



Global Business Council

2009 Spring Conference
March 8-9, 2009

Radisson Fort McDowell, Scottsdale, AZ
www.imaps.org/programs/gbc09spring.htm

Supply Chain Development for 3D Packaging

12 Industry leaders present on the global business issues critical to 3D packaging and 3D IC based products. Including key supply chain requirements in commercialization of TSV technologies.

Keynote Addresses:

Jan Vardaman, President of TechSearch International

Bill McClean, President of IC Insights

Conference Co-Chairs:

Lee Smith, V.P. of Business Development, Amkor

Dr. Jie Xue, Director Technology and Quality, Cisco

Covering the Business Side of Microelectronics & Packaging

GBC Charter

- **PURPOSE:** The IMAPS Global Business Council is an initiative within IMAPS which leads the development and communication of the **business view** for the IMAPS corporate membership.
- **MISSION:** The mission of the GBC is to **provide value to IMAPS corporate membership** by focusing on the business side of technology for microelectronics and packaging. This will be accomplished by development and presentation of events highlighting relevant business topics of interest to corporate membership.

GBC Steering Committee

- Chair; Greg Caswell, ReactiveNano Technologies

Steve Adamson, Asymtek

Jeffrey Demmin, Tessera

Mike Ehlert, Barry Industries

Harry Kellzi, Teledyne

Mark King, Micropac Industries

Arne Knudsen, Kyocera

John Menaugh, Dupont

Gary Nicholls, Cookson Electronics

Matt Perry, Engent

Jim Rates, ChipSupply

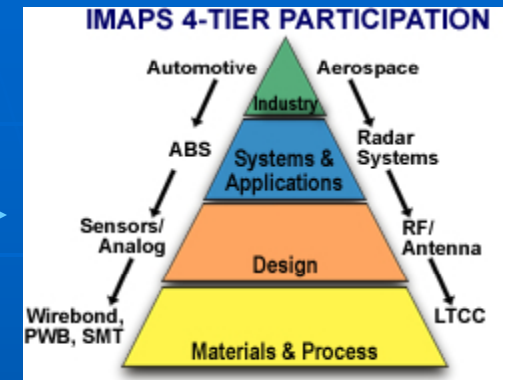
Laurie Roth, Laurie Roth Marketing

Lee Smith, Amkor

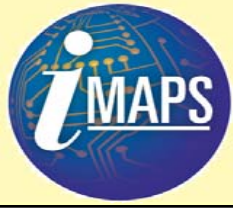
Mariel Stoops, NTK Technologies

Jie Xue, Cisco Systems

GBC Key Initiatives



- Support the "4-Tier" focus
- Sponsor Marketing Forum at IMAPS Symposium and at IMAPS Europe Conferences
- Business session at key IMAPS ETW, ATW, and select conferences
- Coordinate Roadmap Initiative with NTC
- Support for Regional GBC Events
- C-Level Networking
- Annual GBC Spring Conference in AZ



Morning Agenda

8:00 – 9:00 Opening Remarks and Keynote

Jan Vardaman – President, TechSearch International

“Market Demand, Applications and Requirements for 3D Packaging and 3D ICs”

Session 1: 9:00– 2:00

Supply chain collaboration - from research and development to commercialization of 3D ICs with through Si via (TSV) interconnects.

1) “Benefits of Supply Chain Collaboration: TSV Integrated Solutions and Advancements with EMC3D Consortium for Achieving Cost Effective 3D Integration”

Speaker: Rozalia Beica – Applications Director 3D Interconnect, Semitool

2) “3D Integration Technology and the Micro-Electronics Supply Chain, Barriers and Solutions”

Speaker: Eric Beyne – Director Advanced Pkg and Interconnect Center, IMEC

3) “TSS/TSV Process Partitioning to Leverage Supplier Capability and to Provide Maximum Sourcing Flexibility”

Speaker: Tom Gregorich – VP of Packaging, Qualcomm.

