



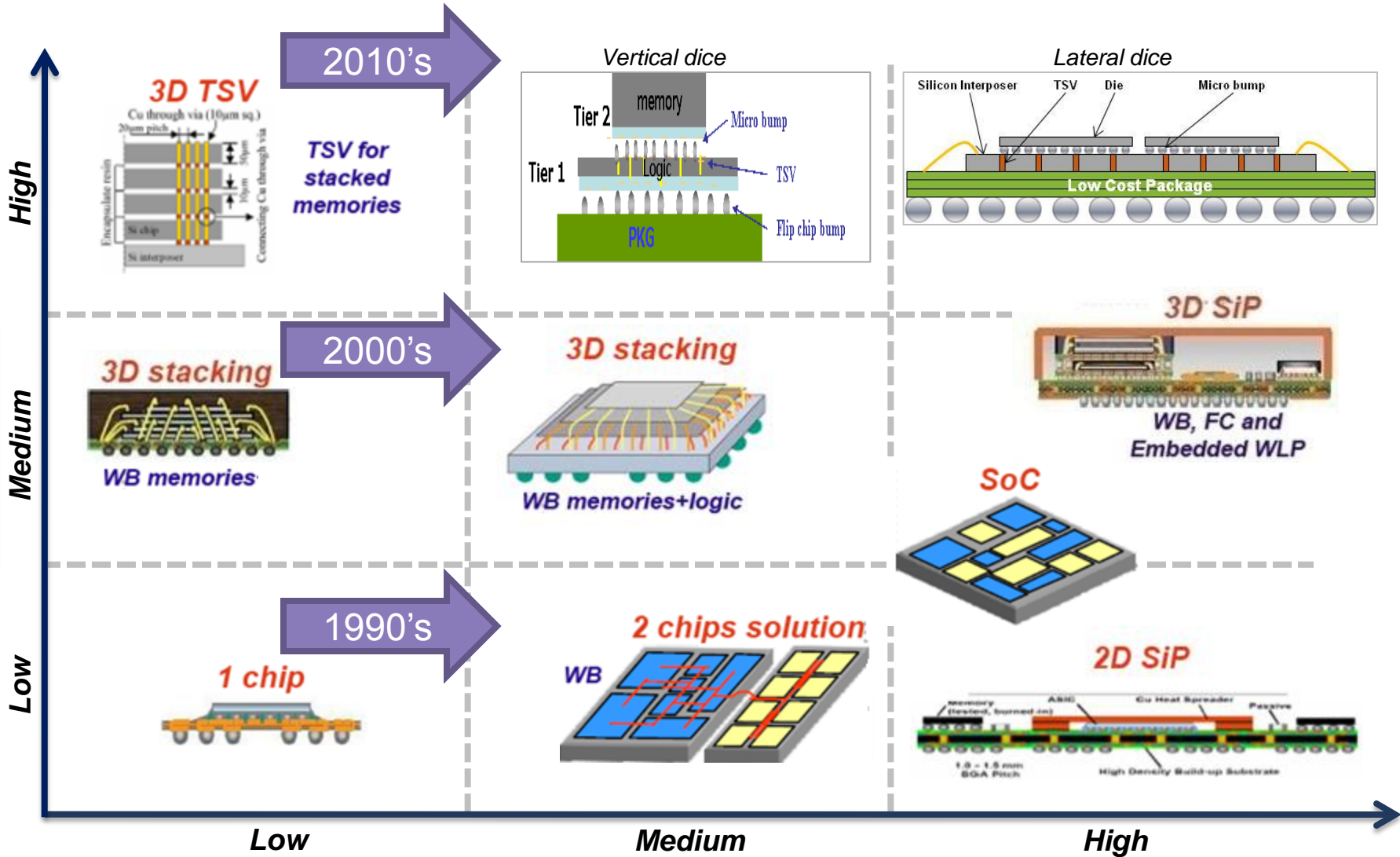
3D IC – Enabling The Next Dimension

GSA EDA/TSV DAC Reception
June 2010

Mark Williams

3D IC (TSV) Is An Emerging Technology

