IBIS Chair's Report

Douglas Burns
SI-Clarity LLC
Chair, IBIS Open Forum

European Hybrid IBIS Summit with IEEE SPI 2025
Gaeta, Italy
May 14, 2025

IBIS™

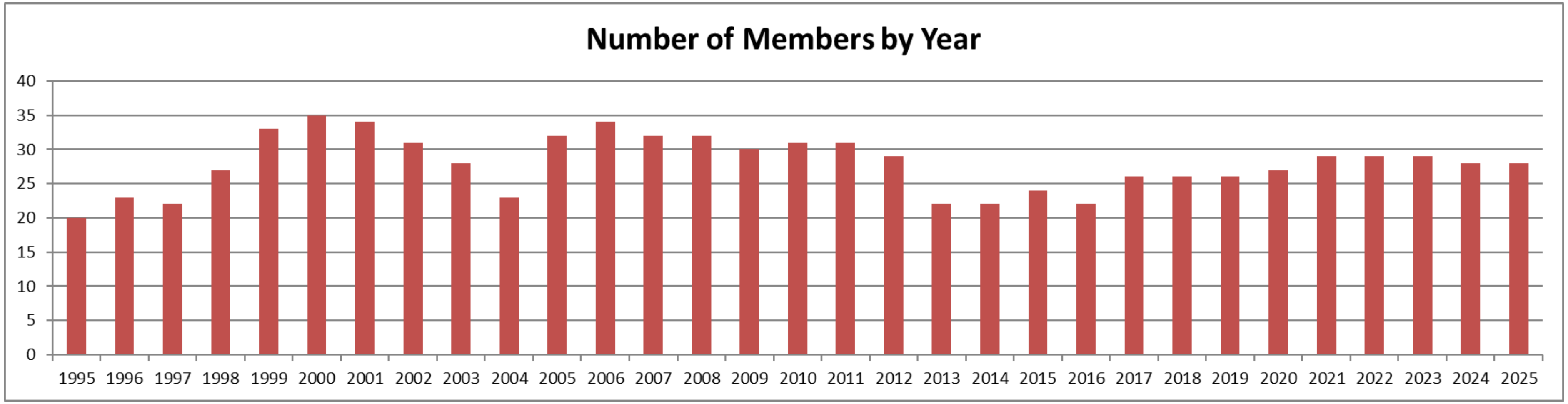
An SAE Industry Technologies Consortia Program

Organization

28 IBIS Members (Organization-based)


Our Members

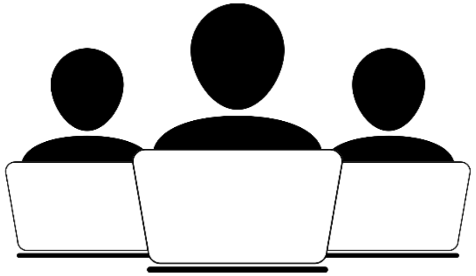
- ALTAIR
- AMD
- ANALOG DEVICES AHEAD OF WHAT'S POSSIBLE™
- Ansys
- APPLIED SIMULATION TECHNOLOGY
- Aurora System
- BROADCOM
- cadence
- ciena
- cisco
- DASSAULT SYSTEMES
- GE HealthCare
- Google
- HUAWEI
- infineon
- intel
- KEYSIGHT
- MARVELL
- MathWorks
- micron
- MISSOURI S&T
- SI-Clarity
- SIEMENS
- SIGNAL EDGE SOLUTIONS
- ST life.augmented
- SYNOPSYS
- ZTE
- ZUKEN


