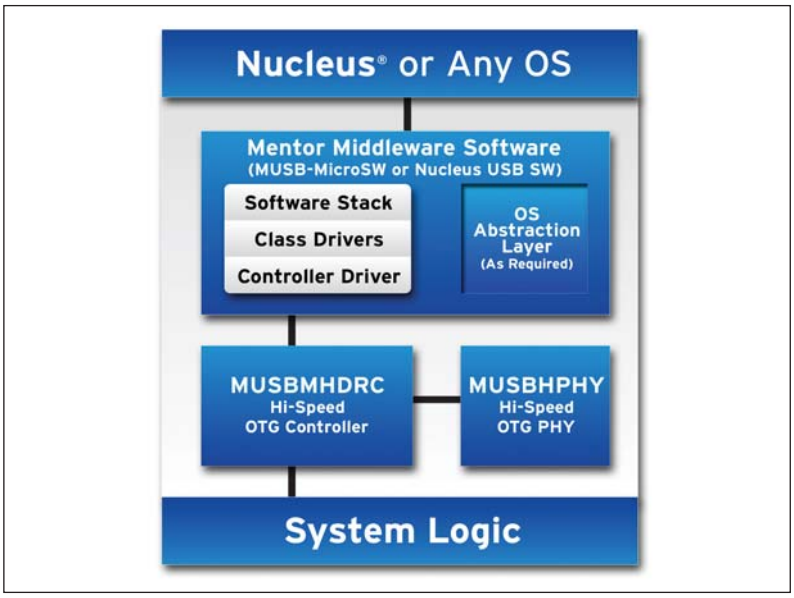
Mentor USB Software

For use in Mentor's USB Subsystem IP

Software IP

D A T A S H E E T



Available in Mentor's USB Subsystem IP, Mentor USB software is comprised of a software stack, class drivers, and controller — all are fully integrated, optimized, and verified to work with Mentor USB hardware IP.

USB is widely accepted as the most popular connectivity interface standard in use today. Because of its success, embedded silicon vendors have increasingly embraced USB as the connectivity solution between embedded devices with or without a PC. Further, silicon vendors are now required to offer a working USB-compliant software solution that's been tested and certified with USB hardware so that customers can implement a complete and fully functional out-of-the-box USB solution for building different embedded applications.

However, with the complexity of USB software (from stack, class driver, to the controller driver), silicon vendors are faced with enormous challenges including fast time-to-market pressures to develop and integrate USB software seamlessly with USB hardware in order to certify their USB-compliant subsystem.

To ease and reduce the efforts associated with USB software development, integration, testing, and certification, Mentor Graphics has introduced the Mentor USB subsystem IP. This USB subsystem IP is well positioned to offer a complete USB software product called *Mentor USB software*. Mentor USB software is comprised of stack, class driver, and controller, which is fully integrated, optimized, verified, and certified with Mentor USB hardware IP for embedded host and device, along with OTG subsystem applications.

Product feature highlights:

Mentor's USB software offering is currently available in two versions.

MUSB MicroSW:

- Supports Control/Bulk/Interrupt/ Isochronous data transfer types
- Used to create embedded hosts, devices, and OTG
- OS abstraction easily ported to any operating system
- Processor independent
- Mass storage and HID

Nucleus USB SW:

- Operates in widely deployed Nucleus OS environment
- Used to create embedded hosts, devices, and OTG
- Supports Hub, Composite, and Compound devices
- Supports Control/Bulk/Interrupt/ Isochronous data transfer types
- Supports MMU and MPU
- Provides descriptor tool utility to automatically create descriptors required by the function stack
- Independent processor and tools
- Supports a vast array of class drivers: mass storage, HID (keyboard, mouse), communications (Modem, Ethernet, RNDIS), printer, still image, audio, video, power, DFU,CCID, virtual serial, USB to RS232
- Supports MTP and PictBridge

Controller driver support:

- **MUSBFPHY** - USB Full-Speed PHY
- **MUSBMHDRC** - USB 2.0 Hi/Full-Speed embedded host OTG controller
- **MUSBHSFC** - USB 2.0 Hi/Full-Speed function controller

Mentor USB Software Benefits:

Easy to Use

Mentor USB software is provided in ANSI C source code format — a fast, small, portable, and modularized solution for easily and quickly creating high-performance multi-functional USB-based embedded systems.

Complete Standards Support

Mentor USB software conforms to USB 1.1 and 2.0 standards and supports Host, Device (peripheral or function), and On-the-Go (OTG) functionality. Speed transmissions are supported in all areas: Low (1.5Mbs); Full (12 Mbs); and High (480 Mbs).

Extensive Class Driver Support

Mentor USB software includes class drivers that support diverse market segments with a wide range of USB applications including: mass storage, communications, HID, printer, still image, audio, video, DFU, serial, and MTP. This assists with the quick and easy implementation of USB functions that are specific to the needs of a specific application. (As seen in the visual below).

Operating System (OS) and Processor Agnostic

Mentor USB software is independent of OS or CPU architecture and can be easily ported to any OS and processor.

Multimedia Transport

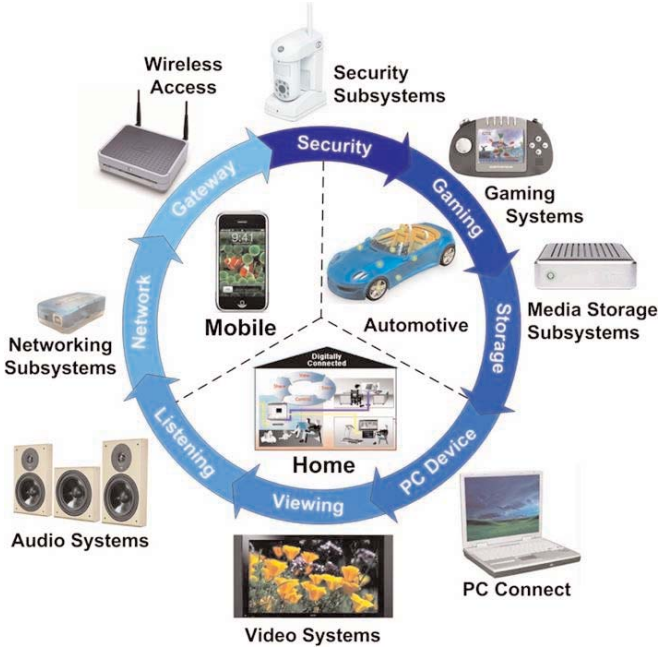
Beyond the USB specifications, there are several multimedia transports that take advantage of USB. Mentor USB software supports MTP for multimedia transfer and PictBridge for direct image printing.

Simulation Environment

Before working on hardware, designers can test their software in a simulated environment on the desktop. This saves time and effort in the development phase. This simulation environment is available through EDGE™ Developer Suite from Mentor Graphics.

USB Certified

Mentor USB software along with Mentor's USB hardware IP, have passed USB-IF compliance testing. This compliancy adds an additional layer of confidence in helps assure design teams to proper certification.



USB applications powered by Mentor USB software.

Visit www.mentor.com/ip for additional IP product information.

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