Hybrid Asian IBIS Summit 2025, Japan
Discussion Room with IBIS Open Forum

2025/11/11

Theme

Discussion Room with IBIS Open Forum について

■ テーマ
SPIMの普及の方向性、現状について知りたい

■ 背景
- これまでPI解析に関してはデバイスの情報が十分に提供されていなかった。
- しかし、SPIMの登場により、必要な情報が定義され、モデルの流通性が高まることで、PI解析が容易に行われることに強く期待している。

■ 質問
- 何をどこまで出来るのか？（周波数ドメイン、タイムドメイン）
- どういう背景できたの？（なにが問題で、提案されたものなのか？）
- 現在どんなディスカッションをしているのか？
- SPIMの作成方法などを、紹介してもらう事はできますか？
- これまでに、どんな実績があるのでしょうか？

■ 起案者
- システム/半導体ベンダー

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Theme

Direction and Current Status of SPIM Adoption

Background

Until now, sufficient device information for PI analysis has not been provided. However, with the advent of SPIM, the necessary information has been defined, and we strongly hope that the widespread adoption of models will make PI analysis easier to perform.

Question

- ✓ **What kinds of PI analysis can be performed with SPIM? (Frequency domain, time domain)**
- ✓ **What was the background for developing SPIM? (What problem did it address, and what was proposed?)**
- ✓ **What discussions are currently taking place regarding SPIM?**
- ✓ **Could you introduce how to create SPIM?**
- ✓ **What achievements have been made so far in the creation and promotion of SPIM?**

Proposer

System Vendor/Semiconductor Vendor

Answer

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- **Question:**
  - ✓ **What kinds of PI analysis can be performed with SPIM? (Frequency domain, time domain)**
    何をどこまで出来るのか？（周波数ドメイン、タイムドメイン）

- **Answer:**
  - ✓ **The original BIRD 223.1 defines AC (frequency domain) and DC analysis only**
  - ✓ **The new proposal presented in this IBIS Summit supports AC (frequency domain), DC and TD (time domain) analysis**

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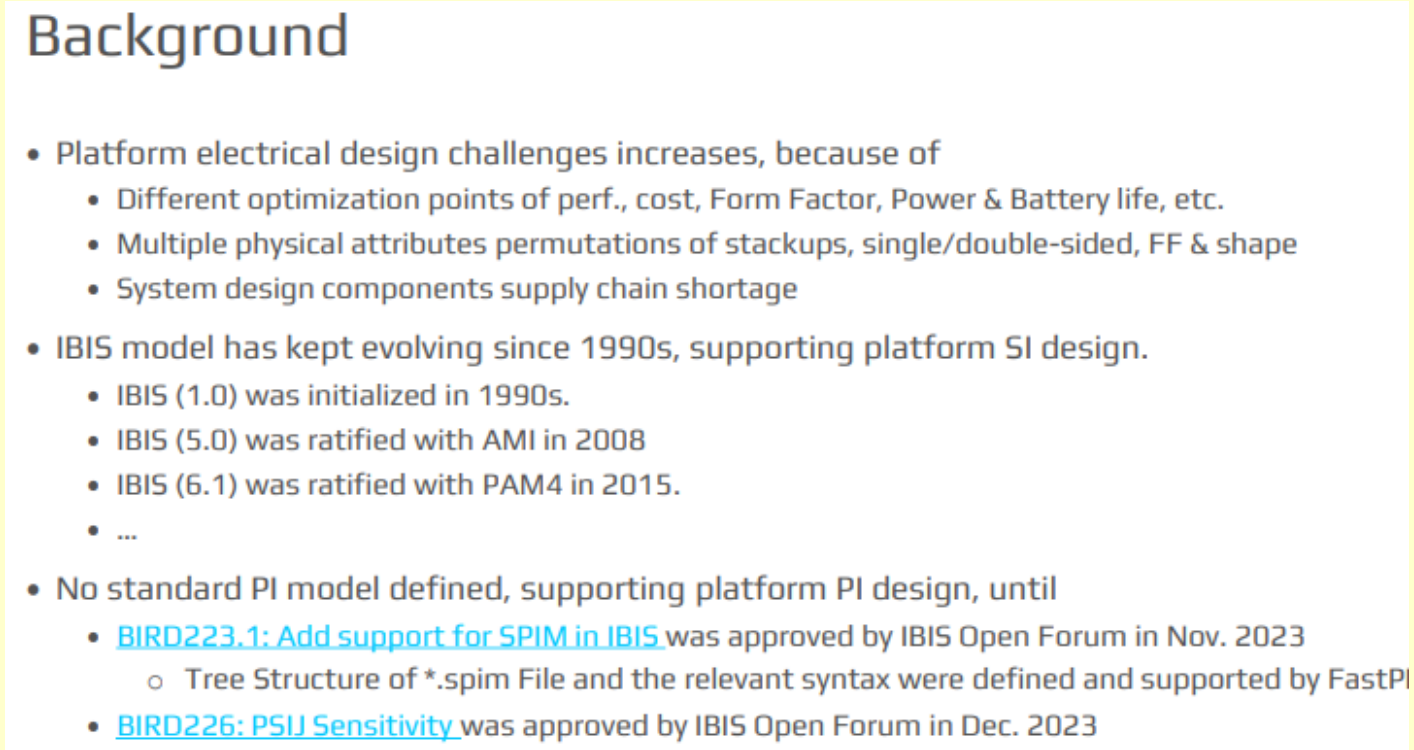
- **Question:**
  - ✓ **What was the background for developing SPIM? (What problem did it address, and what was proposed?)**
    どういう背景できたの？（なにが問題で、提案されたものなのか？）

