



SuperSpeed USB

Host: Jeff Ravencraft, USB-IF president and chairman



Agenda

Introduction & technology overview

- Jeff Ravencraft

Microsoft Corporation

- Fred Bhesania

NEC Electronics Corporation

- Yoshiyuki Tomoda

Texas Instruments

- Scott Kim



Microsoft

NEC





Key updates from today

- Today was a milestone event
 - First interoperability demonstrations
 - Host and device solutions from different companies interoperated
 - Enabled by SuperSpeed USB PIL
- Great market excitement for SuperSpeed USB
 - Well attended developer conferences
 - PIL booked through June
 - Spec downloads: 78,500

SuperSpeed USB Platform Interoperability Lab (PIL)



USB-IF Launches SuperSpeed USB Platform Interoperability Lab

CEBIT, Hanover, Germany – March 3, 2009 – The USB Implementers Forum (USB-IF) today announced the availability of the SuperSpeed USB Platform Interoperability Lab (PIL), providing USB 3.0 developers the opportunity to test host and device interoperability.

- Provides developers the opportunity to test host and device interoperability
- Silicon vendors, IP vendors, device and host vendors, companies developing SuperSpeed USB PHYs
- Prototype SuperSpeed USB software stack and test tools running on Windows will be made available

USB 3.0 Features

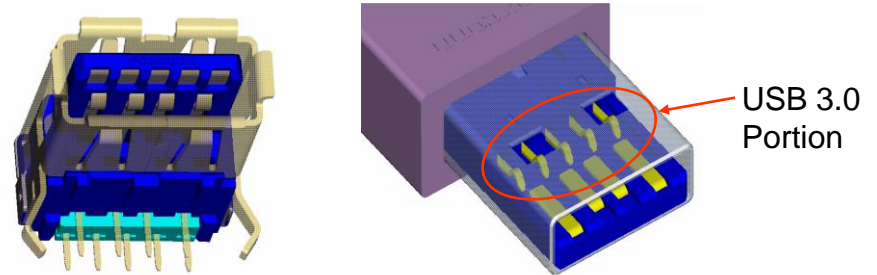


- Up to a 10x performance increase over USB 2.0
- Backward compatible
 - Legacy USB 2.0 devices work when plugged into new host connector
 - USB 3.0 devices work when plugged into legacy systems - at USB 2.0 speeds
 - Existing class drivers continue to work
- Optimized Power Efficiency
 - No device polling
 - Lower active & idle power requirements
- Extensible
 - Protocol designed to efficiently scale up

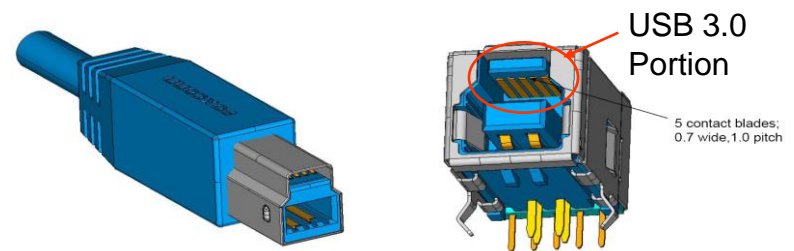
USB 3.0 Connectors



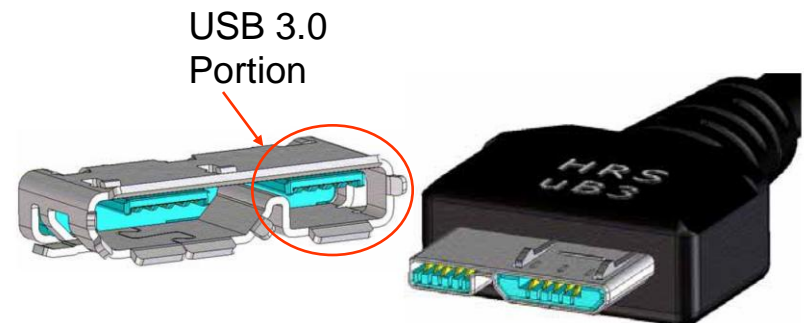
- Std A - Same interface as USB 2.0 Standard-A connector, but with added pins for USB 3.0 Super-Speed signals
- Complete compatibility with USB 2.0 Standard-A connector



- Std B - Defined for relatively large, stationary peripherals such as hard drives and printers
- Powered version variant is a defined
- Receptacle provides backward compatibility
- Visually different from USB 2.0 Standard-B connector

