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(54) **PLUG-AND-PLAY DEVICE AND METHOD FOR ENHANCING FEATURES AND SETTINGS IN AN INTERACTIVE DISPLAY SYSTEM**

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G06F 1/24	(2006.01)

(52) **U.S. Cl.** **710/8**; 710/104; 713/1; 713/2; 713/100

(58) **Field of Classification Search** 710/8, 104; 713/1, 2, 100

See application file for complete search history.

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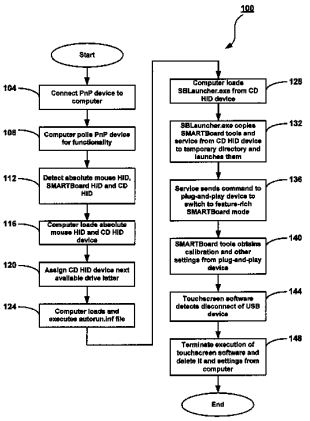
(57) **ABSTRACT**

A plug-and-play device providing a set of functionality comprises a plug-and-play interface, storage, and software stored in the storage. The software is automatically executed by a computer when the plug-and-play device is connected thereto via the plug-and-play interface. The software detects disconnection of the plug-and-play device from the computer and terminates execution in response thereto. The computer does not persistently store the software thereafter.

67 Claims, 3 Drawing Sheets



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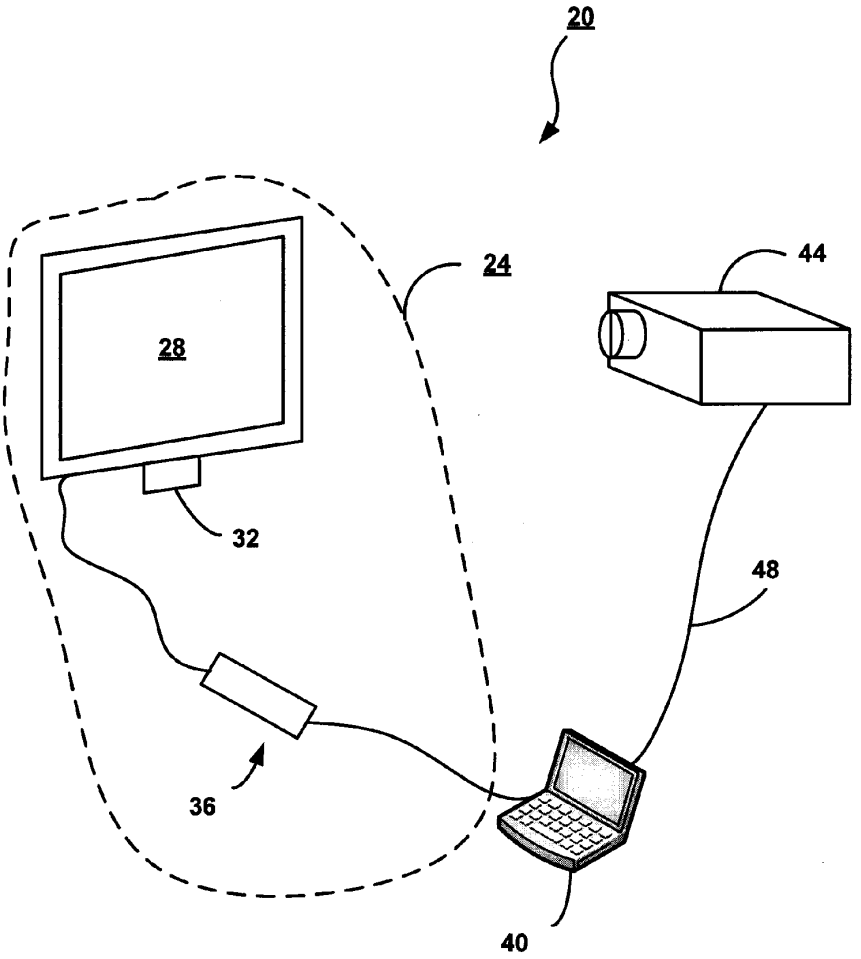

Fig. 1

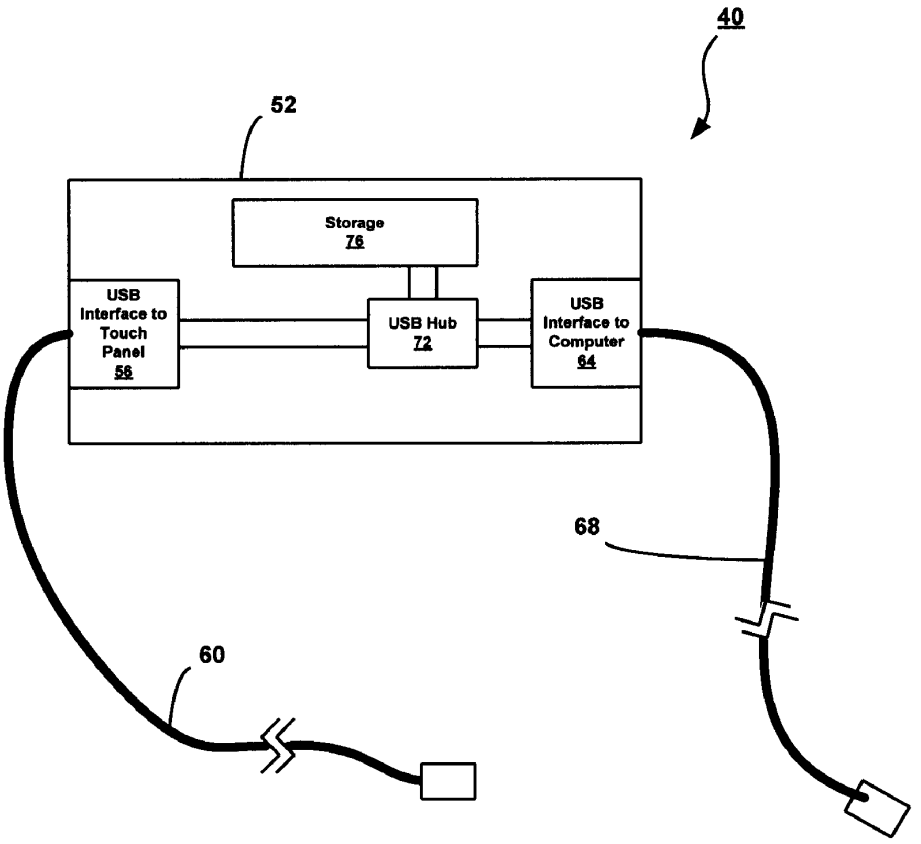
40
52
Storage
76
USB
Interface to
Touch
Panel
56
USB Hub
72
USB
Interface to
Computer
64
68
60

