

IBIS Chair's Report

Randy Wolff

Micron Technology

Chair, IBIS Open Forum

DesignCon 2022 IBIS Summit

Santa Clara, CA

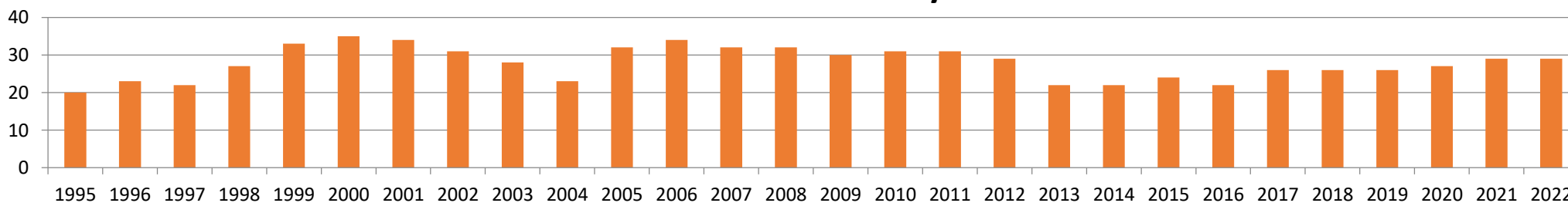
April 8, 2022



29 IBIS Members (Organization-based)



Number of Members by Year



IBIS Officers June 2021- May 2022

Chair: *Randy Wolff, Micron Technology*

Vice-Chair: *Lance Wang, Zuken USA*

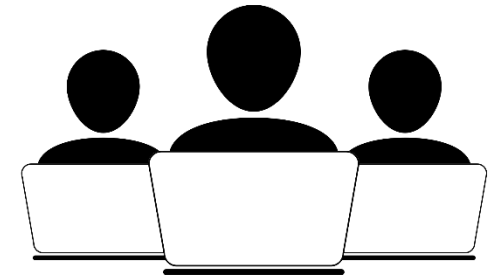
Secretary: *Mike LaBonte, MathWorks*

Treasurer: *Bob Ross, Teraspeed Labs*

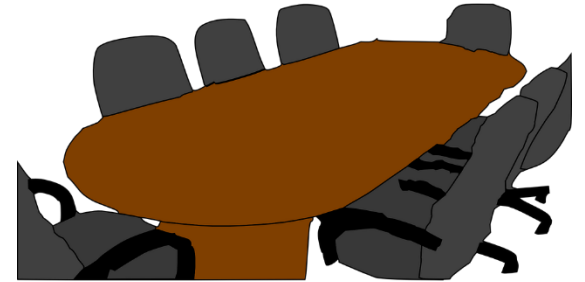
Librarian: *Zhiping Yang, Waymo*

Postmaster: *Curtis Clark, ANSYS*

Webmaster: *Steve Parker, Marvell*



IBIS Meetings



- Weekly teleconferences
 - Quality task group (Tuesdays, 09:00 PT)
 - Advanced Technology Modeling (ATM) task group (Tuesdays, 12:00 PT)
 - Interconnect task group (Wednesdays, 08:00 PT)
 - Editorial task group (suspended)
- IBIS Open Forum teleconference every 3 weeks (Fridays, 08:00 PT)
- IBIS Summit meetings (USA and international)
 - DesignCon, IEEE SPI, IEEE EMC+SIPI, Shanghai, Taipei, Tokyo (JEITA-organized)
- Participants: ~275 in 2021

SAE ITC

- SAE Industry Technologies Consortia is the parent organization of the IBIS Open Forum
- IBIS is assisted by SAE employees José Godoy, Phyllis Gross, and Laurie Strom
- SAE ITC provides financial, legal, and other services
- <https://www.sae-itc.com/>



Task Groups



- Advanced Technology Modeling Task Group
 - Chair: Arpad Muranyi, Siemens EDA
 - https://ibis.org/atm_wip/
 - Develop non-interconnect technical BIRDs
- Editorial Task Group
 - Chair: Michael Mirmak, Intel
 - https://ibis.org/editorial_wip/
 - Produce IBIS specification documents
- Interconnect Task Group
 - Chair: Michael Mirmak, Intel
 - https://ibis.org/interconn_wip/
 - Develop on-die/package/module/connector interconnect modeling BIRDs
- Quality Task Group
 - Chair: Mike LaBonte, MathWorks
 - https://ibis.org/quality_wip/
 - Oversee IBISCHK parser testing and development

BIRD = Buffer Issue Resolution Document

IBIS Milestones

I/O Buffer Information Specification

- 1993-1994 **IBIS 1.0-2.1:**
 - Behavioral buffer model (fast simulation)
 - Component pin map (easy EDA import)
- 1997-1999 **IBIS 3.0-3.2:**
 - Package models
 - Electrical Board Description (EBD)
- 2002-2006 **IBIS 4.0-4.2:**
 - Receiver models
 - AMS languages
- 2007-2012 **IBIS 5.0-5.1:**
 - IBIS-AMI SerDes models
 - Power-aware model