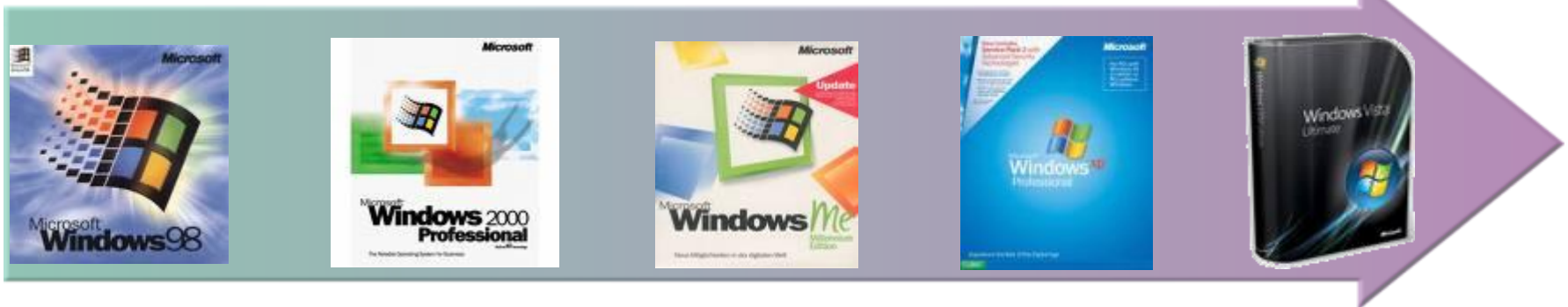


- USB 3.0 Micro B - Based on the proven USB 2.0 Micro-B connector design with an extended portion for the Super-Speed signals





- USB Evolution in Microsoft Windows



Rich Drivers

- 1998=3
- 2008=15
- WinUSB + Windows Driver Foundation

Fundamentals

- Plug-n-Play
- Power Mgmt of Device
- Fast Resume from System Suspend

Cool Scenarios

- Rich Media Devices
- Internal + External Devices
- Windows 7 UI Enhancements

- Key Scenarios Around USB 3.0 for Microsoft



[Fundamentals]

- Backwards compatibility with existing devices/classes
- Enhance support for kernel debugging between PCs



[Enhanced Storage]

- 'USB Attached SCSI Protocol' specification
- Power management and speed enhancements



[High Definition A/V]

- Future-proof. Bandwidth for HD scenarios over time
- Improve scenarios for rich-media devices



Microsoft has Shown Commitment on USB 3.0

- Promoter Member of USB 3.0 from Beginning
- Participation in Core Specification
 - Core Specs: *USB 3.0, XHCI*
 - Working Groups: *USB Mass Storage, power charging over USB, HIDs, Firmware Update, A/V*

Moving Forward

- Coordination with Key Partners on USB 3.0
- Early Software Driver Development
- Participation in USB Industry Plugfests

NEC Electronics' Advantage in USB Building Blocks



NEC Electronics has technology and assets in former USB products

NEC Electronics Technology Portfolio for USB 3.0 Product Development

NEC Electronics Original Stable USB 2.0 Host Controller Driver
with NEC USB-Class Stack

Utilize

USB-Class Driver

USB 3.0 Driver

NEC Electronics USB 2.0/1.1 Host
NEC Electronics USB 2.0/1.1 Hub
NEC Electronics USB 2.0/1.1 Device

