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Archive

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Bridging the technology gaps in PCB fabrication

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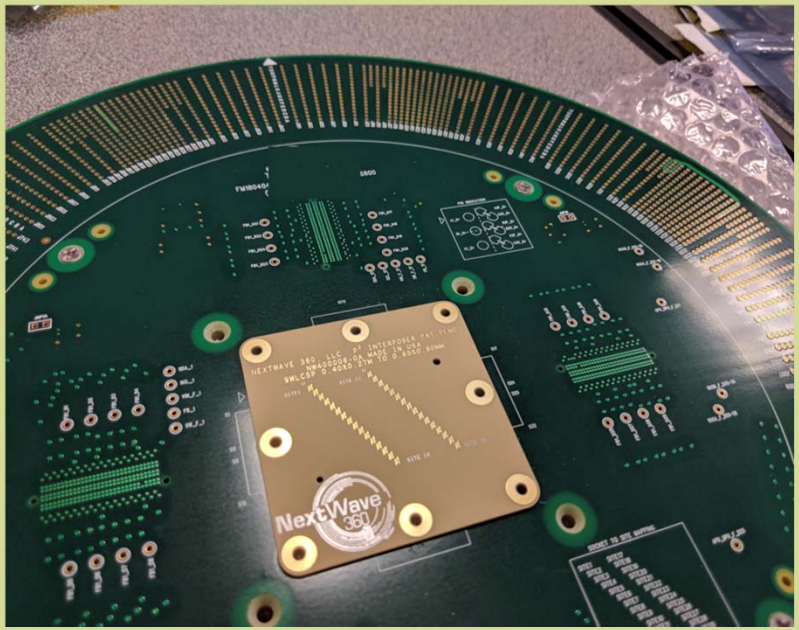
NextWave 360

Presentation Agenda

- Innovation
- Disruptive or Sustaining
- Today's Test Interface Challenges
- The P^2 Interposer Solution
- The Technology Roadmap



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innovation noun
in·no·va·tion | \ˌi-nə-ˈvā-shən \
Definition of innovation
1 : the introduction of something new
2 : a new idea, method, or device

Photo Credit: Astroach

Disruptive or Sustaining Innovation

- **Disruptive Technology** is an innovation that uproots an established technology, or a revolutionary product or service that spawns a new industry

- **Sustaining** innovation relies on incremental improvements to an already established technology.


Time - Cost - Risk
INNOVATION
Innovators
Early Adopters
Chasm
The Market
"No Thanks, We're too busy"
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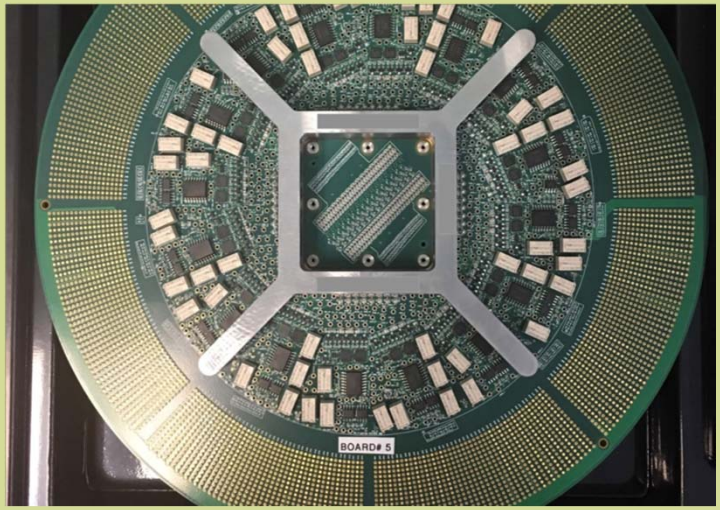
Today's Test Interface Challenges

- **High Signal Density**
  - Up to and sometimes exceeding 10,000 pins
  - Ultra-high data rates and bandwidth
  - Increased power demand
- **High Site Counts**
  - 512, 1024
  - Full wafer / single-touchdown test
- **Condensed Fine Pitch Packaging**
  - WLCSP
  - 50-200 Micron pitch
  - eWLB