Number of Members by Year

Organization

IBIS Officers June 2024- May 2025

Elected



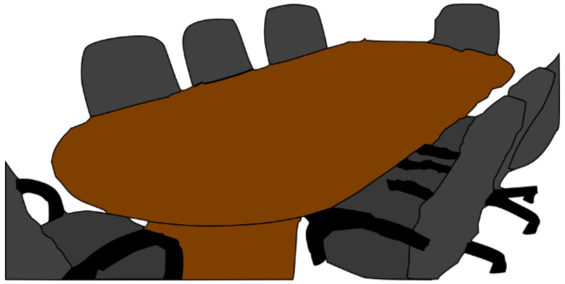
Acting Chair: *Douglas Burns, SI-Clarity LLC*
Vice-Chair: *Douglas Burns, SI-Clarity LLC*
Secretary: *Graham Kus, MathWorks*
Treasurer: *Randy Wolff, Siemens EDA*
Librarian: *Zhiping Yang, MST*
Postmaster: *Curtis Clark, ANSYS*
Webmaster: *Steve Parker, Marvell*

- University Relations: *Chulsoon Hwang, MST*
- IEEE DASC IBIS Liaison: *Michael Mirmak, Intel*

Appointed

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, Tokyo (JEITA-organized)
- Participants: ~290 in 2024



SAE ITC

- SAE Industry Technologies Consortia is the parent organization of the IBIS Open Forum
- IBIS is assisted by SAE employees Tammy Patton, Phyllis Gross, and Rich Demary
- SAE ITC provides financial, legal, and other services
- https://www.sae-itc.com/

An SAE International Affiliate

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
  - Acting Chair: Randy Wolff, Siemens EDA
  - https://ibis.org/quality_wip/
  - Oversee IBISCHK parser testing and development

BIRD = Buffer Issue Resolution Document

IBIS Milestones

I/O Buffer Information Specification

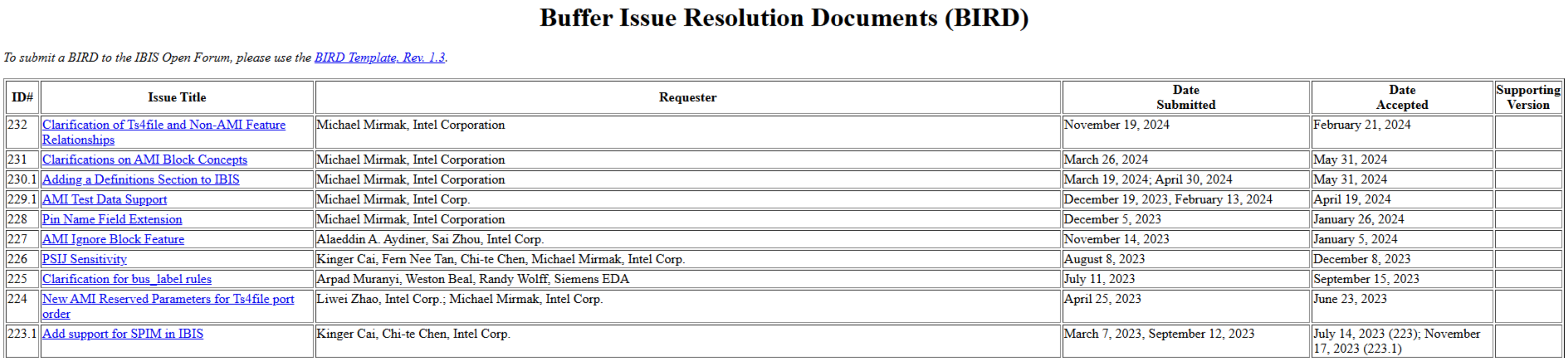
- 1993-1994 **IBIS 1.0-2.1**:
  - Behavioral buffer model (fast simulation)
  - Component pin map (easy EDA import)
- 1997-1999 **IBIS 3.0-3.2**:
  - Package models
  - Electrical Board Description (EBD)
- 2002-2006 **IBIS 4.0-4.2**:
  - Receiver models
  - AMS languages
- 2007-2012 **IBIS 5.0-5.1**:
  - IBIS-AMI SerDes models
  - Power-aware model
- 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
- 2023 **IBIS 7.2:**
  - Redriver simulation flow fixes
  - PAMn IBIS-AMI support
- 2025 IBIS 8.0
  - In progress

