Ecosystem and R&D Collaboration Panel Discussion (3D-IC)

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3D-IC ecosystem
Lot of players, complex interactions

Designers: analysis-driven design and stacking methodology

System house: multi-die integrated package prototyping

Foundry / IDM / OSAT / interposer / package: rules, stacking, layers, and modeling

Everyone: cost models, DFM / yield / reliability and redundancy

3D-IC Ecosystem

SoC Vendor

EDA and IP

Memory Vendor

IDM and Foundry

Interposer, Packages

Mfg. & Test Equipment

OSAT

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Collaborations – critical to success
Collaboration is critical
Interface management system for 3D-IC

From FAB, OSATs and Materials Suppliers

“2D” PDK Data
+
Wafer, TSV, Interposer, Passives and Packages:
(Electrical, Thermal and Mechanical Characteristics)

“3D Ready Exchange (PDK)”

From EDA Tools

Major 3D Design Steps

3D System Design and Partitioning

3D-aware IC Layers Implementation

3D Layers and Stack Verification for Design “Hand Off”

Exchange Format Standards Between Companies Needed

Interoperability Between Tools Needed

Manufacturing
Bringing 3D-IC to mainstream...

Technology – Numerous architectural possibilities
System level hardware-software partitioning and planning
Test and Assembly, probing, thin wafer handling…..

Business Model
Virtual IDM : Foundry/OSAT model: Who builds it? Who owns reliability/yield?
Profit and responsibility sharing

Standards
Standards in technology, in Applications, in design & in handoff