- **Answer: From https://www.ibis.org/summits/aug24/**



Background

- Platform electrical design challenges increases, because of
  - Different optimization points of perf., cost, Form Factor, Power & Battery life, etc.
  - Multiple physical attributes permutations of stackups, single/double-sided, FF & shape
  - System design components supply chain shortage
- IBIS model has kept evolving since 1990s, supporting platform SI design.
  - IBIS (1.0) was initialized in 1990s.
  - IBIS (5.0) was ratified with AMI in 2008
  - IBIS (6.1) was ratified with PAM4 in 2015.
  - …
- No standard PI model defined, supporting platform PI design, until
  - BIRD223.1: Add support for SPIM in IBIS was approved by IBIS Open Forum in Nov. 2023
    - Tree Structure of *.spim File and the relevant syntax were defined and supported by FastPI
  - BIRD226: PSIJ Sensitivity was approved by IBIS Open Forum in Dec. 2023

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- **Question:**
  - ✓ **What was the background for developing SPIM? (What problem did it address, and what was proposed?)**
    どういう背景できたの？（なにが問題で、提案されたものなのか？）

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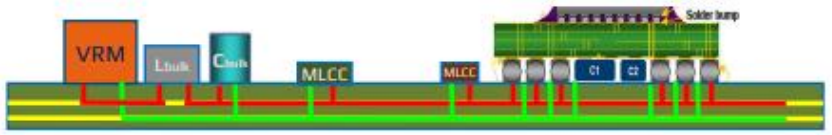
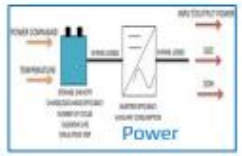
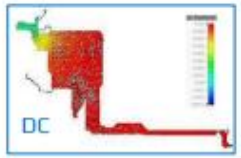
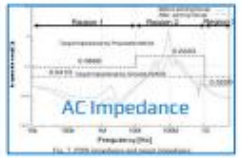
Objective

- ❑ Add Support in IBIS, for the analysis of system Power Delivery, including Power Consumption, Power Integrity of AC, DC & Transient, and the Co-simulation of SI & PI.
  - Leverage & enhance the existing IBIS keywords at most
  - Focus on the coverage beyond modeling accuracy
- ❑ Domains:
  - The power consumption & loss
    - from charger to on-die loading
  - The AC impedance, DC
  - The Transient,
    - From buck/booster to on-die loading, with decoupling capacitances on-BRD/in-PKG/on-die









* Courtesy to the authors of the pictures from internet.