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
- 2024: **Touchstone 2.1**
  - Clarify S-parameter Definition
  - [End] Keyword Corrections and Other Editorial Changes
  - Per Port Reference Resistance on the Option Line
  - Clarify File Extension Rule for Touchstone 1.0 and 1.1 Files
- **IBISCHK**: IBIS file syntax parser
  - Current version 7.2.1
  - Source code available for purchase
  - Compiled executables available free of charge
- **TSCHK2**: Touchstone 2.1 file syntax parser
  - Current version 2.1.0
  - Source code available for purchase
  - Compiled executables available free of charge

Specification Development

- BIRDs planned for IBIS 8.0
  - https://ibis.org/birds/



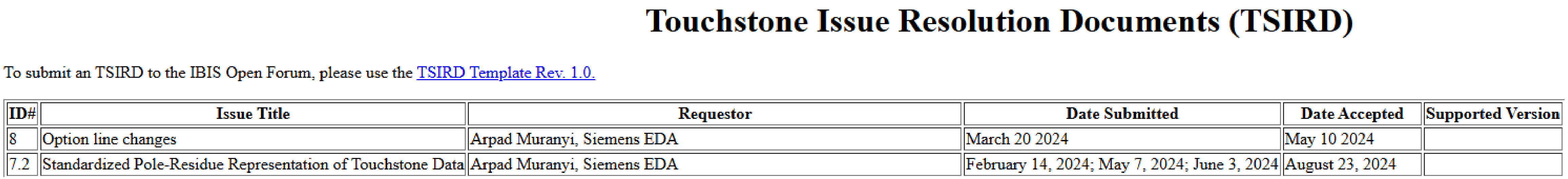
Buffer Issue Resolution Documents (BIRD)

To submit a BIRD to the IBIS Open Forum, please use the BIRD Template, Rev. 1.3.

ID#	Issue Title	Requester	Date Submitted	Date Accepted	Supporting Version
232	Clarification of Ts4file and Non-AMI Feature Relationships	Michael Mirmak, Intel Corporation	November 19, 2024	February 21, 2024	
231	Clarifications on AMI Block Concepts	Michael Mirmak, Intel Corporation	March 26, 2024	May 31, 2024	
230.1	Adding a Definitions Section to IBIS	Michael Mirmak, Intel Corporation	March 19, 2024; April 30, 2024	May 31, 2024	
229.1	AMI Test Data Support	Michael Mirmak, Intel Corp.	December 19, 2023, February 13, 2024	April 19, 2024	
228	Pin Name Field Extension	Michael Mirmak, Intel Corporation	December 5, 2023	January 26, 2024	
227	AMI Ignore Block Feature	Alaeddin A. Aydiner, Sai Zhou, Intel Corp.	November 14, 2023	January 5, 2024	
226	PSIJ Sensitivity	Kinger Cai, Fern Nee Tan, Chi-te Chen, Michael Mirmak, Intel Corp.	August 8, 2023	December 8, 2023	
225	Clarification for bus_label rules	Arpad Muranyi, Weston Beal, Randy Wolff, Siemens EDA	July 11, 2023	September 15, 2023	
224	New AMI Reserved Parameters for Ts4file port order	Liwei Zhao, Intel Corp.; Michael Mirmak, Intel Corp.	April 25, 2023	June 23, 2023	
223.1	Add support for SPIM in IBIS	Kinger Cai, Chi-te Chen, Intel Corp.	March 7, 2023, September 12, 2023	July 14, 2023 (223); November 17, 2023 (223.1)	

Specification Development

- Touchstone 2.1 specification passed January 2024
- Open TSIRDs:
  - https://app.ibis.org/tsirds/



Touchstone Issue Resolution Documents (TSIRD)