I/O Buffer Information Specification

- 2013-2015 **IBIS 6.0-6.1:**
 - PAM4 multi-level signaling
 - Power delivery package models
- 2019 **IBIS 7.0:**
 - Back-channel time-domain support
 - Interconnect modeling using IBIS-ISS and Touchstone
- 2021 **IBIS 7.1:**
 - DDRx IBIS-AMI support
 - Electrical Module Description (EMD)
 - IBIS-AMI back-channel statistical optimization

Other Work

- 1995: **ANSI/EIA-656 (IBIS 2.1 International standard)**
- 1999: **ANSI/EIA-656-A (IBIS 3.2 International standard)**
- 2001: **IEC 62014-1 (IBIS 3.2 International standard)**
- 2003: **Interconnect Model Specification (ICM 1.0)**
- 2006: **ANSI/EIA-656-B (IBIS 4.2 International standard)**
- 2009: **Touchstone 2.0**
 - Official Touchstone donated from Agilent/Keysight
- 2011: **IBIS-ISS 1.0 (Interconnect SPICE Subcircuit)**
 - Subset of HSPICE
- **IBISCHK:** IBIS file syntax parser
 - Current version 7.1.0
 - Source code available for purchase
 - Compiled executables available free of charge
- **TCHK2:** Touchstone 2.0 file syntax parser
 - Current version 2.0.1
 - Source code available for purchase
 - Compiled executables available free of charge

Planning for IBIS Version 7.2

Current unofficial BIRD content for IBIS 7.2

BIRD ID	BIRD Title	Approval Date	Notes
211.4	IBIS AMI Reference Flow Improvements	April 1, 2022	IBIS-AMI
213.x	Extending IBIS-AMI for PAMn Analysis	Not approved	IBIS-AMI
216	Alphanumeric Pin Names	March 11, 2022	[Pin] clarification
217	Require Clocked Rx Models to Return Clock Times	March 11, 2022	IBIS-AMI
218	Designator Pin List Relaxation	Not approved	EMD
219	AMI Parameter Root Name Clarifications	Not approved	IBIS-AMI

Other BIRDs

BIRD ID	BIRD Title	Expected Status
166.4	Resolving problems with Redriver Init Flow	To be rejected (in favor of BIRD211.4)
181.1	I-V Table Clarifications	Delayed until future IBIS version
190	Clarification for Redriver Flow	To be rejected (in favor of BIRD211.4)
210	New Redriver AMI Flow	To be rejected (in favor of BIRD211.4)

What's Next for IBIS?

- IBIS Open Forum's highly collaborative task groups are up for the challenge of addressing the SI and PI demands of new signaling technologies:
 - Expanded system-level perspective
 - Clock/data relationships, timing information, equalization training
 - Improved Power Supply Induced Jitter modeling
 - Potential for IBIS to enable improved modeling/analysis of PDN
 - Voltage regulator models
 - Chip power models
 - 112Gbps SerDes and beyond
 - Interconnect Modeling
 - Touchstone 3.0
 - Pole/Residue support
 - Port naming
 - IBIS-ISS expansions

Participation in IBIS

- The success of IBIS depends on active participation and volunteering
- Bringing your ideas and talents to IBIS
 - Task groups for technical discussions and document editing
 - IBIS email reflectors
 - Open Forum teleconferences for event planning and voting
 - Summit presentations
 - IBIS Board and task group volunteering
 - Writing BIRDs – Buffer Issue Resolution Documents
 - Official method for submitting a proposed change to the IBIS specification
 - Many developed collaboratively in task groups
 - Discussed and voted on in Open Forum meetings



IBIS Website Resources

IBIS Summits

Task Group Info

Spec documents

BIRDs List

Email support

Syntax Parser

Downloads

The screenshot shows the IBIS Open Forum website. The left sidebar contains a navigation menu with the following items: **Upcoming Events**, **Past Summits**, **Open Forum** (with sub-items: Minutes, Regional Forums, China), **Task Groups** (with sub-items: ATM, Quality, Interconnect, Editorial), **Members** (with sub-item: Roster), **Specifications** (with sub-items: BIRDs, Models), **Support** (with sub-items: Model Review, Training), **FREE Tools**, **IBIS Parsers** (with sub-items: IBISCHK, IBISCHK Bugs, TSCHK, TSCHK Bugs), **IBIS Cookbook**, and **Accuracy Handbook**. At the bottom of the sidebar are **Site Map**, **About IBIS**, **Articles**, and **FAQ**. The main content area features a header "Welcome to the IBIS Open Forum", two "NEW" news items, a "Our Specifications" section with links to various documents, and a "Our Members" section displaying logos for companies like Analog Devices, Ansys, Cadence, Google, Intel, etc.

[Thank You]



IBIS Open Forum:

Web: <https://ibis.org>

Email: info@ibis.org

We welcome participation by all IBIS model makers, EDA tool vendors, IBIS model users, and interested parties.