Fig. 2

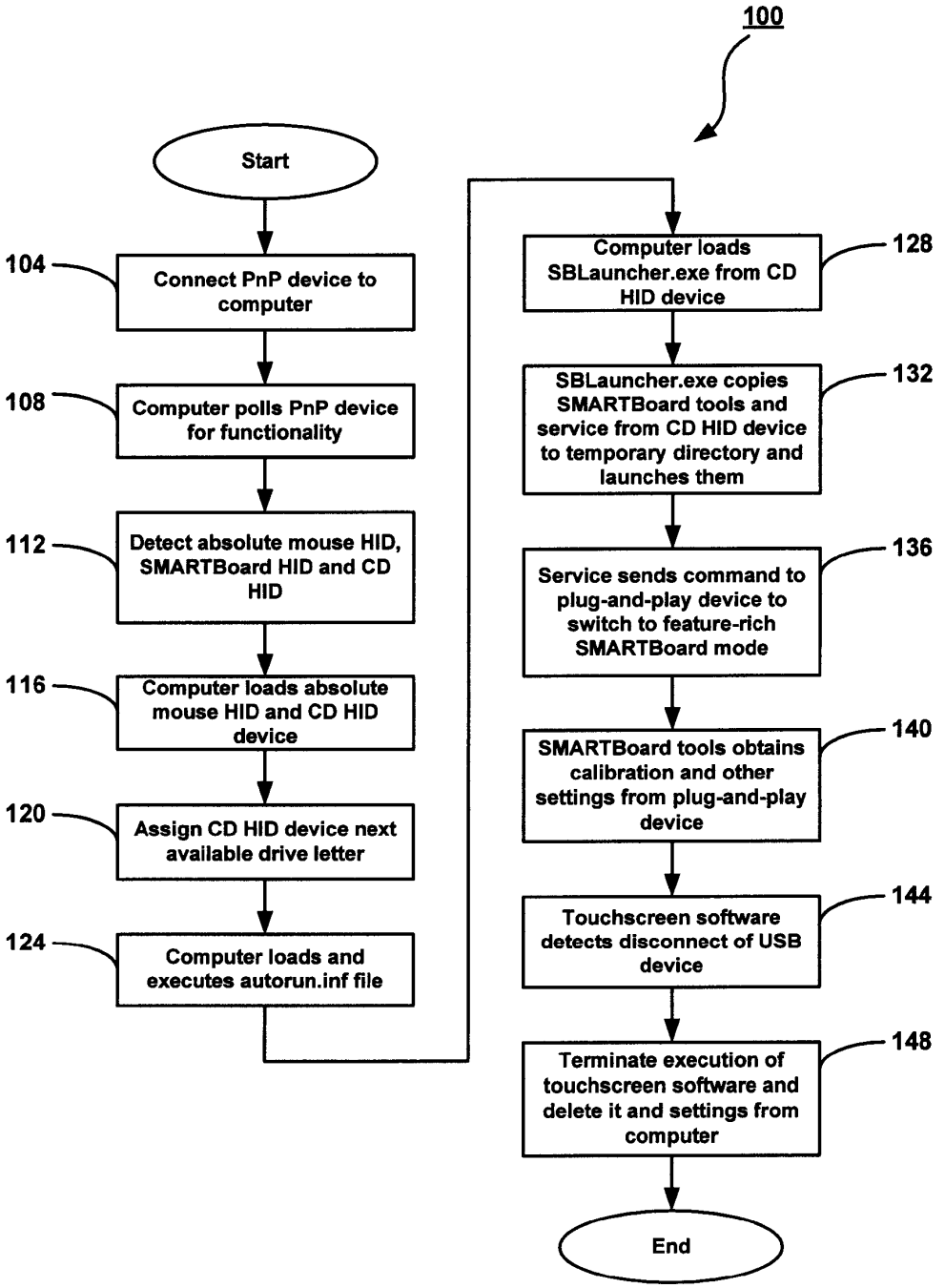
100
Start
104
Connect PnP device to computer
108
Computer polls PnP device for functionality
112
Detect absolute mouse HID, SMARTBoard HID and CD HID
116
Computer loads absolute mouse HID and CD HID device
120
Assign CD HID device next available drive letter
124
Computer loads and executes autorun.inf file
128
Computer loads SBLauncher.exe from CD HID device
132
SBLauncher.exe copies SMARTBoard tools and service from CD HID device to temporary directory and launches them
136
Service sends command to plug-and-play device to switch to feature-rich SMARTBoard mode
140
SMARTBoard tools obtains calibration and other settings from plug-and-play device
144
Touchscreen software detects disconnect of USB device
148
Terminate execution of touchscreen software and delete it and settings from computer
End

Fig. 3

PLUG-AND-PLAY DEVICE AND METHOD FOR ENHANCING FEATURES AND SETTINGS IN AN INTERACTIVE DISPLAY SYSTEM

FIELD OF THE INVENTION

The present invention relates generally to computer peripheral devices and, more specifically, to a plug-and-play device and a method of using the same.

