went very well. Mike noted that presentations and booklets from the meeting are now available on the IBIS website. Bob Ross reported 112 attendees from 34 organizations. Bob noted a surplus of $1568 for the Shanghai Summit and a loss of $1644 for the Taipei Summit, for a net loss of $128. Mike noted that they poll attendees to find out their organizational background (EDA, chip vendors, IBIS users, etc.), and attendees in Shanghai were largely IBIS users. There were often significant interactions after presentations, and we may consider an introductory users workshop for next year. Lance noted that, based on feedback from attendees, an IBIS tutorial at the beginning of the schedule might encourage more attendees to show up early and attend all the presentations.

- Asian IBIS Summit (Taipei) review

The meeting took place November 14, 2016 at the Sherwood Hotel. Cadence Design Systems, IO Methodology, Peace Giant Corporation, Synopsys and Xpeedic Technology were sponsors. Bob Ross reported 59 attendees from 26 organizations. Mike LaBonte noted that this meeting was also largely made up of IBIS users. He noted that we have vendor tables at the Summits in Shanghai and Taipei, and that sponsors often have tables and these can foster good interactions during breaks in the schedule.

- Asian IBIS Summit (Tokyo)

The meeting took place November 18, 2016. Primary sponsors were JEITA and the IBIS Open Forum. Additional sponsors were ANSYS, Inc., Cadence Design Systems, Cybernet Systems, Keysight Technologies, Mentor Graphics Corporation, MoDeCH, Inc., Toshiba Corporation and ZUKEN, Inc. Mike LaBonte noted that this meeting is run by JEITA. The morning workshop JEITA gave this year was on AMI. Bob Ross reported 106 attendees from 69 organizations. Mike LaBonte noted good interactions after presentations. One presentation “IBIS Model – the Thankworthy Technology” inspired lots of discussion. It was a discussion, with no conclusion, about some points relative to IBIS. One point was that there are tools that can extract a SPICE model for parts directly, but IBIS models took actual resources to develop. The author Kusunoki-san was looking for ideas about what could be done. One statement was that IC vendors have become hesitant to invest in producing IBIS models. Someone else commented that people have to put pressure on IC vendors to do it, because IBIS models are useful to end users.

- DesignCon IBIS Summit

Mike LaBonte noted that he had been in communication with UBM and would be sending them a signed barter agreement. As in years past, it states that UBM is to provide a meeting room and some promotion, and we provide some promotion as well. Mike noted that we had not yet voted to hold the DesignCon IBIS Summit, but in anticipation of doing so he had worked on the barter agreement. He said it was not yet clear whether our meeting room would be at the Santa

Clara Convention Center itself, or if it would be in the Hyatt as it had been last year. Radek Biernacki noted that last year's Hyatt room had been a bit too small. Mike agreed and said he was trying to get a room at the convention center, but he wasn't sure if it was at the Hyatt last year because DesignCon had officially ended the day before the IBIS Summit and released the convention center. Bob Ross moved for a vote on the previous motion to hold a Summit meeting at the DesignCon 2017 conference on the Friday after the event, February 3, 2017, with costs not to exceed $10,000. Radek seconded the motion.

The roll call vote tally was:
ANSYS – yes
Broadcom – yes
Cadence – yes
CST – yes (by email)
GLOBALFOUNDRIES – yes
IBM – yes
Infineon Technologies AG – yes (by email)
Intel – yes
IO Methodology – yes
Keysight Technologies – yes
Mentor Graphics – yes
Micron – yes (by email)
Signal Integrity Software – yes
Synopsys – yes
Teraspeed Labs – yes.

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

Bob Ross noted that he would begin soliciting sponsors for the DesignCon IBIS Summit.
Mike LaBonte noted that the first announcement for the DesignCon IBIS Summit would be sent out today.

- SPI IBIS Summit

Bob Ross stated that we have held the European IBIS Summit at SPI for the past 19 years, and he hoped we would continue. He noted that we have started getting quotes for the event. Bob moved to schedule a vote, to be held at the next IBIS Open Forum meeting, to hold a half day European IBIS Summit at SPI on Wednesday, May 10, 2017, with costs not to exceed $3000. Lance Wang seconded. There were no objections. Bob noted that the initial quote for this year had come in at €1500, as opposed to €1200 last year, but that the exchange rate was favorable. Typically, sponsorship covers the entire cost of this Summit.

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. Mike noted that the meeting on December 6, 2016 is cancelled. The group continues to work on development of ibischk.

