Leveraging Serial ATA for Small Form Factor Applications

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Agenda

- SATA-IO – Who We Are
- What is Serial ATA?
- SATA Gets Small
- SATA is Battery Friendly
- SATA Outperforms
- Developments in the Tablet Market
- Why SATA?
- SATA Continues to Evolve

SATA-IO – Who We Are

- Nearly 200 members representing all aspects of the storage industry
  - SSD, HDD, controllers, components, cables, connectors, subsystems, test labs
- Mission
  - Provide sustainable long-term stewardship and support of Serial ATA as the mainstream storage interface
  - Advance the Serial ATA standard

- More information available at www.sata-io.org

What is SATA?

- Serial ATA is a serial storage interface
  - Supports speeds up to 6 Gbits/second
  - eSATA supports external 2 meter cable

- Mature industry infrastructure

- Dominant storage interface
  - >98% share of PC storage market
  - >30% share of Enterprise storage market

SATA Markets
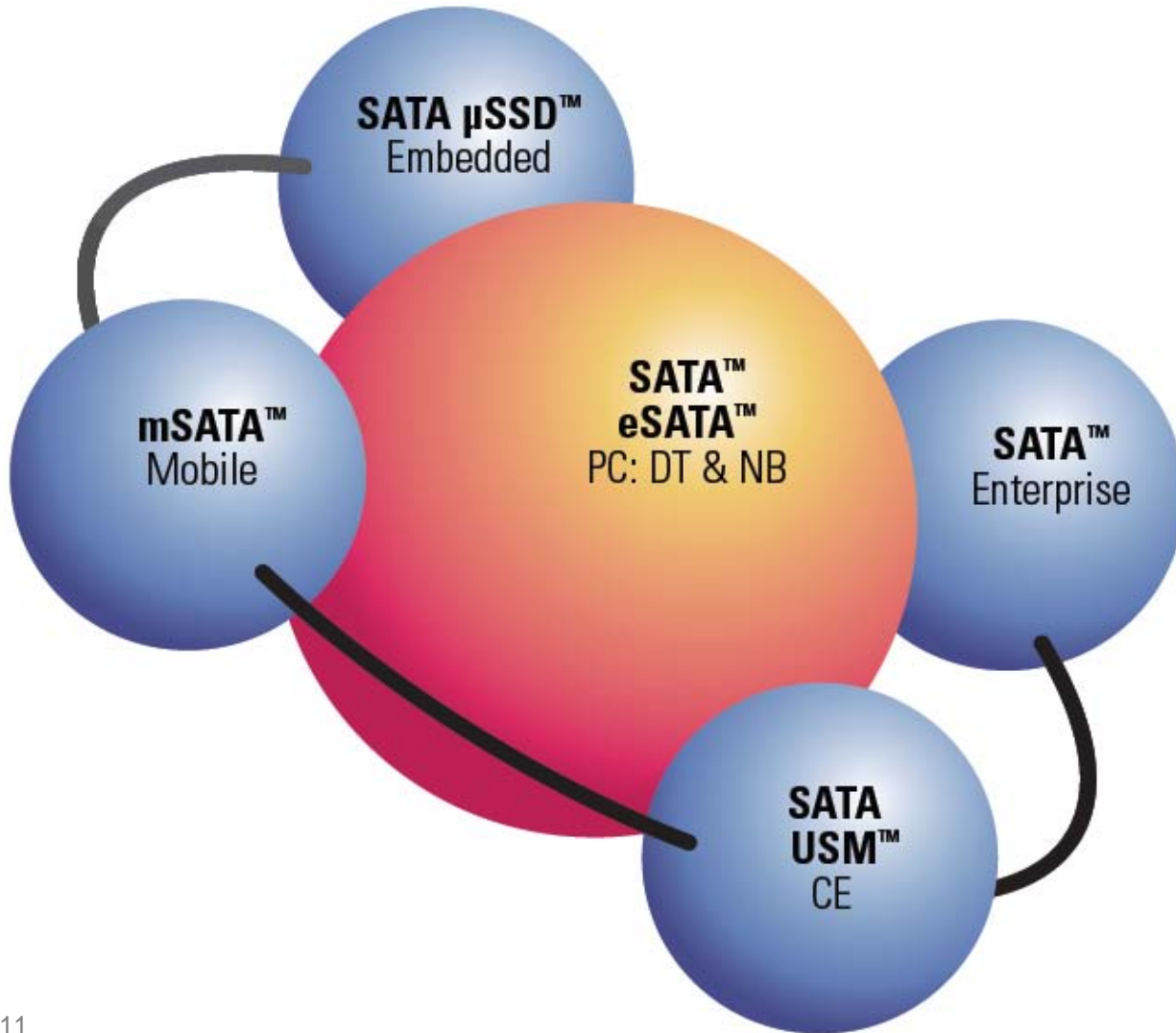
SATA Gets Small

- The SATA specification defines connectors and pin layouts and utilizes small form factors for space-constrained applications

  - Micro SATA Connector for 1.8-inch drives

 - mSATA / mSATA mini

  - SATA μSSD

Micro SATA Connector for 1.8" Drives

- Micro SATA connector enables 5mm high 1.8-inch SATA SSD

- Photo shows 1.8-inch SSD with Micro SATA connector overlaying 2.5-inch SSD with the standard SATA connector

mSATA / mSATA mini

- mSATA is designed to plug into existing mini-PCIe connector on motherboards
- Connector pin detects if card is mSATA or PCIe

mSATA

mSATA mini

Same size as a business card

Half the depth of mSATA card
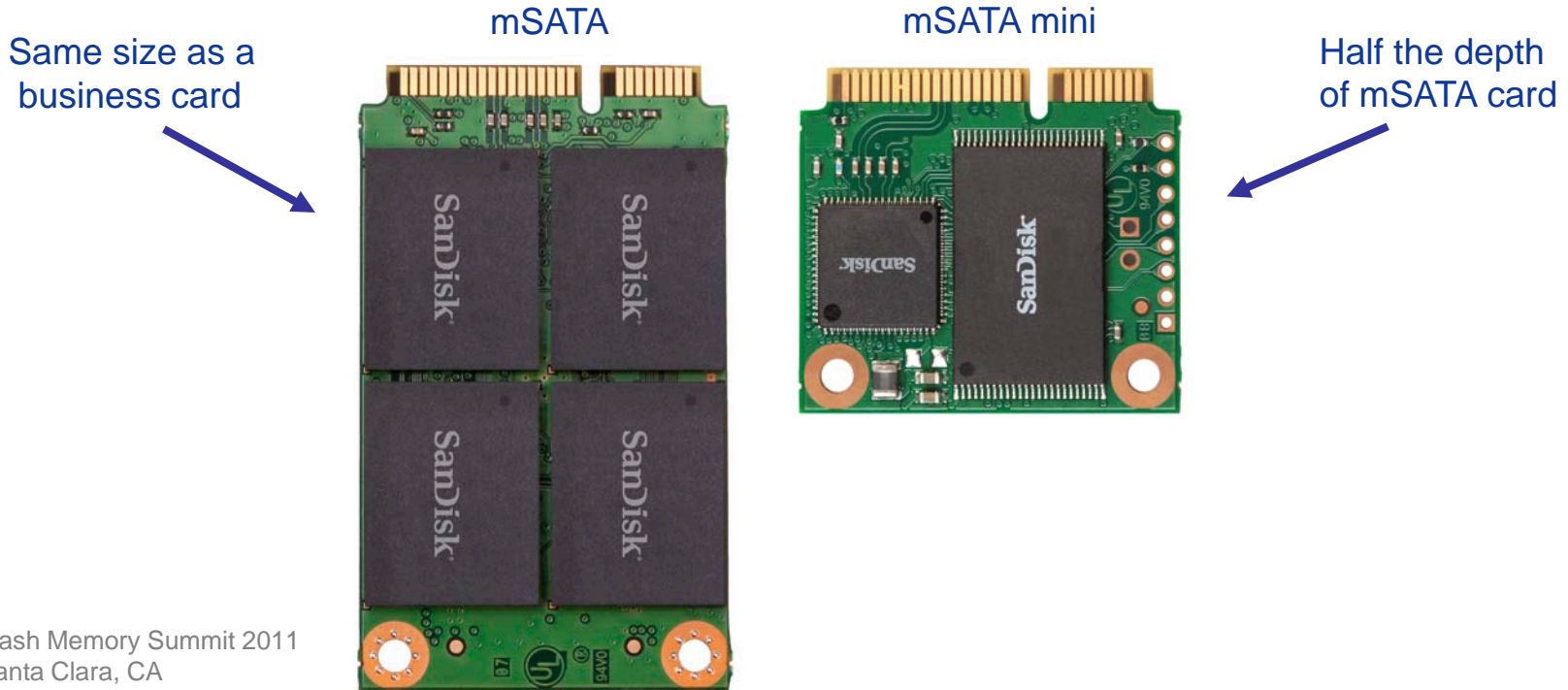
SATA μSSD (just announced!)