BACKGROUND OF THE INVENTION

Plug-and-play devices are well known and many types of plug-and-play standards exist, including universal serial bus ("USB"), IEEE1394 ("FireWire") and PCMCIA ("PC Card"), with the most common being USB. Such devices have a set of functionality that is accessible to a computer through a plug-and-play interface. This functionality can include, but is not limited to, storage, input registration, image capturing, audio input and output, etc. Many sets of functionality are pre-defined as device classes. Upon connection of a plug-and-play device to a computer, an electronic circuit is completed and the operating system of the computer is alerted of the connection. The operating system polls the plug-and-play device to determine what functionality is available on the device.

Many operating systems possess a number of pre-loaded drivers for generic plug-and-play device classes, such as USB mass storage, a two-button mouse, etc. If the operating system is in possession of a driver for the device class of the plug-and-play device connected to the computer, the driver is loaded so that the functionality of the device can be accessed. If, instead, the operating system does not possess a driver corresponding to the device class of the plug-and-play device, the operating system can prompt the user to install the appropriate software to enable the computer to access the functionality of the device.

For example, U.S. Patent Application Publication No. 2004/0205778 to Wong et al. discloses a peripheral device that includes driver storage. The peripheral device connects to a computer via a plug-and-play interface and cycles through the emulation of a number of plug-and-play device classes recognized by the operating system until one is found that permits auto-execution of a driver installation program.

U.S. Patent Application Publication No. 2005/0038934 to Gotze et al. discloses a USB-based peripheral printer that can be conditioned between two modes. In a first mode, the printer emulates USB mass storage to permit installation of drivers stored in memory of the printer onto a computer to which the printer is connected. Once the drivers are installed, the printer is conditioned into a second mode, in which it behaves as a printer. The drivers installed on the computer enable printing on the printer.

The need to install software/drivers can be undesirable in a number of situations, such as where a user does not possess administrative rights for the computer or simply does not desire to install yet more software on the computer, especially where the connection of the plug-and-play device is infrequent or a one-time affair. Installing software may also prove to be a difficult or complicated task. For example, the user may need to download software from the Internet or may need to locate media upon which the software/drivers are located.

Where the plug-and-play device is a touch panel, calibration to map the coordinate system of the input field of the touch panel to the computer display coordinate system is typically required in order to ensure proper registration of

touch input. Calibration is the process of checking or adjusting the accuracy of a device, such as the interpretation of input or the presentation of output.

Generally, a calibration process needs to be carried out so that calibration settings can be registered by the computer. These calibration settings are stored on the computer that performed the calibration. As a result, however, when the touch panel is plugged into a computer to which it was not previously connected, the calibration process must be carried out again in order to establish the calibration settings on the new computer.

SUMMARY OF THE INVENTION

Accordingly, in one aspect there is provided a plug-and-play device providing a set of functionality, comprising:

a plug-and-play interface;

storage; and

software stored in said storage, said software being automatically executed by a computer when said plug-and-play device is connected thereto via said plug-and-play interface, said software being operable to detect disconnection of said plug-and-play device from said computer and terminate execution in response thereto, said computer not persistently storing said software thereafter.

In one implementation, the software enables the computer to access the set of functionality provided by the plug-and-play device. The plug-and-play interface can be a universal serial bus interface. The storage can store an autorun.inf file that specifies the software for execution. The software can be copied to a temporary location on the computer and executed therefrom, and can be terminated and deleted upon disconnection of the plug-and-play device from the computer.

According to another aspect, there is provided a method of using a plug-and-play device with a computer, comprising:

detecting connection of a plug-and-play device to said computer;

automatically locating software specified for execution, said software being stored in memory of said plug-and-play device;

executing said software with said computer; and

terminating execution of said software upon disconnection of said plug-and-play device from said computer.

According to yet another aspect, there is provided a plug-and-play device, comprising:

storage; and

settings stored in said storage, said settings being associated with a set of functionality.

The plug-and-play device can further include software stored in the storage, the software providing access to the set of functionality when the plug-and-play device is connected to a computer. The set of functionality in this case is an input interface provided by the plug-and-play device.

Alternatively, the plug-and-play device can include software stored in the storage, the software being executable on a computer to which the plug-and-play device is connected and providing access to the set of functionality. The software can reference the calibration settings during execution. The software can be automatically executed by the computer when the plug-and-play device is connected thereto via a plug-and-play interface thereof, with the software detecting disconnection of the plug-and-play device from the computer and terminating execution in response thereto. In this case, the computer does not persistently store the software thereafter. The plug-and-play device can also include calibration software for setting the calibration settings for the set of functionality.

According to still yet another aspect, there is provided a plug-and-play device for receiving input, comprising:

a plug-and-play interface;

a touch panel on which a computer-generated image is displayed;

storage; and

calibration settings stored in said storage and mapping touch panel an computer-generated image coordinate systems.

According to still yet another aspect, there is provided a method of adjusting the function of a computer, comprising:

retrieving calibration settings from an external device associated with functionality provided by the external device; and

adjusting the function of said computer using said calibration settings.