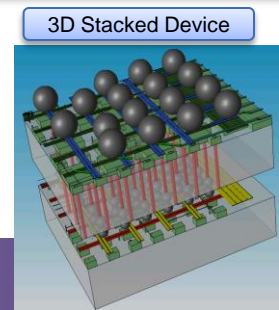
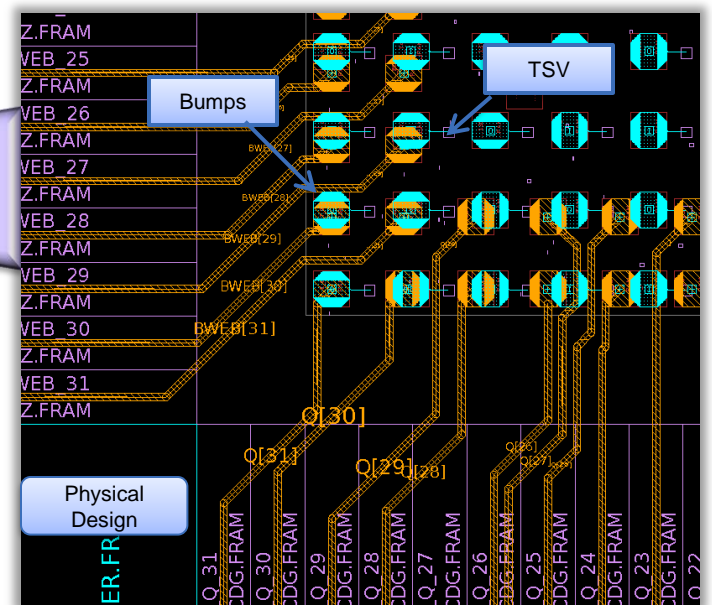
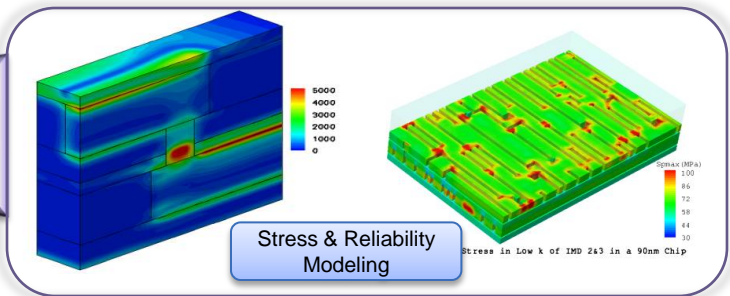
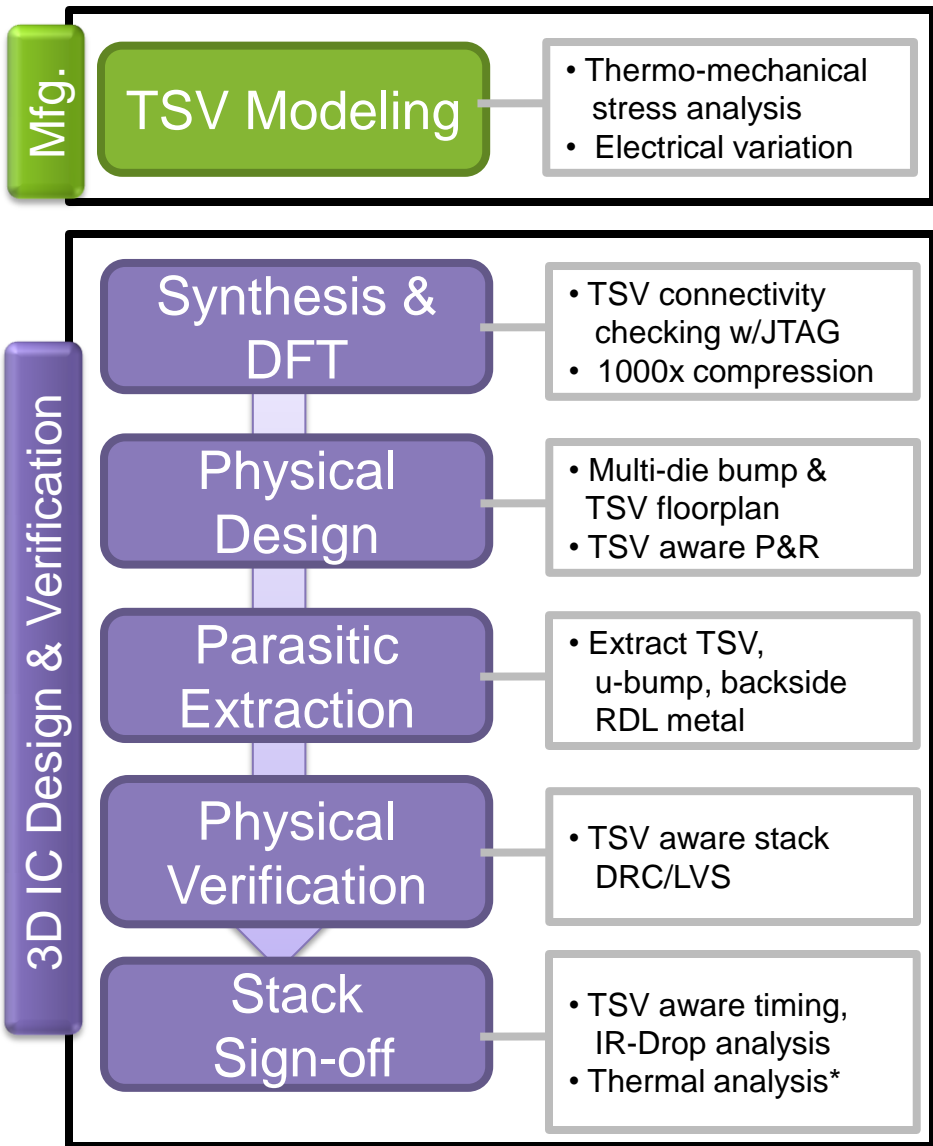
System Integration Technology Evolution