Utilize

Host Protocol Engine

Hub Protocol Engine

Device Protocol Engine

NEC Electronics
PCI Express Link + PHY
NEC Electronics SATA Link + PHY

Utilize

SuperSpeed USB Link

SuperSpeed USB PHY

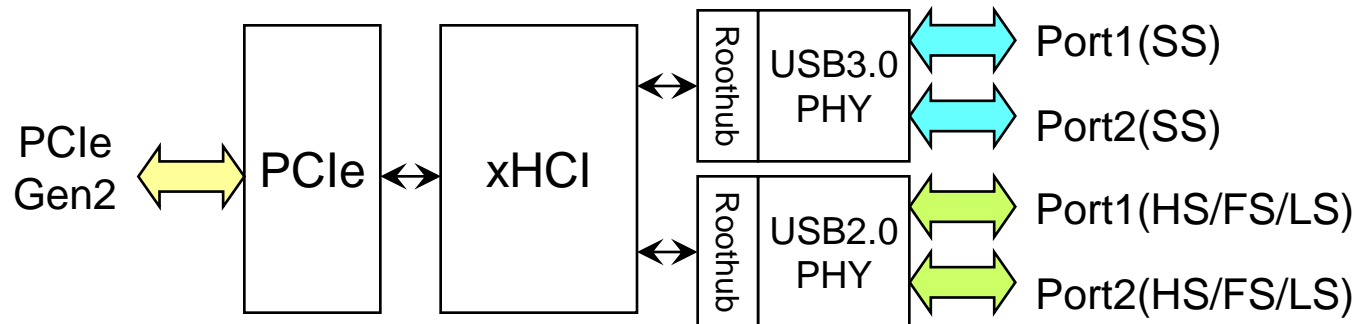
Current Technology

Core of Future Products

World's 1st USB 3.0 Host Controller



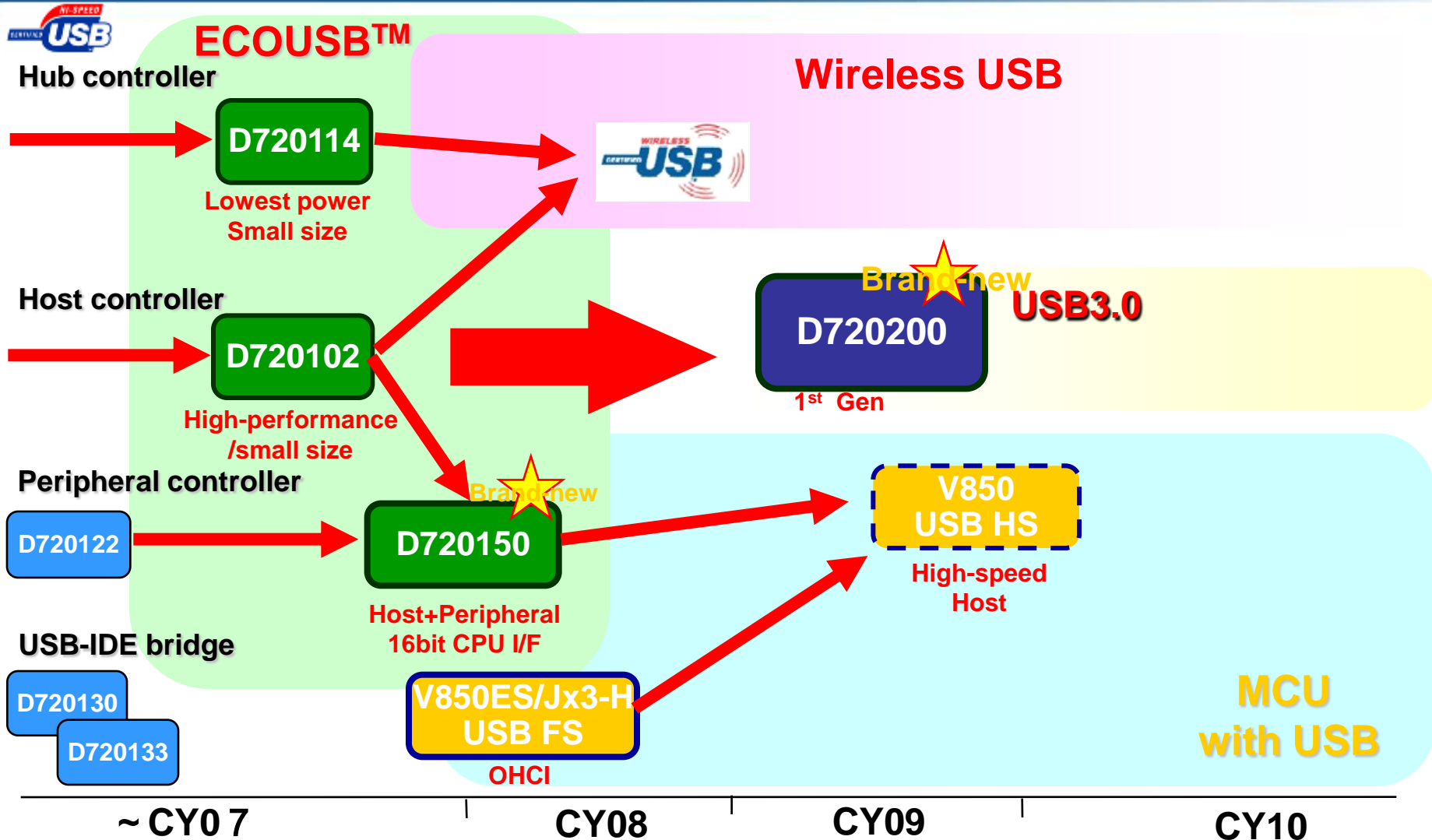
- **Product Name** : **μPD720200**
- **System I/F** : **PCIe Gen2 x 1 Lane**
- **USB ports** : **2 ports (SS/HS/FS/LS)**
- **Comply spec to** : **PCIe 2.0 Base Spec**
: **USB 3.0 rev1.0**
: **Intel xHCI rev0.95**
- **VDD** : **1.05V, 3.3V**
- **Clock** : **24MHz Xtal or 48MHz clock input**
- **Package** : **176 pin FPBGA (10x10mm, 0.65mm ball pitch)**
- **Ta** : **0 – 70°C**
- **Power** : **1.0W max**