According to still yet another aspect, there is provided a plug-and-play device providing a set of functionality, comprising:

a plug-and-play interface;

storage; and

software stored in said storage, said software being copied to said computer and executed therefrom automatically when said plug-and-play device is connected to said computer, said software providing access to said set of functionality of said plug-and-play device.

By storing software for the plug-and-play device on the plug-and-play device itself that automatically loads onto the computer when the plug-and-play device is connected to the computer, the user of the plug-and-play device need not pre-install software/drivers on the computer in order to access the functionality offered by the plug-and-play device nor does the user require administrative rights for the computer in order to use the software. As the software is not stored persistently on the computer upon termination, the computer is left in the same general state it was in before connection to the plug-and-play device. Further, by storing settings on the plug-and-play device, a setup process need not be performed when a new computer is connected to the plug-and-play device.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments will now be described, by way of example only, with reference to the attached Figures, wherein:

FIG. **1** shows a plug-and-play device comprising a touch panel, a controller and a cable, coupled to a computer;

FIG. **2** shows a schematic diagram of the cable of FIG. **1**; and

FIG. **3** is a flow chart of the general operation of the plug-and-play device of FIG. **1**.

DETAILED DESCRIPTION OF THE EMBODIMENTS

FIG. **1** illustrates a system **20** comprising a plug-and-play device **24** for receiving and digitizing input. In this embodiment, the plug-and-play device **24** includes a touch panel **28**, a controller **32** and a cable **36**. Touch panel **28** is of the type manufactured and sold by SMART Technologies, Inc. of Calgary, Alberta under the name SMARTBoard™. The controller **32** controls the operation of the touch panel **28** and is in communication with a computer **40** via the cable **36**. An LCD projector **44** is coupled to the computer **40** via a VGA cable **48**. The computer **40** controls the LCD projector **44** to project images otherwise presented on a display of the computer **40** onto the touch panel **28**. The projector **33** may be positioned in front of or behind the touch panel **28**.

The touch panel **28** provides a user with the ability to interact with the projected images via a pointer, such as a marker or a finger, for the purpose of providing input. The touch panel requires no extra software other than that provided by the operating system to work as a mouse. The functionality of the touch panel is greatly enhanced by additional software not available on the operating system, as will be described below.

The controller **32** includes a processor (not shown) that executes firmware stored in non-volatile storage. Generally, the firmware causes the controller **32** to operate in one of two operational modes. In an initial mode, the controller **32** operates two USB profiles, namely an absolute mouse human interface device ("HID") profile and a touch panel HID profile. The absolute mouse HID profile enables the controller **32** to relay absolute position information for a pointer, as it is detected by the touch panel **28**, along with basic mouse functions. The touch panel HID is a device class that enables enhanced functionality for the touch panel **28**. The enhanced functionality includes all of the functionality available in the absolute mouse HID device class, plus inking information, additional tool information (buttons, eraser, pen selection, etc.) and two-way communications with the controller **32**. In a "native" operating mode, the controller **32** terminates the absolute mouse HID profile and only operates the touch panel HID profile.

The components of the cable **36** are described with reference to FIG. **2**. The cable **36** includes a USB hub component **52** that has a first USB interface **56** for connection to a USB cable **60** that extends to the touch panel **28**, and a second USB interface **64** for connection to a USB cable **68** that extends to the computer **40**. Both the first and second USB interfaces **56**, **64** are in communication with a USB hub **72**.

Also in communication with the USB hub **72** is storage **76**, namely flash memory, that is configured to operate in accordance with the compact disk ("CD") HID profile. The CD HID profile enables storage **76** to behave like a CD drive. Storage **76** stores a set of software applications, including a user application, a service application, a launcher application, a calibration application and an autorun.inf file that references the launcher application. Further, the storage **76** can also store calibration settings associated with the configuration of the system **20**. In particular, the calibration settings include data for mapping input received by the touch panel **28** with output projected by the LCD projector **44** onto the surface of the touch panel **28**.

The position of the LCD projector **44** and the touch panel **28** are generally fixed relative to one another. As a result, once their relative positions are determined, they do not have to be re-determined.

The user application permits a richer set of features than basic mouse functionality. It contains a number of presentation applications, integration into popular drawing and presentation applications, and an application to allow users to ink over documents in any application or the desktop of the graphical user interface of the computer **40** that is projected onto and displayed on the surface of the touch panel **28**.

The method of operation of the plug-and-play device **24** is shown in FIG. **3**. When the plug-and-play device **24** is connected to the computer **40** (step **104**), and the connection of the plug-and-play device **24** to the computer **40** is detected by the operating system of the computer **40**, the computer **40** queries the plug-and-play device **24** to determine what functionality is provided by the plug-and-play device **24** (step **108**). As the USB hub **72** is connected to storage **76** as well as the controller **32**, the USB hub **72** queries each of these two units to determine what profiles are available. The storage **76**

responds by indicating that it supports the CD HID profile. The controller **32**, which is in the initial mode, responds by indicating that it supports the absolute mouse HID profile and the touch panel HID profile.

The computer **40**, upon receiving this information, detects that the following functionality is available for the plug-and-play device **24**: the absolute mouse HID profile, the touch panel HID profile and CD HID profile (step **112**). The computer **40** loads the drivers for the devices recognized by the operating system (i.e. for which the operating system has drivers); namely, the absolute mouse HID and CD HID (step **116**). As each of these sets of functionality are detected by the computer **40**, the computer **40** recognizes them as separate devices. The computer **40** does not load the touch panel HID profile as the operating system of the computer **40** does not possess a corresponding driver. The computer **40** then assigns the detected CD HID device the next available drive letter (step **120**).