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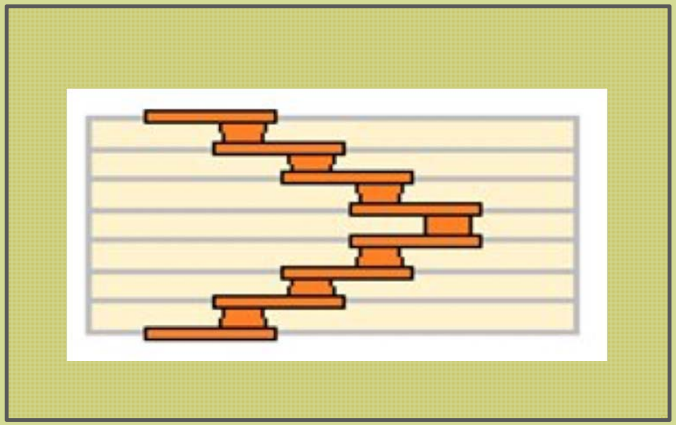
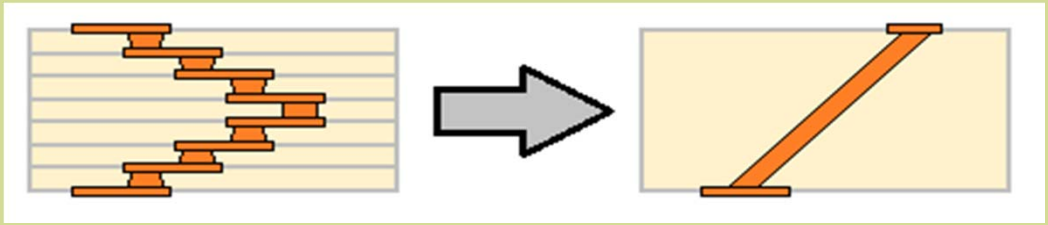
Current Pitch Translation Challenges

MLO/MLC Solution Weaknesses:

- Blind & buried vias
- Micro/Lazer drills
- High layer count
- Increased design impact to overall schedule
- Increased cost and risk to overall project
- DFM reliability concerns, low yield



Current Solutions (MLO/MLC) vs. Direct via Interposer



Current Design Solution
MLO/MLC

P² Design Solution

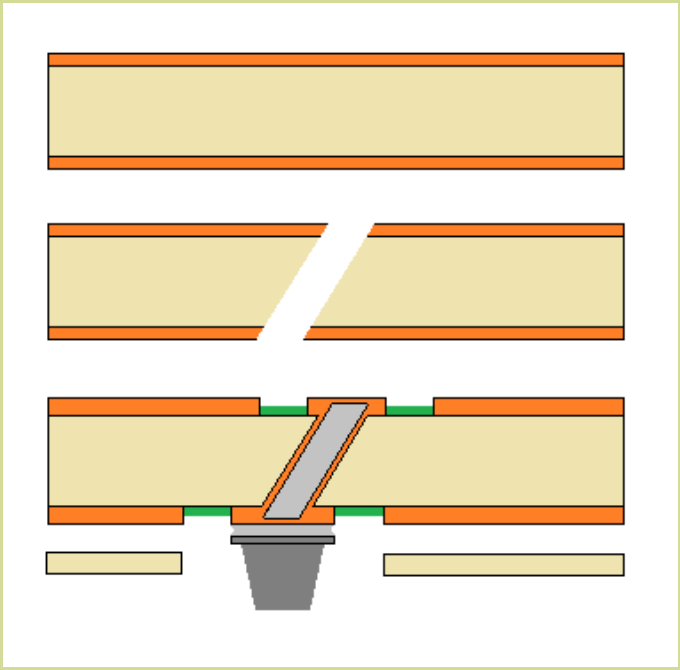
- Straight through angled vias (no blind or buried via connections)
- 2-layer monolithic substrate
- Conductive or non-conductive fill (per application)
- Pads, typical plate up, including nickel/gold

Interposer Solution – Attributes

- **Design Simplification** – project schedule time reduction
- **Simplified Fabrication** – schedule cycle time reduction
- **Reduced Risk** – higher FAB output yield
- **Cost Competitive** – competitive solutions vs. current technical solutions

Fabrication and Assembly Process

- Substrate Construction
- CNC Processes
- Standard PCB Finishing Steps
- Standard Reflow, Sintering or Elastomer Pin Assembly
- Compression Stop

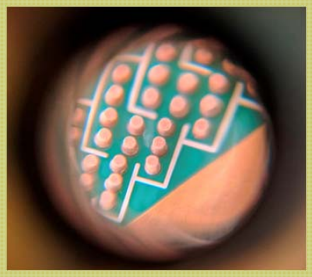


Interposer Attachment Methodologies

Elastomer Pins:

- Simple installation on-site at the same time as the probe head or socket
- Simple removal on-site
- Not a permanent addition to the PCB,