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

http://www.ibis.org/ibischk6/ibischk_6.1.1_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 discussed relaxation of file name rules (BIRD 186) and the BIRD 147 backchannel proposal recently. Arpad noted that the meeting on December 27, 2016 is cancelled.

Task group material can be found at:

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

## INTERCONNECT TASK GROUP

Michael Mirmak reported that the group is meeting on Wednesdays at 8:00 a.m. PT. The group has recently discussed new introductory text and an additional set of technical issues regarding whether incomplete interconnect paths should be considered.

Task group material can be found at:

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

## EDITORIAL TASK GROUP

Michael Mirmak reported that the group remains suspended.

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 an IBIS Board meeting is scheduled for December 9, 2016 to discuss this. He hoped to have something for general review soon.

The document can be found at:

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

- SAE/EIA-STD-656-B listed as reaffirmed on October 26, 2016 (IBIS 4.2)

Mike LaBonte noted that SAE has accepted our reaffirmation, which we voted to approve at the October 26, 2016 IBIS Open Forum meeting. SAE will ask us to revisit this in five years.

- 2017 Membership dues

Bob Ross moved to set the 2017 dues at $900 per organization, maintaining the current rate. He noted the we are currently operating with comfortable margins and there is no need for an increase. He noted that the DesignCon IBIS Summit is one instance in which sponsorship for the IBIS Summit does not cover the entire expense, so we rely on the margin in the dues funds to help cover part of the meeting. Radek Biernacki seconded the motion.

The roll call vote tally was:
ANSYS – yes
Broadcom – yes
Cadence – yes
GLOBALFOUNDRIES – yes
IBM – yes
Intel – yes
IO Methodology – yes
Keysight Technologies – yes
Mentor Graphics – yes
Signal Integrity Software – yes
Synopsys – (did not vote)
Teraspeed Labs – yes.

The roll call vote concluded with a vote tally of Yes – 11, No – 0, Abstain – 0. The motion passed. Bob Ross noted that he will instruct SAE to begin invoicing member organizations in late December.

## BIRD186: FILE NAMING RULES

Walter Katz reviewed the new BIRD. He noted that current IBIS file name rules stipulate lower-case only, no slashes (“/”), and other restrictions. In the current day, he felt the lower case restriction was onerous. In addition, for AMI and for upcoming Interconnect models, there may often be many files associated with a given model. It can be cumbersome to have to place all of those files in a single directory, and can lead to collisions and other maintenance problems. Allowing the use of “/” in file name quantities allows for related files to be placed in a subdirectory of the IBIS file itself. The new BIRD allows longer filenames, upper and lower case, and “/” characters for subdirectories. In addition, in several places the IBIS specification talked about path names, but these were not really defined. The new BIRD states that path names follow the same rules as file names, except that they refer to a directory. When any IBIS file references another file, the path names given in the IBIS file are always relative to the directory that contains the IBIS file.

Lance Wang asked for confirmation as to whether backslashes ("\") and spaces are allowed in filenames with the new BIRD. Walter confirmed that backslash "\" is not allowed, and only forward slash can be used as a path delimiter in IBIS files. Walter said spaces are still not allowed in file names because space is a delimiter within IBIS. He noted that AMI had defined strings in double quotes, but IBIS in general did not have quoted strings and relied on space as a delimiter. Arpad Muranyi and Lance noted that parameters in [External Model]s might be another example of quoted strings in IBIS files.

Mike LaBonte asked which kinds of file names allowed slashes. Walter noted that slashes were allowed in any file name except the value of the [File Name] keyword itself. Walter also noted that "../" is not allowed in file names in the IBIS file because it implies a directory that is not a subdirectory of the one containing the file. However, there are cases in which the EDA tool creates path names that get passed to an AMI shared object. In those cases, the EDA tool needs the flexibility to pass any path it wants, so there are no "subdirectory only" restrictions. The restriction disallowing "../" applies only to the paths that appear in the IBIS file itself. We are only specifying the subdirectories-only rule for the distribution of the IBIS model itself.

Mike observed that requirement 4 in the Definition of the Issue section contained a typo and was confusing. Walter said the wording of that requirement was a remnant of the approach taken in the original draft of the proposal, in which file names and path names were not defined separately. In this draft, they are defined separately so that requirement could be reworded. Mike suggested that it would be helpful to add a note to requirement 4 citing the AMI Supporting_Files parameter as something that required path names.

Mike noted that this BIRD will now appear in the BIRDS Eligible for Vote section of the agenda.