NEC Electronics' USB products RoadMap



Key word is Ecological, Embedded system, and super speed



Texas Instruments

Scott Kim, USB Business Dev. Mgr



- ***Focus on SuperSpeed USB early adoption market opportunity***
- ***Introduced the SuperSpeed USB 5Gbps transceiver test chip***
- ***Products in development***
 - ❖ TUSB1310, SuperSpeed USB Transceiver
 - ❖ TUSB9260, SuperSpeed USB to SATA device
 - ❖ TUSB8040, SuperSpeed USB Hub

TI announces first SuperSpeed USB transceiver test chip



- Announced a new 5-Gbps transceiver test chip designed to the USB 3.0 specification version 1.0.
- The new transceiver is capable of driving and receiving signals over 4-meters USB 3.0 cables to ensure data integrity.
- This transceiver will be demonstrated at the USB Developers Conference in Tokyo, Japan on May 21-22, in booth #1.
- The new SuperSpeed USB transceiver and Synposys' intellectual property (IP) core tested successfully at the USB-IF SuperSpeed Peripheral Interoperability Lab.
- Availability
 - The first in TI's SuperSpeed USB family of devices, the TUSB1310, SuperSpeed USB transceiver, will sample in 4Q09 and volume production is expected in 1Q10. In addition, evaluation modules will be available to interface the TUSB1310 to a variety of processor and FPGA implementations.
- For more information on TI's SuperSpeed USB technology see: www.ti.com/superspeedusb3-pr.



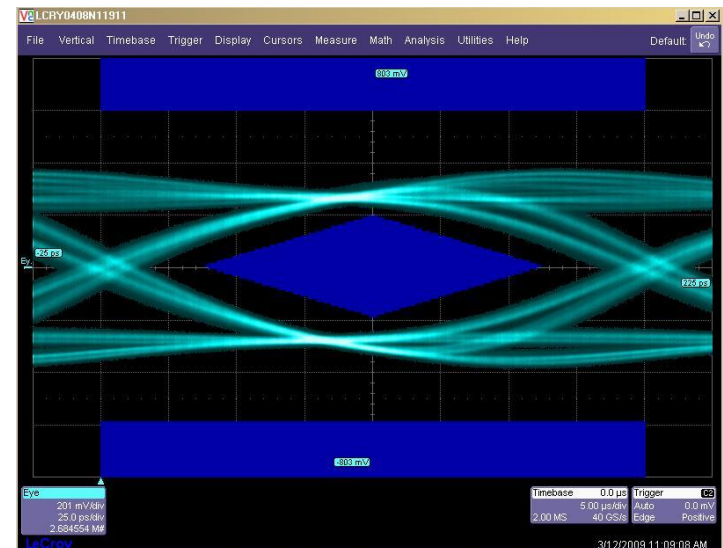
TUSB1310: Discrete SuperSpeed Phy

Features

- USB Interface
 - USB 3.0 PHY for SuperSpeed signaling
 - USB 2.0 PHY for high-speed, full-speed, and low-speed signaling
- Digital Interface
 - PIPE3 For SuperSpeed signal path
 - ULPI for high-speed, full-speed, and low-speed signal path
- Internal spread spectrum generation
 - Uses a single low-cost crystal
 - Supports multiple input reference frequencies: 20 MHz, 25 MHz, 30 MHz and 40 MHz
- Programmable transmitter pre-emphasis
- Best-in-class adaptive receiver equalizer

Benefits

- Supports all USB application spaces
- Industry standard interface enables easy system integration with attached core
- Lower BOM Cost
- Support for longer cables
 - tested up to 4m



Samples

Production

Oct-09

1Q10

All Pre-Release Product and Schedule Information is Preliminary and Subject to Change



Questions?