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- **Question:**
  - ✓ **What discussions are currently taking place regarding SPIM?**
    現在どんなディスカッションをしているのか？

- **Answer:**
  - **BIRD 223.1 was originally planned to be included in the upcoming IBIS 8.0 specification**
  - **The IBIS Editorial Task Group found a few problems in BIRD 223.1 that needed to be resolved**
  - **As a result, BIRD 223.1 was removed from the draft of IBIS 8.0**

  - **The IBIS Advanced Technology Modeling (ATM) Task Group began working on the issues**
    - Initially this work only attempted to fix the problems in BIRD 223.1 without making any technical changes
    - As discussions progressed, additional new technical features were requested / proposed
  - **The presentation given in this IBIS Summit is the result of that work**

  - **However, the authors of BIRD 223.1 still wish to fix the problems found in BIRD 223.1 and bring it to the IBIS Open Forum for consideration in IBIS 8.1**

  - **Consequently, a decision will have to be made on which of the two proposals should be adopted in IBIS 8.1**

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- **Question:**
  - ✓ **Could you introduce how to create SPIM?**
    SPIMの作成方法などを、紹介してもらう事はできますか？

- **Answer:**
  - ✓ **Currently we are not aware of any automation (scripts or software) that generates SPIM files**

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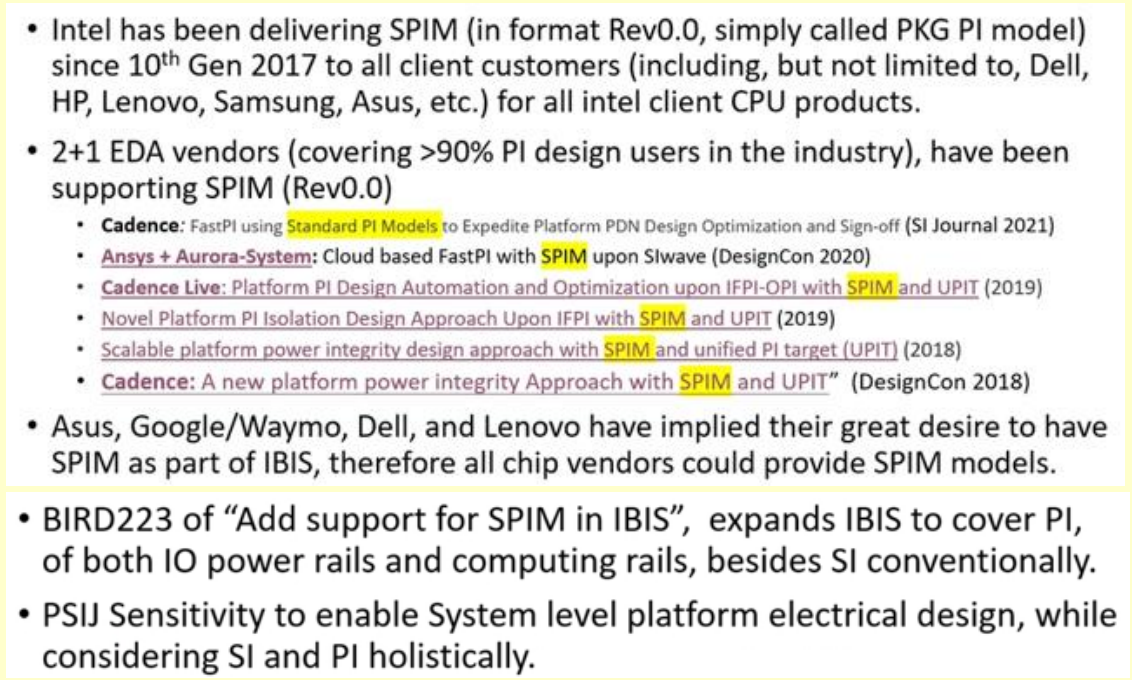
- **Question:**
  - ✓ **What achievements have been made so far in the creation and promotion of SPIM?**
    これまでに、どんな実績があるのでしょうか？

- **Answer from a private conversation with Kinger Cai on May 2, 2025:**



  - ✓ **More presentations by Kinger Cai can be found at https://sites.google.com/view/fastpi/home**

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