## BIRD147.4: BACK-CHANNEL SUPPORT

Bob Miller reviewed the differences between BIRD147.3 and 147.4. He noted that the only change was to the BCI_ID parameter section, which had been reworded to align more succinctly with BIRD186. The text now refers to file name as described in Paragraph 3 of Section 3. Bob noted that BCI_ID lets the EDA tool provide the executable models with a namespace where they can create message files for the Tx and Rx to communicate. That namespace is exclusive to each channel in order to avoid collisions. BCI_ID provides the common meeting location for the models that might need to communicate. Because the various models on a channel may be located in different directories, it is possible the EDA tool would have to set different values into the models' BCI_ID parameters in order to point them to the same common location.

Mike LaBonte noted that this BIRD will now appear in the BIRDS Eligible for Vote section of the agenda.

## BIRD184.1: MODEL_NAME AND SIGNAL_NAME RESTRICTION FOR POWER AND GND PINS

(see BIRD 185.1 below)

### BIRD185.1: SECTION 3 RESERVED WORD GUIDELINE UPDATE

Mike LaBonte noted that BIRDs 184.1 and 185.1 had both been scheduled for a vote previously, but motions to defer the vote on each of them had passed. Bob Ross said he wanted to hold off on these two BIRDs until we had time to review comments from Michael Mirmak. Bob moved that both 184.1 and 185.1 be sent back to the ATM task group for further discussion. Michael Mirmak 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.

### BIRD158.3: AMI TOUCHSTONE ANALOG BUFFER MODELS

Discussion was tabled.

### BIRD161.1: SUPPORTING INCOMPLETE AND BUFFER-ONLY [COMPONENT] DESCRIPTIONS

Discussion was tabled.

### BIRD163: INSTANTIATING AND CONNECTING [EXTERNAL CIRCUIT] PACKAGE MODELS WITH [CIRCUIT CALL]

Discussion was tabled.

### BIRD164: ALLOWING PACKAGE MODELS TO BE DEFINED IN [EXTERNAL CIRCUIT]

Discussion was tabled.

### BIRD165: PARAMETER PASSING IMPROVEMENTS FOR [EXTERNAL CIRCUIT]S

Discussion was tabled.

### BIRD166: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW

Discussion was tabled.

### BIRD181.1: I-V TABLE CLARIFICATIONS

Discussion was tabled.

## IBISCHK6 PARSER AND BUG STATUS

Bob Ross noted that executables for IBISCHK 6.1.3 had been uploaded.  Bob said he would release the official source code to parser code licensees later that day.  Bob and Mike LaBonte noted that there was one question about the Ubuntu 32 executable.  It seems to work properly, but its date stamp of October 26, 2016 seems too early.  Mike also noted a change to the website.  There are now links to individual executables or a link to a .zip file containing all of them.  Bob noted that BUGs 174 – 180 are addressed by this release.  A new BUG184 has been filed, and it will be classified at the next meeting.

## NEW TECHNICAL ISSUES

None.

## NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held December 16, 2016.  A vote is scheduled for the next meeting on whether to hold the European IBIS Summit at SPI on Wednesday, May 10, 2017.  The following IBIS Open Forum teleconference meeting will tentatively be held January 6, 2017.

Bob Ross moved to adjourn.  Michael Mirmak seconded the motion.

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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 11, 2016 | November 14, 2016 | November 18, 2016 | December 2, 2016 |
|---|---|---|---|---|---|---|
| ANSYS | User | Active | - | - | X | X |
| Broadcom Ltd. | Producer | Inactive | - | - | - | X |
| Cadence Design Systems | User | Active | X | X | X | X |
| Cisco Systems | User | Inactive | X | - | - | - |
| CST | User | Inactive | - | - | - | - |
| Ericsson | Producer | Active | X | X | X | - |
| GLOBALFOUNDRIES | Producer | Inactive | - | - | - | X |
| Huawei Technologies | Producer | Inactive | X | - | - | - |
| Infineon Technologies AG | Producer | Inactive | - | - | - | - |
| IBM | Producer | Inactive | - | - | - | X |
| Intel Corp. | Producer | Active | X | X | - | X |
| IO Methodology | User | Active | X | X | - | X |
| Keysight Technologies | User | Active | - | - | X | X |
| Maxim Integrated | Producer | Inactive | - | - | - | - |
| Mentor Graphics | User | Active | - | - | X | X |
| Micron Technology | Producer | Inactive | - | - | X | - |
| Signal Integrity Software | User | Active | X | X | X | X |
| Synopsys | User | Inactive | X | - | - | X |
| Teraspeed Labs | General Interest | Inactive | - | - | - | X |
| Xilinx | Producer | Inactive | - | - | X | - |
| ZTE | 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.