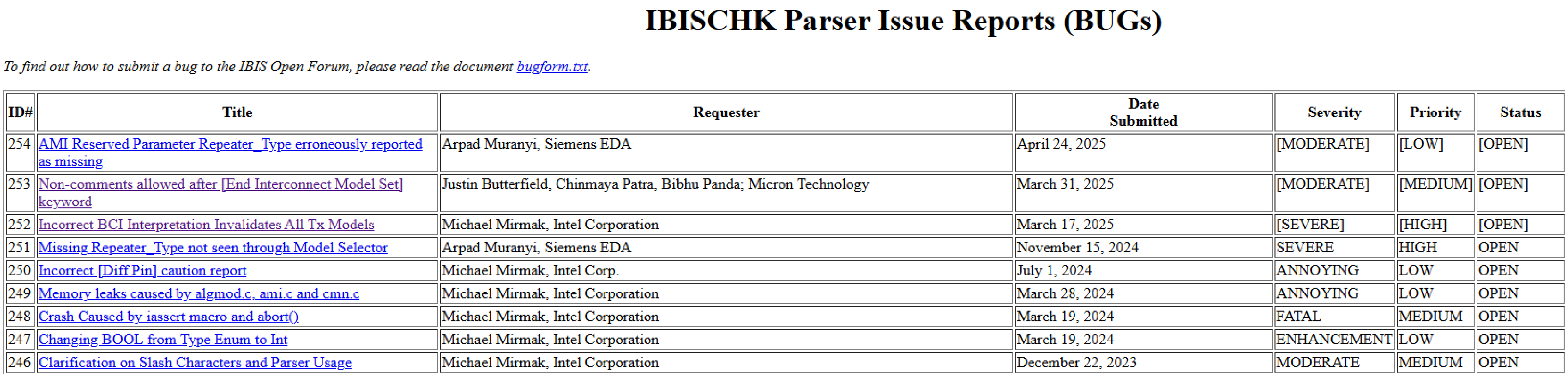
To submit an TSIRD to the IBIS Open Forum, please use the TSIRD Template Rev. 1.0.

ID#	Issue Title	Requestor	Date Submitted	Date Accepted	Supported Version
8	Option line changes	Arpad Muranyi, Siemens EDA	March 20 2024	May 10 2024	
7.2	Standardized Pole-Residue Representation of Touchstone Data	Arpad Muranyi, Siemens EDA	February 14, 2024; May 7, 2024; June 3, 2024	August 23, 2024	

IBIS Golden Parser

IBISCHK Development

- The latest parser (7.2.1) was delivered on December 21, 2023
- 9 Open BUGS (246 – 254)
  - https://ibis.org/bugs/ibischk/



IBISCHK Parser Issue Reports (BUGs)

To find out how to submit a bug to the IBIS Open Forum, please read the document bugform.txt.

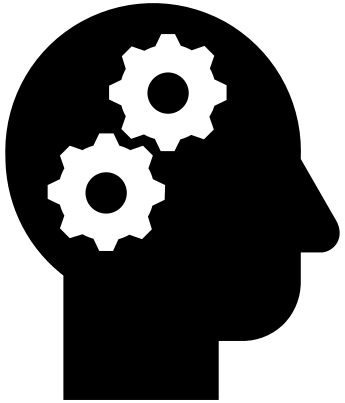
ID#	Title	Requester	Date Submitted	Severity	Priority	Status
254	AMI Reserved Parameter Repeater_Type erroneously reported as missing	Arpad Muranyi, Siemens EDA	April 24, 2025	[MODERATE]	[LOW]	[OPEN]
253	Non-comments allowed after [End Interconnect Model Set] keyword	Justin Butterfield, Chinmaya Patra, Bibhu Panda; Micron Technology	March 31, 2025	[MODERATE]	[MEDIUM]	[OPEN]
252	Incorrect BCI Interpretation Invalidates All Tx Models	Michael Mirmak, Intel Corporation	March 17, 2025	[SEVERE]	[HIGH]	[OPEN]
251	Missing Repeater_Type not seen through Model Selector	Arpad Muranyi, Siemens EDA	November 15, 2024	SEVERE	HIGH	OPEN
250	Incorrect [Diff Pin] caution report	Michael Mirmak, Intel Corp.	July 1, 2024	ANNOYING	LOW	OPEN
249	Memory leaks caused by algmod.c, ami.c and cmn.c	Michael Mirmak, Intel Corporation	March 28, 2024	ANNOYING	LOW	OPEN
248	Crash Caused by iassert macro and abort()	Michael Mirmak, Intel Corporation	March 19, 2024	FATAL	MEDIUM	OPEN
247	Changing BOOL from Type Enum to Int	Michael Mirmak, Intel Corporation	March 19, 2024	ENHANCEMENT	LOW	OPEN
246	Clarification on Slash Characters and Parser Usage	Michael Mirmak, Intel Corporation	December 22, 2023	MODERATE	MEDIUM	OPEN