4) Supplier reqmts for uP 3D IC products with TSV

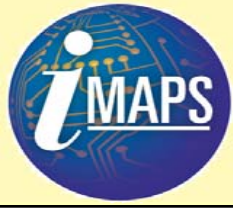
Speaker: Jean Trehella, Director of Packaging Development, IBM

5) “Lessons learned in quest to be first/early commercial supplier of 3D IC product. Obstacles faced from lack of 3D IC / TSV supply chain infrastructure.”

Speaker: Bob Patti CTO, Tezzaron Semiconductor

12:00 – 1:00 Lunch IC Market Keynote “Poised for Quick Rebound”

Speaker: Bill McClean, President IC Insights



Session 2: 1:00 – 5:00pm

3D Packaging and TSV Roadmap - Supply Chain Development

6) “3D Electronics and System in Package integration

Where it’s at --- Where it’s going---“

Speaker: W. R. “Bill” Bottoms, CEO, NanoNexus

7) “Key Requirements for 3D Packaging Using TSVs”

Speaker: Robert Lanzone VP Advanced Pkg Development, Amkor

8) Materials requirements and development issues for 3D Packaging and TSV

Speaker: Leo Linehan, Global Marketing Director, Rohm & Haas

9) “Front End/Back End: Morphing the Manufacturing Model for Tough Times.”

Speaker: Jim Walker, Research VP – Semiconductor Mfg, Gartner Dataquest

Supply chain collaboration, multi sources of supply – Lessons learned from 3D Packaging- based products.

10) “3D pkg trends in multimedia handsets from teardown analysis”

Speaker: David Carey, President Portelligent

11) “Case study on collaboration in development - deployment of next generation high density package-on-package (PoP) technology with through mold via (TMV) interconnects.”

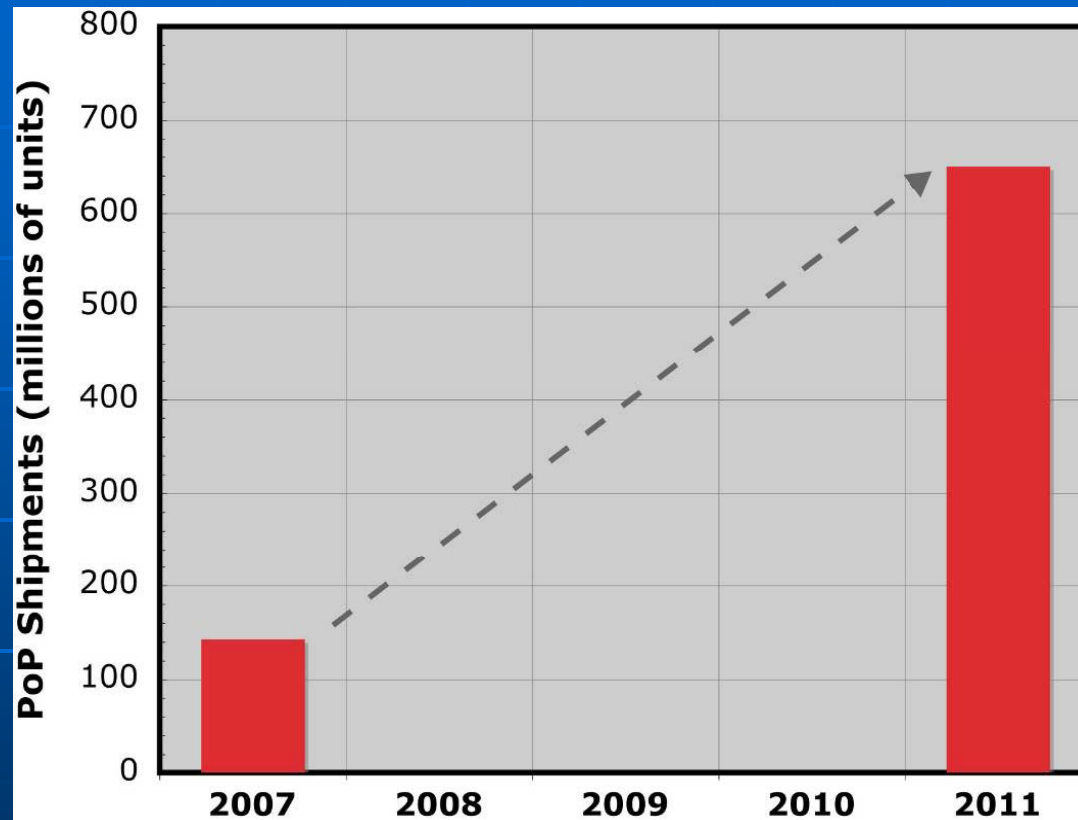
Speaker: Lee Smith VP Business Development, Amkor

12) “Rolling Out a New Packaging Technology; Benefiting From and Maximizing Supply Chain Opportunities that Span the Chain.”

