IBIS Chair’s Report and Roadmap

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IBIS Summit
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http://www.eda.org/ibis/
http://www.eigroup.org/ibis/

Agenda

* Organizational Health
* Key Recent Events
* Status of IBIS & ICM Today
* Short-term Direction of IBIS
* IBIS Timeline
* Long-term Issues
* Thanks to Key Participants
* Questions
* Backup – Linking ICM and IBIS
Organization Health

* Membership
  - IBIS Open Forum has 27 members
  - Four renewals are under discussion
  - Renewal window closes June 24

* ICM and IBIS Parsers
  - New ICM licensing policy: US$1000 per license
  - Previous GPL license highly restrictive for EDA community
  - Intent now is to maintain consistency with IBISCHK parser license
  - IBISCHK parser fee now US$2500

* Finances
  - Income: US$20,168 from members, US$1024 from parser
    - Non-GEIA outlays: parser development ($7600), Summits

Membership trend is good, but additional parser purchases needed

Key Recent Events

* ICM 1.1 Draft completed January 28
* IBIS 4.1 Parser released March 14
* ICM 1.1 Parser released March 16
  - Will be officially announced at specification approval

* JEITA IBIS Conference
  - Held in Tokyo at JEITA Headquarters March 24
  - Very successful!
    - ~40 attendees from many parts of Japanese industry
    - US delegates S. Huq, M. Mirmak and L. Wang
  - Thanks to Atsuji Ito, Takeshi Watanabe and Norio Matsui for strong support!
Status of IBIS & ICM

* IBIS
  - IBISCHK4 now at version 4.1.1
    - Supports IBIS 4.1 plus one bug fix
    - Thanks to Jon Powell for parser development and support!
  - Free executables are now available on-line
  - IBIS Quality Subcommittee now assembling list of parser improvements to be proposed for next release

* ICM
  - ICM 1.1 draft specification undergoing “readings”
    - Includes frequency-dependent RLGC
    - Third “reading” at June 24 Open Forum
    - Approval vote scheduled for July 15 Open Forum
  - ICM 1.1 parser now available on-line
    - “Unofficially” supports ICM 1.1 features
    - Thanks to Kelly Green for parser development and support!

* Source code licenses for both parsers may be purchased from the IBIS Open Forum

Short Term Direction

* Over the next six months…
  - Complete ICM 1.1 approval
    - After approval vote, EIA and ANSI balloting
  - Distribute IBIS 4.0 Cookbook
    - A free guide to making IBIS models
    - Improves on IBIS 2.1 Cookbook (1997)
    - Describes extraction of differential buffer data (examples: Serial ATA, PCI Express®)
    - Adds details on use of 3.2, 4.0 keywords (examples: [Diff Pin], [Driver Schedule])
    - Estimated ready for Open Forum review July 15
  - Complete draft of IBIS 4.2
    - What should it include? See “Long Term Direction”
IBIS Timeline

Not Shown
- July, 2002: IBIS 4.0 approved
- Sep., 2003: ICM 1.0 approved
- Jan., 2004: IBIS 4.1 approved

Spec Activities
- IBIS 4.1 Parser
- IBIS 4.1 Approval
- ICM 1.1 Proposal
- ICM 1.1 Cookbook
- IBIS 4.2 Proposal
- IBIS 4.2 Approval

Summits
- 2005 IBIS Summit at DAC
- DesignCon
- DesignCon East
- JEITA IBIS Conference

Regular summits in Asia starting in '06? Looking likely!