Computer **40** is configured as the majority of computers are by default; that is, it is configured to search CD HID devices for a file named autorun.inf that will direct the computer **40** to automatically execute a specific application upon connection to a CD HID device. Accordingly, computer **40** queries the CD HID device for autorun.inf and, upon receiving it, loads and executes the instructions contained therein (step **124**). The autorun.inf file is used by the Microsoft Windows® family of operating systems to execute, under certain conditions, the instructions contained therein upon detection of certain types of storage devices. For example, under certain conditions, the autorun.inf file is executed when a CD-ROM disk, containing the autorun.inf file, is inserted into the bay of a CD-ROM drive. Execution typically begins without delay after the information in the autorun.inf file becomes available to or is recognized by the operating system.

The autorun.inf file contains a pointer to the executable launcher application. Upon parsing the autorun.inf file, the computer **40** uses the pointer to obtain the launcher application from the storage **76**, along with a set of corresponding dynamic link libraries ("DLLs"), and executes it (step **128**). The launcher application, in turn, directs the computer **40** to copy two executable files, namely the user application and the service application along with some associated DLLs, from the storage **76** to a temporary directory on the computer **40** and execute them (step **132**). Upon execution of the service application, the launcher application terminates execution and the service application directs the computer **40** to send a command to the controller **32** to switch to the touch panel HID mode (step **136**).

Upon launch, the user application queries and obtains from storage **76** of the plug-and-play device **24** the calibration settings and other settings (step **140**). The calibration settings enable the user application to map touch input received from the touch panel **28** to the computer display coordinate system. The other settings include pen tray settings, COM port settings, contact filter settings and user settings for some of the software applications. All of these settings are stored in a standard Windows INI file. Further, several XML files are used to store layout and menu settings for various applets forming part of the user application. These applets provide a floating window of toolbuttons for accessing various functionality, an on-screen keyboard, etc. These layout and menu settings are stored in XML files in the storage **76** of the plug-and-play device **24**, and are loaded and saved in the user directory "C:\Documents and Settings\<user name>\ ApplicationData\SMART Technologies Inc.\SMARTBoard™ Software\" during execution of the user application, where <user name> is the login name of the current user.

Upon obtaining the calibration settings, the user application permits user interaction with the touch panel **28** to be registered spatially relative to the images projected on the surface of the touch panel **28** by the LCD projector **44**. During execution, some settings are stored in the "HKEY_CURRENT_USER" key of the registry and, in particular, in the "Software\SMART Technologies Inc.\SMARTBoard™ Software\" subkey. These settings include application window positions, user settings for each application and a list of recently used files. The "HKEY_CURRENT_USER" key is used as there are generally no restrictions on modifications made to this key. In addition, if there are no access restrictions on the "HKEY_LOCAL_MACHINE" key, spell checker settings are written there.

Upon termination of the session, the computer **40** can be unplugged from the plug-and-play device **24** and removed. When the plug-and-play device **24** is disconnected, the computer **40** notifies the launcher application (step **144**). The launcher application proceeds to terminate execution of and delete the user application, the service application, the various related DLLs and settings from the temporary locations on the computer **40** and then does the same for itself (step **148**). Before termination of execution of the launcher application, it writes the user settings stored in "C\Documents and Settings\<user name>\Application Data\SMART Technologies Inc.\SMARTBoard™ Software\" to XML files which it then stores in storage **76** of the plug-and-play device **24**. The launcher application then deletes these settings and those stored in the registry. Once the settings and files are deleted from the computer **40**, the launcher application places an entry in the HKEY_CURRENT_USER\Software\ Microsoft\Windows\CurrentVersion \RunOnce registry key which tells Windows to delete the launcher application when the user logs in next, and then terminates execution. If, instead, the user stops the SMARTBoard™ software by closing the user application, then the launcher application executes the instance of itself found in the storage **76** of the plug-and-play device **24** and terminates execution of itself. In response, the launcher application is executed from the plug-and-play device **24** and deletes the instance of the launcher application stored on the computer **40**.

As noted above, in order for input made relative to an image projected onto the touch panel **28** by the LCD projector **44** to be registered spatially with the image projected, the system **20** is calibrated. As the spatial relation between the image projected by the LCD projector **44** and the touch panel **28** changes only when the LCD projector **44** and the touch panel **28** are moved relative to one another, calibration is generally performed after the touch panel **28** and LCD projector **56** are fixed at a location. In order to calibrate the system **20**, the calibrate application is launched. The user is then prompted to touch a number of points on the graphical user interface of the computer **40** that is displayed on the surface of the touch panel **28**. The resulting touch panel output is used to map the raw touch coordinates registered by the touch panel **28** to the computer display coordinate system. The newly-captured calibration settings are then recorded in the Windows INI file so that they can be used by other computers to map input received from the plug-and-play device **24** with the graphical user interface presented thereon.

While the system has been described with specificity to USB, other types of plug-and-play architectures can be utilized. For example, those of skill in the art will readily understand how to adapt the system described herein for use with FireWire and PCMCIA architectures and the like.

The drivers for the plug-and-play device can be stored on a separate CD HID device or the like. Similarly, the calibration settings can be stored on a separate removable storage, such as a USB flash drive, rewritable optical disk, etc. In this manner, existing calibration settings can be made available to other computers that are coupled to the plug-and-play device. Alternatively, the calibration settings can be stored on the

touch panel's controller using the two-way communication enabled by the touch panel HID profile.