Supply chain development, deployment and HVM licensing of new vertical die edge interconnect 3D technology.

Speaker: Marc Robinson-CTO, Vertical Circuits Inc.’s

PoP Shipment Forecast



Source: TechSearch International

44% Compound Annual Growth Rate!

PoP Trends – Increased Integration, Miniaturization & Performance

System Dynamics

Signal processing

μP integration Bband + applications engine - increased pin counts

μP core speed 2 – 3X w/ each node (840MHz @ 45nm)

Transition to FC accelerates from 65nm

Memory Interface

Higher speed memory interface SDRAM – DDR → LP DDR2

Wider memory bus 16 – 32 – (64)

Shared to split bus to 2 channel architectures

Packaging Challenges

Increased pin counts with size reduction requires 0.4mm pitch top and bottom

Warping control with thinner / higher density PoP stacks

Signal integrity optimization, decoupling cap integration

Si / pkg co-design for PoP to optimize for cost / performance

Device Dynamics

Processor I/O	400	600	700
CMOS Node	65nm	45nm	32nm
Peak Power	900mW	1.2W	2 W
Ave. Die Size	81mm ²	64mm ²	50mm ²

2008

2009

2011

Amkor TMV™ PoP Solution

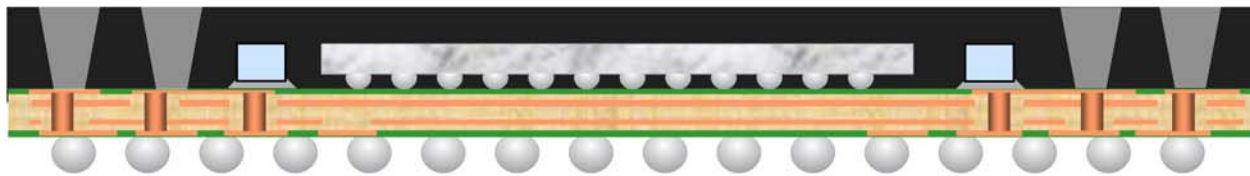
SMTAI '08 Paper w/ Sony Ericsson

14 x 14mm 6 net daisy chain next generation PoP test vehicle

- 0.4mm thick mold cap with molded underfill encasing

- 7 x 7mm Flip Chip daisy chain die at 220µm bump pitch

- 32 tiny 01005 size 0 ohm resistors (to represent decoupling caps)

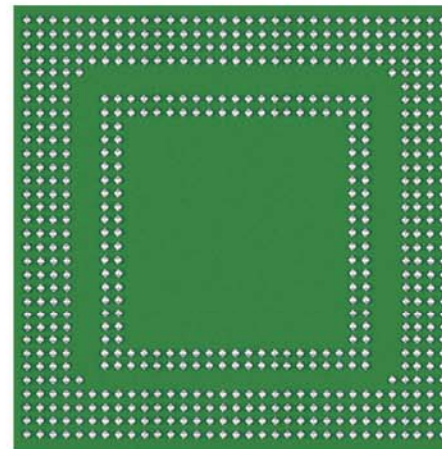


Cross Section View

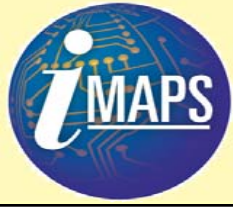
Top View
200 Solder Lands
@ 0.5mm pitch
memory interface



Bottom View
620 BGAs @
0.4mm pitch



TMV test vehicle reported at ECTC 2008



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Thank you.

**Please join us in sunny
Scottsdale.**