- SATA SSD in a single BGA package which can be mounted directly onto a motherboard
- SATA specification defines signal/ball layout
- JEDEC standard BGA package
- Standardization ensures that products from different manufacturers are interchangeable
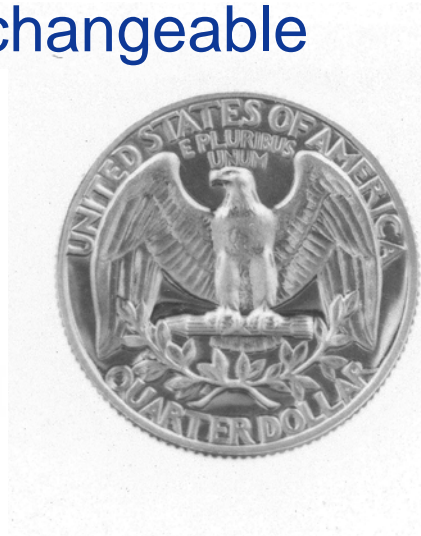
SATA is Battery Friendly

- Power Management removes or reduces power to circuitry not currently in use, thus reducing overall power consumption, which increases battery life

- Multiple reduced-power modes enable the host to manage the tradeoff of lower power consumption versus longer recovery time (time to become fully operational)

- SATA defines two distinct areas of power management
  - On the SATA interface – Partial & Slumber modes
  - Within the SATA device – Idle, Standby & Sleep modes

- SATA provides a range of host or device controlled power management options to maximize flexibility

SATA Outperforms

- SATA supports transfer rates up to 6Gb/s

- SATA Native Command Queuing (NCQ) frees host from having to await completion of each command, reducing latency

- NCQ streaming command enables isochronous data transfers for bandwidth-hungry audio/video applications

- SATA is a high performance, low latency storage interface, ideal for demanding applications

Developments in the Tablet Market

- Business-focused "Productivity Tablets" are coming to market from HP, ASUS, Acer, and others

- Business users have more stringent requirements than casual users

  - Multitasking – ability to run multiple applications at the same time and quickly switch between them

  - PC-like web browsing – not just running apps

  - More data storage – higher capacity storage for memos, spreadsheets, presentations, etc.

- Productivity Tablets require larger, faster storage

Why SATA?

- SATA outperforms other interface technologies currently used in tablets
  - Higher performance storage is needed for business applications
- SATA's flexible, aggressive power management will increase battery life
- SATA devices are available in a variety of small form factors appropriate for tablets
- SATA was designed to be a low cost, low power storage interface for desktop and portable environments
  - More than 98% of notebooks & netbooks contain SATA devices
- Productivity Tablets need SATA storage

SATA Continues to Evolve

- Recently released SATA specification v3.1 includes:
  - mSATA – SATA for mobile computing devices, now with enhanced auto detection, eliminating the need for a dedicated mSATA connector
  - Universal Storage Module – removable storage for consumer applications
  - Queued Trim Command – allows SATA SSDs to execute Trim without impacting normal operation, improving SSD performance

- ANNOUNCED AT FMS: Next generation SATA Express is in development
  - One or two lane PCIe (8Gb/s per lane)
  - Integrated SATA controller provides software compatibility
  - Targeted at SSDs that require more than 6Gb/s

Thank You!