While the system has been described with reference to a touch panel, the system can be any one of a number of other devices, such as cameras, sound systems, etc. For example, where the plug-and-play device is a sound system, the settings can include the output volumes for each speaker that have been previously calibrated to desired levels for the set configuration.

Although an embodiment has been described with reference to the accompanying drawings, those of skill in the art will appreciate that modifications and variations may be made without departing from the spirit and scope thereof as defined by the appended claims.

What is claimed is:

1. An interactive input system comprising:

an interactive surface having a controller; and

a plug-and-play cable connecting a computing device to the controller and establishing a bi-directional communication channel therebetween, wherein upon request of said computing device, said controller sending a plurality of human interface device profiles to said computing device via said plug-and-play cable, and upon receiving said plurality of human interface device profiles, said computing device loading a first human interface device profile, said plug-and-play cable comprising:

storage;

executable software stored on said storage, said software being automatically executed by the computing device when said plug-and-play cable is connected to the computing device, and when executed, said software instructing said computing device to send a command to said controller instructing said controller to switch from the first human interface device profile to a second human interface device profile; and

settings stored on said storage, said settings being transferred to the computing device via said plug-and-play cable and being used by the computing device to calibrate automatically the computing device and the interactive surface, wherein said software enables said computing device and controller to communicate over said bi-directional communication channel and is operable to detect disconnection of said plug-and-play cable from said computing device and terminate execution in response thereto, said computing device not persistently storing said software and settings thereafter.

2. The interactive system of claim **1**, wherein said plug-and-play cable comprises a universal serial bus interface.

3. The interactive system of claim **2**, wherein said storage stores an autorun file that specifies said software for automatic execution.

4. The interactive system of claim **3**, wherein said plug-and-play cable comprises a compact disk human interface device (CD HID) profile.

5. The interactive system of claim **2**, wherein said software is copied to a temporary location on said computing device and executed therefrom, and wherein execution of said software is terminated and deleted from said temporary location upon disconnection of the plug-and-play cable from the computing device.

6. The interactive system of claim **2**, wherein said software registers a request with the operating system of said computing device to delete said software at a later time.

7. The interactive system of claim **1**, wherein said software is copied to a temporary location on said computing device and executed therefrom, and wherein execution of said software is terminated and deleted from said temporary location upon disconnection of the plug-and-play cable from the computing device.

8. The interactive system of claim **7**, wherein said software executes an instance of said software stored in said storage of said plug-and-play cable, terminates its own execution and the instance of said software executing from said storage of said plug-and-play cable and deletes said software from said temporary location on said computing device.

9. The interactive system of claim **1**, wherein said software registers a request with the operating system of said computing device to delete said software at a later time.

10. The interactive input system of claim **1**, wherein said settings further comprise pen tray settings.

11. A method of interacting with an interactive surface comprising:

connecting a plug-and-play cable between a computing device and a controller associated with the interactive surface;

establishing a bi-directional communication channel between said computing device and said controller via the plug-and-play cable;

in response to a request received by said controller from said computing device, sending a plurality of human interface device profiles from said controller to said computing device;

upon receiving said plurality of human interface device profiles, loading a first human interface device profile on said computing device;

automatically locating executable software stored on memory of said plug-and-play cable specified for execution and executing said located software on said computing device to cause said computing device to send a command to said controller instructing said controller to switch from the first human interface device profile to a second human interface device profile;

automatically locating settings for said interactive surface and transferring the settings to said computing device;

automatically calibrating said computing device and said interactive surface using said settings; and

terminating execution of said software upon disconnection of said plug-and-play cable from said computing device, said computing device not persistently storing said software and settings thereafter.

12. The method of claim **11**, wherein said executing comprises copying said software to storage on said computing device.

13. The method of claim **12**, further comprising registering a request with the operating system of said computing device to delete said software at a later time.

14. The method of claim **11**, wherein said settings further comprise pen tray settings.

15. A plug-and-play cable for interconnecting an interactive surface and a computing device and establishing a bi-directional communication channel therebetween, said plug-and-play cable comprising:

storage; and

a hub communicating with said storage, said hub providing executable software stored in said storage to said computing device for automatic execution upon connection of said plug-and-play cable to said computing device to enable the computing device and a controller of said interactive surface to communicate over said bi-directional communication channel and to cause the computing device to send a command to said controller instructing said controller to switch from a first human interface device profile to a second human interface device pro-

file, said plug-and-play cable further communicating calibration settings to the computing device when the plug-and-play cable interconnects the interactive surface and computing device, wherein said settings are configured for use by the computing device to calibrate automatically said computing device and said interactive surface.

16. The plug-and-play cable of claim **15**, wherein said software references said calibration settings during execution.

17. The plug-and-play cable of claim **16**, wherein said software automatically detects disconnection of said plug-and-play cable from said computing device and terminates execution in response thereto, said computing device not persistently storing said software and settings thereafter.

18. The plug-and-play cable of claim **15**, wherein the interactive surface comprises a touch panel on which images are projected, said calibration settings mapping touch panel and displayed image coordinate systems.

19. The plug-and-play cable of claim **15**, wherein said software is copied to a temporary location on said computing device and executed therefrom, and wherein execution of said software is terminated and deleted from said temporary location upon disconnection of the plug-and-play cable from the computing device.

20. The plug-and-play cable of claim **15**, wherein said software registers a request with the operating system of said computing device to delete said software at a later time.

21. The plug-and-play cable of claim **15**, wherein said plug-and-play cable further communicates pen tray settings to said computing device.