Recent and Future Developments in IBIS

- IBIS Open Forum’s task groups are discussing these topics:
  - Expanded system-level perspective
    - Clock/data relationships, timing information, equalization training
  - Power Integrity focused modeling
    - Chip-level Standard Power Integrity Model (SPIM, BIRD223 accepted on July 14, 2023)
    - Improved Power Supply Induced Jitter modeling (PSIJ, BIRD226 accepted on Dec. 8, 2023, and BIRD220.2 accepted on April 4, 2025)
    - Generalized Power Integrity Model (PIM) discussions
  - Multi-level analog buffer modeling
  - Interconnect Modeling
    - Touchstone 3.0 with Pole/Residue and port mapping support
    - IBIS-ISS expansions
  - Quality and Testing
    - AMI Test Data Support (BIRD229.1)
  - Specification Clarification
    - Adding a Definitions Section to IBIS (BIRD230)
    - Clarifications on AMI Block Concepts (BIRD231)
- What else should we be looking at? Bring your ideas!

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



Participation

IBIS Website Resources

IBIS Summits

Task Group Info

Member FAQ

Spec documents

*IRDs

Email support

Syntax Parser Downloads

Upcoming Events
Past Summits

Open Forum
- Minutes

Regional Forums
- China

Task Groups
- ATM
- Quality
- Interconnect
- Editorial

Members
- Membership FAQ
- Roster

Specifications
- BIRDs
- ISSIRDs
- TSIRDs

Models

Support
- Model Review
- Training

FREE Tools

IBIS Parsers
- IBISCHK
- IBISCHK Bugs
- TSCHK
- TSCHK Bugs

IBIS Cookbook
Accuracy Handbook
IBIS Quality Spec

Site Map

About IBIS
- Officers
- Articles
- FAQ

Welcome to the IBIS Open Forum

NEW TSCHK2.1.0 parser is released and available for free executable download

NEW Touchstone 2.1 Specification is approved and available for download

Our Specifications

I/O Buffer Information Specification	(IBIS 7.2) (SAE/EIA-STD-656-B) (IEC-62014-1)
IBIS Interconnect Modeling Specification	(ICM 1.1) (SAE/GEIA-STD-0001)
IBIS Interconnect SPICE Subcircuit Specification	(IBIS-ISS 1.0)
Touchstone® File Format Specification	(Touchstone 2.1)

Our Members

The IBIS Open Forum is the industry organization responsible for the management of the IBIS specifications and standards including IBIS, IBIS-AMI, IBIS-ISS, ICM, and Touchstone. The Open Forum meets every three weeks by teleconference. Membership is open to all interested companies. If you are interested in joining the IBIS Open Forum, please contact the IBIS Open Forum Chair or any of the IBIS Officers.

IBIS.org

[Thank You]

An SAE Industry Technologies Consortia Program

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.