Short Term Direction

- **BIRD94**: Clarifications on [Diff Pin] Parameters
  - Corrects text, examples for [Diff Pin] keyword
  - At this point, technical changes are minor

- **BIRD95**: Power Integrity Analysis Using IBIS
  - Adds table for current from source through buffer
  - Adds RLGC values to describe buffer power-ground path

- **BIRD97/98**: Gate Modulation Effect
  - New parameters change I-V tables as supply voltages change
  - Example: Power_coeff_typ = 0.8
  - I-V table reduced by 8% for a 10% change in supply voltage
  - BIRD98 is table-based; BIRD97 is equation-based
Long Term Issues

* Link between ICM and IBIS
  – Need ICM for best description of power rail current data (BIRD95)
  – Many users want ICM for package modeling
  – Creating new syntax for ICM link is very difficult!
    * IBIS 4.0 assumptions are very limited
    * Each [Model] has ONLY one pin – no pad name!
    * Futures Committee developing working proposal

Long Term Issues

* IBIS 4.1 Cookbook
  – IBIS community needs guidance on behavioral modeling with AMS
  – IBIS 4.1 keywords can be confusing
  – See recent IBIS Reflector discussions

* What should the next revision of IBIS include?
  – Need power delivery (BIRD95, BIRD97/98) features
  – Need ICM-IBIS links soon
    * 4.1 specification actually implies ICM without naming it
  – User-defined measurements for [Ext. Circuit]?
    * Many tools need these for SI analysis
  – Major changes will increase cost of a new parser
Long Term Issues

* A path under discussion…
* IBIS 4.2 would…
  - Remove implied ICM support
  - “Clean up” language to save parser costs
    * BIRD94, BIRD99 and bug fixes only
* IBIS 5.0 would…
  - Add BIRD95, BIRD97/98
  - Add explicit support for ICM
  - Include user-defined measurements
  - Support [External Circuit] with [Model]
* Do we need these features earlier that 5.0?
* Do we need syntax for BIRD95, BIRD97/98 outside of AMS, macromodel languages?

Long Term Issues

* SPICE Macromodeling
  - What is the new syntax?
  - Can a proposal be developed quickly?
  - How does it relate to AMS?
  - Can it be more successful than transistor SPICE?
* Can IBIS 5.0 be “revolutionary?”
  - IBIS 1.1-4.0 syntax is very limiting
    * Examples: Package format, [Diff Pin], no pad names
  - Should IBIS 5.0 support all 1.1 – 4.0 features?

What does the IBIS baseline need to be for the next five years?
We must live with our choices!
Thanks to Key Players

* Our members and parser owners

- Actel
- Agere
- Agilent*
- AMD
- Ansoft
- Aplac*
- Applied Simulation Technology
- Cadence Design Systems
- Cisco
- Fluent
- Freescale
- Hitachi ULSI Systems
- Huawei
- IBM
- Intel
- Legend Design*
- LSI Logic
- Marvell
- Mentor Graphics
- Micron
- NEC
- Panasonic (Matsushita)
- Samtec
- Siemens
- Signal Integrity Software
- Sigrity
- Silego
- Silvaco*
- Synopsys
- Teraspeed Consulting Group
- Texas Instruments
- Xilinx
- Zuken

* non-member parser licensee

Thanks to Key Players

* Our board staff

- Syed Huq – Vice-Chair
  - especially for coverage during the Chair’s absence
- Randy Wolff – Secretary
  - handling official documents plus EIA/ANSI relations
- Lance Wang – Model Librarian
  - keeping our external IBIS model library up-to-date
- Bob Ross – Postmaster/”Parliamentarian”
  - maintaining reflectors and our institutional memory

… and of course to you, the IBIS Community!
Thanks for another great year!
ICM & IBIS

* We must handle these four cases
* Case 1 – Coupling

- [External Model]

![Diagram of Case 1 - Coupling]

Four Cases

* Case 2 – Wired-or or “mux”
  - Multiple pins, single [Model]
Four Cases

Case 3 – Power distribution
- Single model, single signal pin

Case 4 – Wired-or or “mux”
- Single pin, multiple [Model]s
**Packages Today**

* IBIS 3.2 & 4.0 Approach

- **[Model] iobuf**
  - implied!

- **[Package Model]**
  - implied!

- **[Pin]**
  - A1 name iobuf
  - A2 name GND
  - B1 name iobuff

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**What do we need?**

* The General Case…

- **[Model]**
  - Need explicit link to [Model] instance

- **[Model]**
  - Need explicit link to [Pin] instance

- **[Model]**
  - **[Pin]**
    - A1
    - B1
    - C1