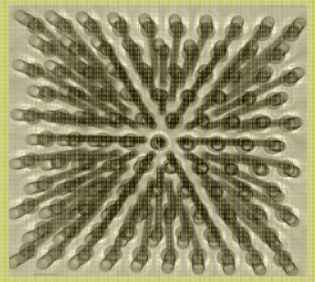
Elastomer pins applied to the P^2 Interposer



Solder Reflow:

- Installation occurs with other PCB components
- Provides a solid connection and is X-Ray verified
- Replaceable

X-Ray Images of a reflow connection



Sintering:

- Provides a permanent connection to the PCB
- Thin substrates where planarity is key
- Eliminates the possibility of ”potato-chipping”

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The Stack Up

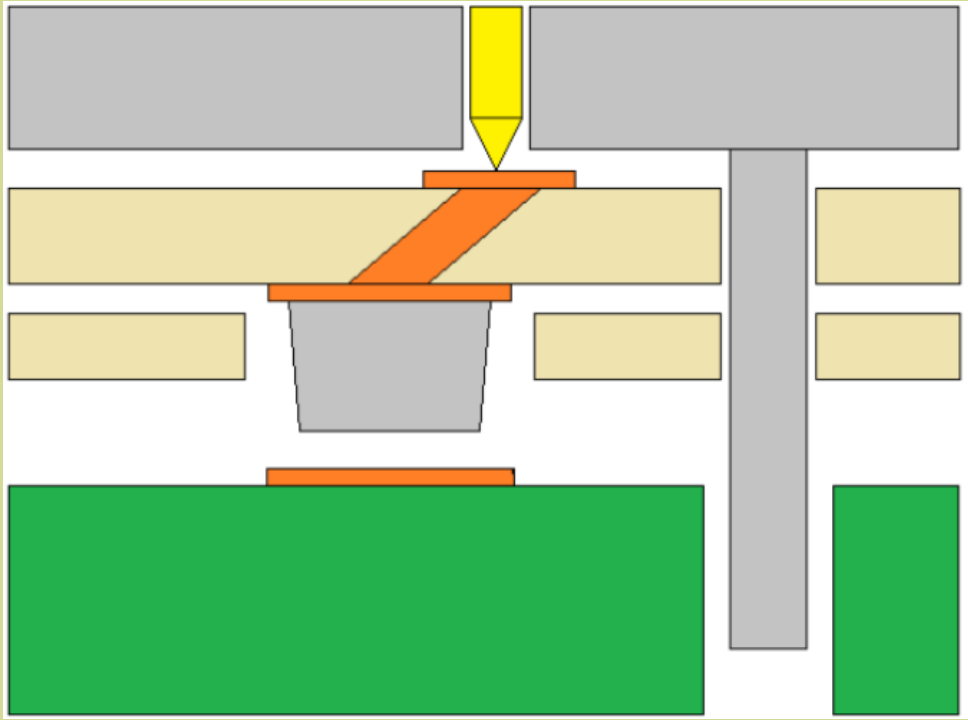
Probe Head

P2 Interposer

Compression stop

Elastomer pin

Probe card



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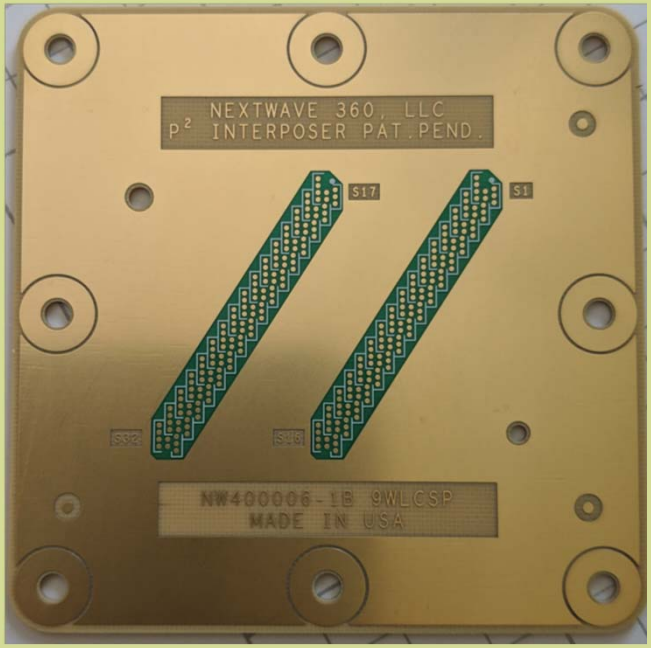
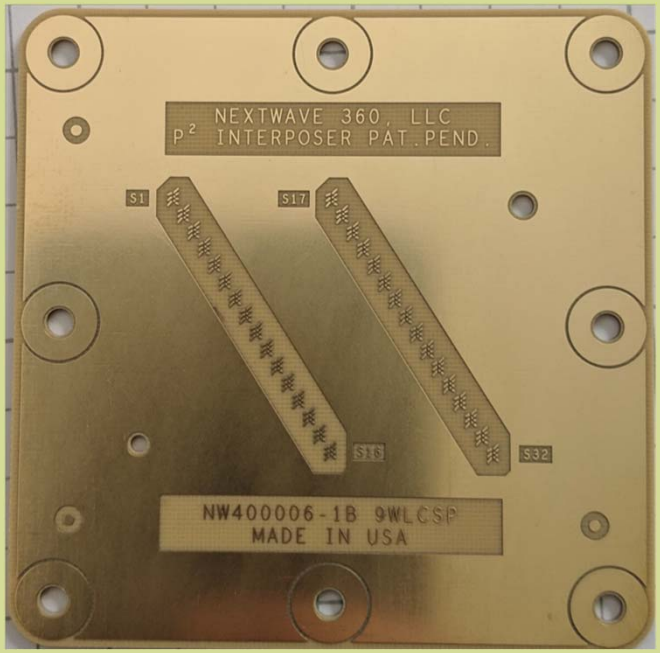
P² Interposer Simple Innovation