*Source: Yole Development, 2008

Functionality

Synopsys 3D IC Design Flow



*application dependent

Synopsys 3D IC Design Flow Partners

Mfg.

IMEC

- Thermo-mechanical stress analysis
- Electrical variation

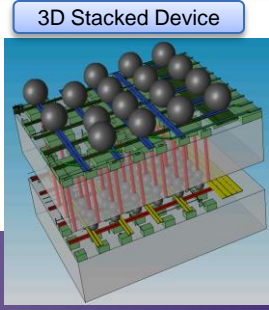
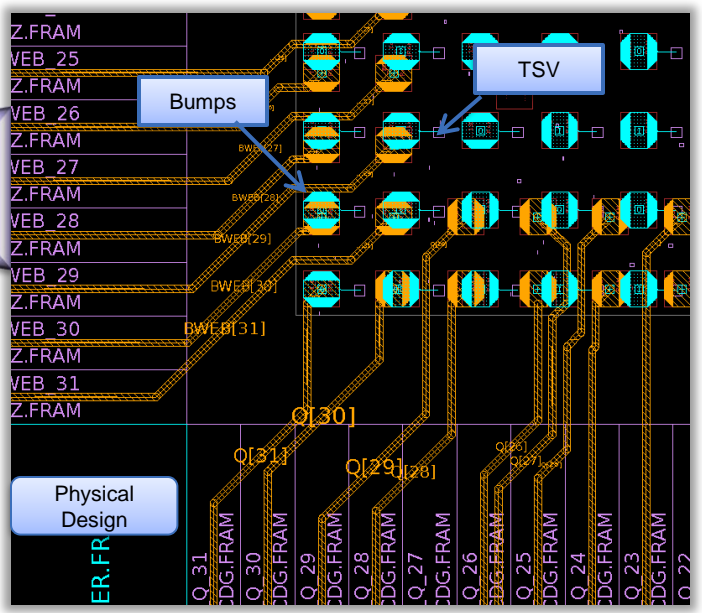
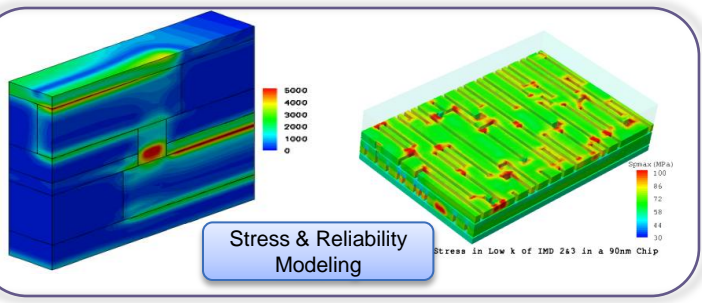
3D IC Design & Verification

TSMC

Reference Flow 11

- Synthesis & DFT**
 - TSV connectivity checking w/JTAG
 - 1000x compression
- Physical Design**
 - Multi-die bump & TSV floorplan
 - TSV aware P&R
- Parasitic Extraction**
 - Extract TSV, u-bump, backside RDL metal
- Verification**
 - TSV aware stack DRC/LVS
- Stack Sign-off**
 - TSV aware timing, IR-Drop analysis
 - Thermal analysis*

Leading IDM



*application dependent