22. An interactive system comprising:

a controller;

a plug-and-play cable comprising storage, said plug-and-play cable connecting the controller to a computing device and establishing a bi-directional communication channel therebetween, said storage storing executable program code that is transferred to said computing device upon connection of said plug-and-play cable to said computing device, upon execution of said program code, said computing device sending a command to said controller instructing said controller to switch from a first human interface device profile to a second human interface device profile;

an interactive display on which a computer-generated image from said computing device is displayed; and

calibration settings stored on said storage, said calibration settings being transferred to said computing device upon execution of software stored in said storage and being used by said computing device to automatically map a display of said computing device to said interactive display upon connection of said plug-and-play cable to the controller and computing device.

23. The interactive system of claim **22**, wherein said computer-generated image comprises a graphical user interface.

24. The interactive system of claim **22**, wherein said plug-and-play cable comprises a universal serial bus interface.

25. The interactive system of claim **22**, further comprising calibration software stored on said storage for execution by the computing device to set said calibration settings.

26. The interactive system of claim **25**, wherein said software is copied to a temporary location on said computing device and executed therefrom, and wherein execution of said software is terminated and deleted from said temporary location upon disconnection of the plug-and-play cable from the computing device.

27. The interactive system of claim **25**, wherein said software registers a request with the operating system of said computing device to delete said software at a later time.

28. The interactive input system of claim **22**, further comprising pen tray settings stored on said storage.

29. A method of mapping a display of a computing device to an interactive screen comprising:

connecting a plug-and-play cable comprising storage between the computing device and a controller associated with the interactive screen;

establishing a bi-directional communication channel between the computing device and the controller over the plug-and-play cable;

in response to a request received by the controller from the computing device, sending a plurality of human interface device profiles from the controller to the computing device;

loading a first of the received human interface device profiles on said computing device;

executing by the computing device software stored on the storage of said plug-and-play cable causing said computing device to instruct said controller to switch from the first human interface device profile to a second human interface device profile;

retrieving calibration settings upon connection of the plug-and-play cable, said calibration settings being associated with functionality provided by the interactive screen; and automatically mapping the display of the computing device to the interactive screen using said calibration settings.

30. The method of claim **29** further comprising terminating execution of said software upon disconnection of said plug-and-play cable from said computing device, said computing device not persistently storing said software and settings thereafter.

31. The method of claim **29**, wherein said executing comprises copying said software to storage on said computing device.

32. The method of claim **29**, further comprising registering a request with the operating system of said computing device to delete said software at a later time.

33. The method of claim **29**, further comprising retrieving pen tray settings upon connection of said plug-and-play cable.

34. A plug-and-play cable for connection between a computing device and a controller associated with an interactive system comprising:

storage;

software stored on said storage, said software being copied to said computing device and executed therefrom automatically when said plug-and-play cable is connected to said computing device to enable the computing device and controller to communicate; and

a two-way communication channel through said plug-and-play cable over which the computing device and interactive system communicate, settings for the interactive system being copied to said computing device over said communication channel, said settings being configured for use by said computing device to calibrate automatically a display of said computing device and a display of said interactive system upon connection of the plug-and-play cable between the computing device and the interactive system, wherein the software, when executed, causes said computing device to instruct said controller to switch from a first human interface device profile to a second human interface device profile.

35. The plug-and-play cable of claim **34**, wherein said settings on said storage further comprise pen tray settings.

36. An interactive input system comprising:

an interactive surface having a controller; and

a plug-and-play cable connecting a computing device to the controller and establishing a bi-directional communication channel therebetween, said plug-and-play cable comprising:

storage;

executable software stored on said storage, said software being automatically executed by the computing device when said plug-and-play cable is connected to the computing device; and

settings stored on said storage, said settings being transferred to the computing device via said plug-and-play cable, said settings comprising calibration settings used by the computing device to calibrate automatically the computing device and the interactive surface and pen tray settings, wherein said software enables said computing device and controller to communicate over said bi-directional communication channel and is operable to detect disconnection of said plug-and-play cable from said computing device and terminate execution in response thereto, said computing device not persistently storing said software and settings thereafter.

37. The interactive system of claim **36**, wherein said plug-and-play cable comprises a universal serial bus interface.

38. The interactive system of claim **37**, wherein said storage stores an autorun file that specifies said software for automatic execution.

39. The interactive system of claim **36**, wherein said plug-and-play cable comprises a compact disk human interface device (CD HID) profile.

40. The interactive system of claim **36**, wherein said software is copied to a temporary location on said computing device and executed therefrom, and wherein execution of said software is terminated and deleted from said temporary location upon disconnection of the plug-and-play cable from the computing device.

41. The interactive system of claim **36**, wherein said software registers a request with the operating system of said computing device to delete said software at a later time.

42. The interactive input system of claim **36**, wherein upon request of said computing device, said controller sends a plurality of human interface device profiles to said computing device via said plug-and-play cable, and upon receiving said plurality of human interface device profiles, said computing device loads a first human interface device profile.

43. The interactive input system of claim **42**, wherein when said software is executed, said software instructs said computing device to send a command to said controller instructing said controller to switch from the first human interface device profile to a second human interface device profile.

44. A method of interacting with an interactive surface comprising:

connecting a plug-and-play cable between a computing device and a controller associated with said interactive surface;

establishing a bi-directional communication channel between said computing device and said controller via the plug-and-play cable;

automatically locating executable software stored on memory of said plug-and-play cable specified for execution and executing said located software on said computing device to enable said computing device and controller to communicate over said bi-directional communication channel;

automatically locating calibration settings and pen tray settings for said interactive surface and transferring the settings to said computing device;

automatically calibrating said computing device and said interactive surface using said calibration settings; and

terminating execution of said software upon disconnection of said plug-and-play cable from said computing device, said computing device not persistently storing said software and settings thereafter.