P² Interposer Patent Pending # 62774910

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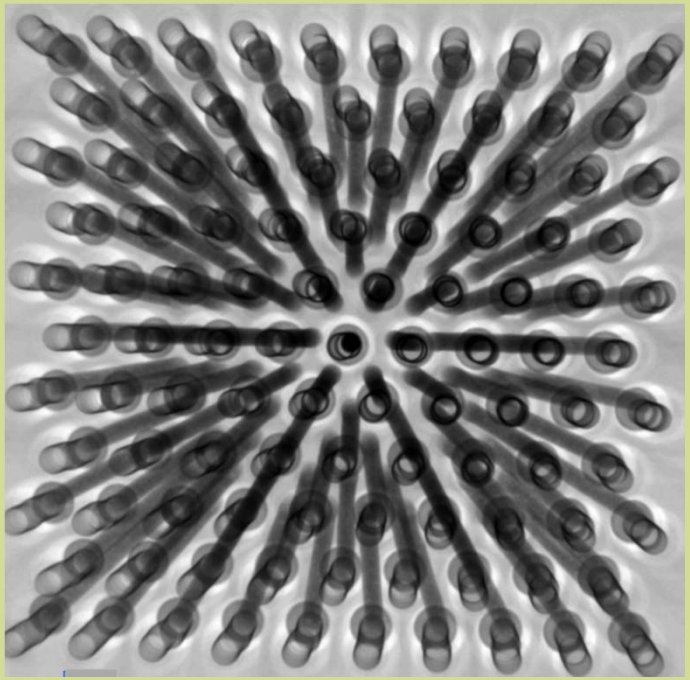
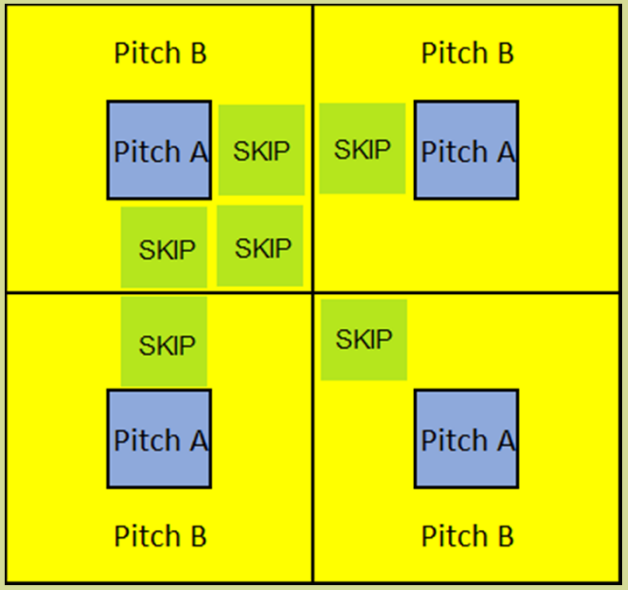
P² Interposer Applications

