



Virtual Silicon

INTELLECTUAL PROPERTY DIVISION

**EDA Consortium East Coast Meeting:
Impact of the Consumer Market on EDA and IP**

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- > MOSAID is a semiconductor technology company
 - » Develops and licenses semiconductor IP
 - » Designs and manufactures memory test equipment
- > Semiconductor IP products



Low Power Library IP (Standard cells, SRAM compliers, I/O) >100x reduction in standby power



Flexible, programmable fractional PLL - 44MHz to 3GHz output within 1ppm



Complete memory controller solution (controller RTL + hardened PHY) – DDR/DDR2 to 800Mb/s

- > Acquired Virtual Silicon in Oct 2005
- > Locations in Ottawa, Canada and Santa Clara, California

> Consumer Market

- » Semiconductor devices that are incorporated into products which are purchased by individual consumers
- » Desktop and laptop computers, home networking, printers, audio/visual entertainment, cell phones, MP3 players, cameras, automobiles
- » NOT communications/networking infrastructure, industrial, military/aerospace, or servers/mainframes/supercomputers

> Attributes

- » Cost sensitive
- » Short product development cycles – fast time-to-market
- » Portable handheld products require low power
- » Relaxed reliability requirements except for automotive

- > Is IP more or less relevant for serving the needs of consumer electronics product development, vs. say enterprise or infrastructure or mil/aero applications?

- > IP is MORE relevant for consumer product development
 - » Faster time-to-market using pre-developed IP
 - » More cost effective since IP development is amortized among all customers of IP vendor
 - » Lower risk since IP is pre-verified
 - » IP tends to be more configurable and programmable than internally developed blocks because it is targeted towards multiple applications – possibility of quick product variants/enhancements
 - » Hard IP tends to be available in multiple foundries and process variants – ease of porting for 2nd source or cost reduction