

# 20 YEARS OF HITS & MISSES

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# LOOKING AT 20 YEARS OF HOT CHIPS

- ★ Keep in mind: Product success or failure may or may not be correlated with technical success or failure

# 9 TECHNICAL HITS (1<sup>ST</sup> HOT CHIP)

- ★ CMOS trumps Bipolar, ECL, Gallium Arsenide
- ★ Multimedia ISA: SIMD, Vector (i860, HP-PA)
- ★ Graphics Coprocessors (TI TMS34020, NVIDIA)
- ★ Superscalar instruction issue (IBM Power)
- ★ Faster DRAM interfaces: DDR, Synch (RAMbus)
- ★ Synthesizable Embedded cores: (ARM)
- ★ Out-of-order execution (Intel Pentium Pro)
- ★ Multicore, Multithreading for Servers (Power4?)
- ★ Long Instruction Word for DSPs (TI TMS320xxx)

## 4 TECHNICAL “NEAR-SUCCESSSES” (MISSES)

- ★ Very Long Instruction Words for GP computing
  - + If claims held, ILP for VLIW vs. Multicore for rest!
- ★ Superpipelining
  - + Shipped 31 stages; Projections of 50 stages
- ★ Large Scale CC-NUMA Computers vs. Clusters
  - + Numbers apps that scale needed CC-NUMA?
- ★ Network Processors
  - + Many attempts; hard to say what problem it solved

# RESOLVING RISC-CISC DEBATE

Products shipped?

2008: 3.0B ARM, 0.3B x86

How USA resolves debates?

We ask celebrities!

Who is the biggest celebrity in the world?

# RESOLVING RISC-CISC DEBATE



- ★ Angelina Jolie as Kate Libby (aka as hacker Acid Burn) in movie “Hackers” (1995)

# RESOLVING RISC-CISC DEBATE



Angelina Jolie: “RISC architecture is gonna change everything.”

“Hackers” (1995)

Blue Man Group  
“(silence)”