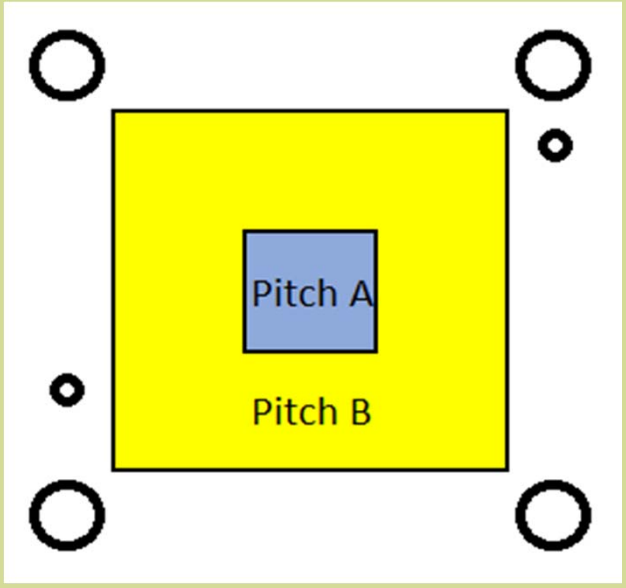
- **Burn-In**
- **WLCSP Probeheads**
- **Final test socket/handler boards**



Pitch Amplification Challenges



Probe



Package Test

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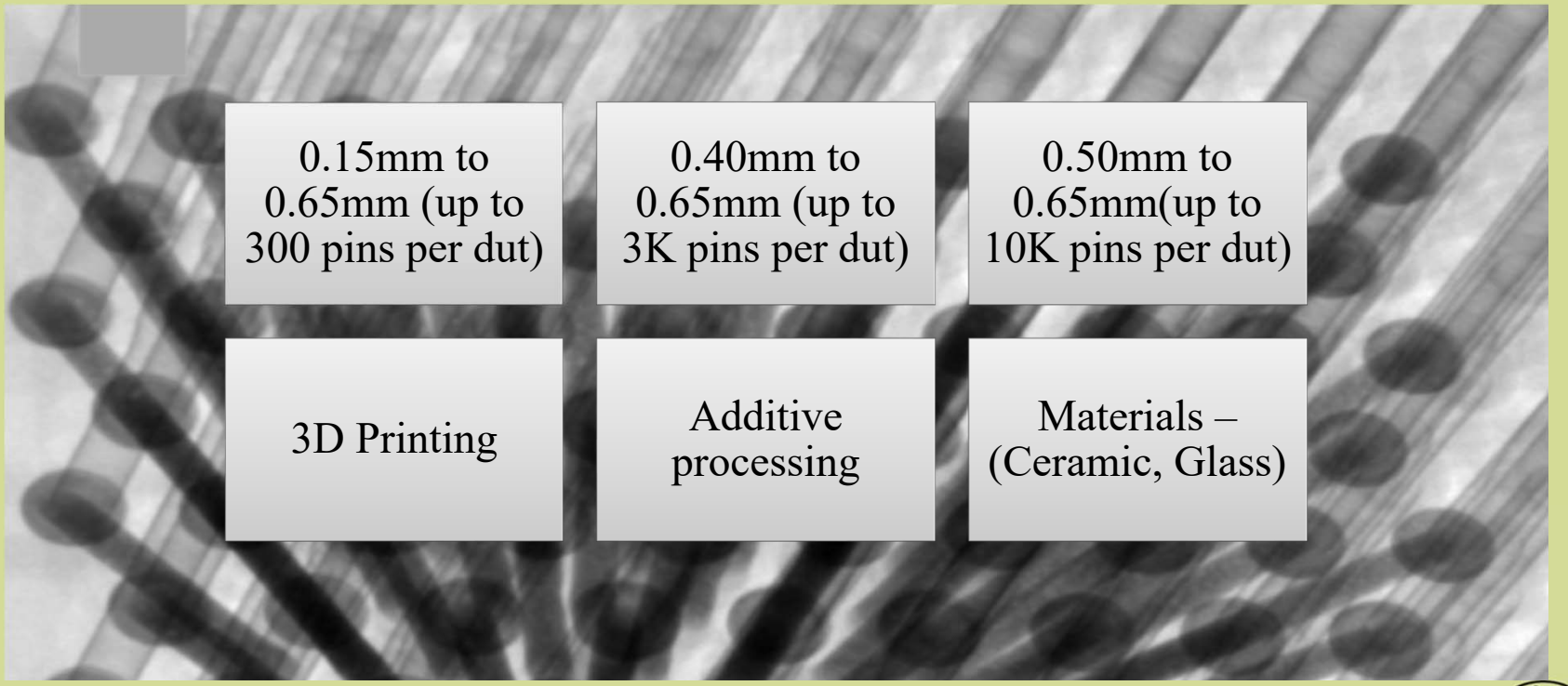
Roadmap & Capabilities



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Conclusion

Being **innovative** does not only mean inventing.

Innovation can mean adapting to changes in your environment to deliver better products or services