45. The method of claim **44**, wherein said executing comprises copying said software to storage on said computing device.

46. The method of claim **44** further comprising:

sending a plurality of human interface device profiles from said controller to said computing device; and

upon receiving said plurality of human device interface device profiles, loading a first human device interface device profile on said computing device.

47. The method of claim **46** wherein during execution of said software, said computing device instructs said controller to switch from the first human interface device profile to a second human interface device profile.

48. A plug-and-play cable for interconnecting a controller associated with an interactive surface and a computing device and establishing a bi-directional communication channel therebetween, said plug-and-play cable comprising:

storage; and

a hub communicating with said storage, said hub providing executable software stored in said storage to said computing device for automatic execution upon connection of said plug-and-play cable to said computing device to enable the computing device and controller to communicate over said bi-directional communication channel, said plug-and-play cable further communicating calibration settings and pen tray settings to the computing device when the plug-and-play cable interconnects the controller and computing device, wherein said calibration settings are configured for use by the computing device to calibrate automatically said computing device and said interactive surface.

49. The plug-and-play cable of claim **48**, wherein said software references said calibration settings during execution.

50. The plug-and-play cable of claim **49**, wherein said software-automatically detects disconnection of said plug-and-play cable from said computing device and terminates execution in response thereto, said computing device not persistently storing said software and settings thereafter.

51. The plug-and-play cable of claim **50**, wherein the interactive surface comprises a touch panel on which images are projected, said calibration settings mapping touch panel and displayed image coordinate systems.

52. The plug-and-play cable of claim **51**, wherein said software is copied to a temporary location on said computing device and executed therefrom, and wherein execution of said software is terminated and deleted from said temporary location upon disconnection of the plug-and-play cable from the computing device.

53. The plug-and-play cable of claim **48** wherein upon request of said computing device, said controller sends a plurality of human interface device profiles to said computing device, and upon receiving said plurality of human device profiles, said computing device loads a first human device profile.

54. The plug-and-play cable of claim **53** wherein when said software is executed, said computing device sends a command to said controller instructing said controller to switch from the first human interface device profile to a second human interface device profile.

55. An interactive system comprising:

a controller;

a plug-and-play cable comprising storage, said plug-and-play cable connecting the controller to a computing device and establishing a bi-directional communication channel therebetween;

an interactive display on which a computer-generated image from said computing device is displayed; and

calibration settings and pen tray settings stored on said storage, said calibration settings and pen tray settings being transferred to said computing device upon execution of software stored in said storage, said calibration settings being used by said computing device to automatically map a display of said computing device to said interactive display upon connection of said plug-and-play cable to the controller and computing device.

56. The interactive system of claim **55**, wherein said computer-generated image comprises a graphical user interface.

57. The interactive system of claim **55**, wherein said plug-and-play cable comprises a universal serial bus interface.

58. The interactive system of claim **55**, further comprising calibration software stored on said storage for execution by the computing device to set said calibration settings.

59. The interactive system of claim **58**, wherein said software is copied to a temporary location on said computing device and executed therefrom, and wherein execution of said software is terminated and deleted from said temporary location upon disconnection of the plug-and-play cable from the computing device.

60. The interactive system of claim **55** wherein upon request of said computing device, said controller sends a plurality of human interface device profiles to said computing device, and upon receiving said plurality of human interface device profiles, said computing device loads a first human interface device profile.

61. The interactive system of claim **60** wherein upon execution of said software, instructions are transferred to said computing device to send a command to said controller to switch from the first human interface device profile to a second human interface device profile.

62. A method of mapping a display of a computing device to an interactive screen comprising:

connecting a plug-and-play cable comprising storage between the computing device and a controller associated with the interactive screen;

establishing a bi-directional communication channel between the computing device and the controller over the plug-and-play cable;

executing by the computing device software stored on the storage of said plug-and-play cable to enable the computing device and interactive screen to communicate over the bi-directional communication channel;

retrieving calibration settings and pen tray settings upon connection of the plug-and-play cable, said calibration settings being associated with functionality provided by the interactive screen; and

automatically mapping the display of the computing device to the interactive screen using said calibration settings.

63. The method of claim **62** further comprising terminating execution of said software upon disconnection of said plug-and-play cable from said computing device, said computing device not persistently storing said software and settings thereafter.

64. The method of claim **62** further comprising:

sending a plurality of human interface device profiles from said controller to said computing device; and

upon receiving said plurality of human device interface device profiles, loading a first human device interface device profile on said computing device.

65. The method of claim **64** wherein execution of said software by the computing device causes said computing device to instruct said controller to switch from the first human interface device profile to a second human interface device profile.

66. A plug-and-play cable for connection between a computing device and a controller associated with an interactive system comprising:

storage;

software stored on said storage, said software being copied to said computing device and executed therefrom automatically when said plug-and-play cable is connected to said computing device to enable the computing device and controller to communicate; and

a two-way communication channel through said plug-and-play cable over which the computing device and interactive system communicate, calibration settings and pen tray settings for the interactive system being copied to said computing device over said communication channel, said calibration settings being configured for use by said computing device to calibrate automatically a display of said computing device and a display of said interactive system upon connection of the plug-and-play cable between the computing device and the interactive system.

67. The plug-and-play cable of claim **66** wherein upon request of said computing device, said controller sends a plurality of human interface device profiles to said computing device, and upon receiving said plurality of human device profiles, said computing device loads a first human interface device profile, and when executed, said software instructs said computing device to send a command to said controller instructing said controller to switch from the first human interface device profile to a second human interface device profile.

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