Icon design recommendation for Identifying USB 2.0 Ports on PCs, Hosts and Hubs

Purpose

If a high speed USB 2.0 device is plugged into a low or full speed USB (1.1) port, it will work, but will result in slower performance than when both host and device support USB 2.0. Users may expect high speed devices to deliver performance as advertised and may not grasp the distinction between low, full and high speed USB. This confusion may lower the quality of these users' experience and result in calls to PC, peripherals or operating system vendors.

This design guideline is intended to address the use-scenario described above, but it carries no mandatory requirements. Instead, it makes recommendations that PC OEMs may choose to follow in the placement and proper use of an icon to label USB 2.0 ports on PCs, hubs and other devices with host controllers (i.e., devices with "A" receptacles). This guideline does not recommend use of this icon on cables and cable-connector housings.

Background

The Consumer PC Ease of Use Roundtable (www.eouroundtable.com) has been collecting data from PC OEMs, communications companies and peripherals vendors for over 2 years, some of which corroborates that the installation and configuration of USB peripherals was a "top-5" usability issue.

In early 2001, a group was formed representing major PC and peripherals OEMs, Intel, and Microsoft to generate guidelines aimed at alleviating some of the usability problems we are anticipating as the two USB implementations (1.1 and 2.0) mix in the marketplace. This team considered the basic USB Interaction model, analyzed all critical scenarios, reviewed proposed solutions and chose the best one given constraints and time-frame. The team found that use of an icon in conjunction with the USB logo program, operating system USB detection / alert capabilities and good usability engineering principles should significantly reduce the confusion and potential call impact of the co-existence of USB 1.1 and 2.0 ports.

Participants in the working group

- Agere Systems (formerly Lucent)
- Compaq
- Dell
- Gateway
- Hewlett Packard
- IBM
- Intel
- Microsoft
- NEC

Design Guideline

The icon provided for use here is based on the trident design found in the USB specification with an addition of a plus sign as shown in the diagrams. The intent here is that users will first identify the icon as "USB", and secondly notice the additional visual element, signifying "high speed, USB 2.0". The addition of the plus sign feature also allows easy reference in documentation, software alerts, and technical support discussions.

Icon Design and Use

The icon shown here may be used to label any PC, host or hub USB port (i.e., with an "A" receptacle) that supports USB 2.0 performance[1]. The icon should be drawn as shown in the USB 2.0 specification,
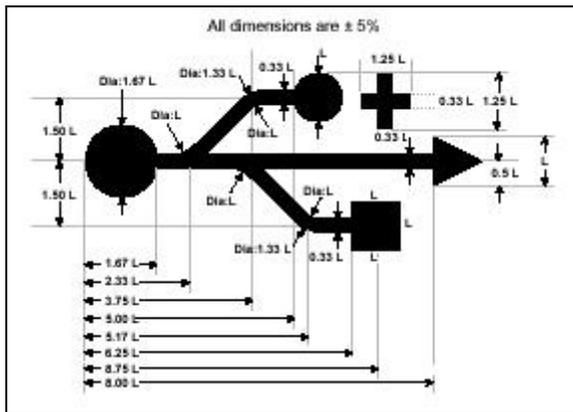

figure 6.5[2]. This diagram reproduces the specification figure with the additional plus sign shown with suggested positioning and relative size dimensions. Note that manufacturers should feel free to scale the image as required by their production process in order to fit it on a surface near the PC or host port.

The icon should be placed such that it is likely to be seen by a user viewing the PC or host port from normal vantage points, given typical use-environments and conditions.[3]

Software Alerts

It is not intended that this icon be the only mechanism that helps the user identify the appropriate USB port to use for a given device. In addition, the operating system should be able to detect certain characteristics of USB devices plugged into PC and host ports, and to guide the user through dialog boxes or other messaging to proper attachment of USB devices. The capability of the operating system to detect USB devices plugged into PC or host ports is summarized in the table on the following page.

When a USB 2.0 hub or device (the operating system treats these identically) is plugged into a USB 1.1 hub or host port, the logic summarized in the table will be applied to direct the user to an unused USB 2.0 port. When a USB 1.1 hub/device is plugged into a USB 2.0 hub or host port, no action is taken by the operating system and no alerts are displayed unless/until an additional USB 2.0 device is plugged into a 1.1 port and no additional 2.0 port exists (making scenario #2, above, apply). At that point, the action described in the table occurs.

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his guideline does not apply to cables, as unique cables are not needed to support USB 2.0 ports/connectors.

niversal Serial Bus Specification Revision 2.0, page 93.

y "typical use-environments and conditions" we mean that the PC or host is placed for use on a surface as intended by the M's design, and such that reasonable access to the port(s) available. Placement in unusual or cramped settings cannot be cluded, but will make viewing of the ports, and identification of the icon more difficult.

Software Alert Logic and Actions

State or Condition	Operating System Alert
1. Unused 2.0 port exists:	Alerts inform user and advise them to move 2.0 device to appropriate port.
2. No unused 2.0 port exists:	Alert informs user and advises them to swap 2.0 device with 1.1 device that's plugged into a 2.0 port.
3. All 2.0 ports are already filled up with 2.0 devices:	Alert informs user and advises them they can unplug another 2.0 device that's not being used at the moment and move the 2.0 device of interest to that port.
4. System is not 2.0-capable:	Alert will warn user that 2.0 device may not deliver max performance when used in USB 1.1 port.