METHOD TO REDUCE THE COST OF PRODUCT SOFTWARE UPGRADES AFTER PRODUCTION

Inventor: Norifumi Takaya, San Diego, CA (US)

Correspondence Address: RADER FISHMAN & GRAUER PLLC LION BUILDING, 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036 (US)

Assignees: Sony Corporation, Tokyo (JP); Sony Electronics Inc., Park Ridge, NJ (US)

Appl. No.: 12/379,726

Filed: Feb. 27, 2009

Publication Classification

Int. Cl.
B65B 5/00 (2006.01)
B65D 85/00 (2006.01)

U.S. Cl. 53467; 206/320

Abstract

A product packaging shipping container for housing and shipping a device that allows for service upgrades while the product packaging container remains closed. The product packaging container may include a set of container interfaces configured to be accessible from an exterior of the product packaging container and respectively corresponding to a set of device interfaces. The shipping container may also include a set of connections that respectively connect the set of container interfaces to the set of device interfaces, such that an external connection to the set of devices is provided while the product packaging container remains closed via access to the set of container interfaces.
Fig. 7

Manufacturing Stage

S1
Software Update
YES  Insert Jig or Wireless Update Device and Power Up Device
NO
Quality Assurance Stage

S2
Software Update
YES  Insert Jig or Wireless Update Device and Power Up Device
NO
Storage Stage

S3
Software Update
YES  Insert Jig or Wireless Update Device and Power Up Device
NO

S4
Confirm Ready for Shipment

External Factory Shipment
METHOD TO REDUCE THE COST OF PRODUCT SOFTWARE UPGRADES AFTER PRODUCTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to product packaging and more particularly to a product packaging container that allows connection to a device interface while the packaging remains closed.

2. Description of the Related Art

Packaging containers have developed quite significantly over the years in response to a number of concerns. Some of these concerns involve the type of article to be shipped, changes in the display of the article, changes in the packaging material, and even changes in marketing styles. The earliest type of product containers was a simple cardboard box which had the advantage of being easily stacked for shipment and easily shelved for display. Further advances in packaging containers included changing the actual design of the container to achieve greater sales. However, most advances in packaging revolved around either the front end of choosing the correct packaging container for the article or the back end of marketing the product to the consumer. Very few advances to packaging containers have been made for the shipping process.

3. Summary of the Invention

With the advent of shipping devices that need service and software upgrades, the shipping process has taken on a new importance. Conventionally, many electrical apparatuses such as televisions, for example, require placement in a packaging container right after the manufacturing stage, during the quality assurance stage, and during the storage stage right before shipment to the end consumer. At each of these stages, there is need for software and service upgrades to the electrical apparatus.

Currently, the service technician, at any one of the aforementioned stages, is compelled to remove the electrical apparatus to provide the service and software upgrade. This procedure can result in many problems, not the least of which is possible damage to the electrical apparatus itself. Other problems include, cost effectiveness and technician safety.

For these reasons and other that will become apparent, it is desirable to have a packaging container that can provide service and software upgrades to a device inside the packaging container without removing the device from the packaging container. More specifically, it is desirable to provide the service and software updates from the exterior of the packaging container before shipping the device to the end user.

A conventional transportation case 10 is shown in FIG. 1. The transportation case 10 is shown to have a port cover 30 at a location at the bottom left of transportation case 10. The port cover 30 is configured to be unscrewed at throughput hole 40 to reveal USB data output cables 30 and power supply cable 20. The USB data output cable 30 and the power supply cable 20 can be pulled out of the transportation case 10 via the throughput hole 40. The USB data output cable 30 is connected to a PC and the power supply cable 20 is connected to a suitable connector.

The transportation cover 10 encases a "6TD seismometer" and is shown to receive power through power supply cable 20 and receives and outputs data through USB data output cable 30. It must be maintained that the transportation case 10 can not be shipped but only provides access to the 6TD seismometer only when the throughput hole 40 is revealed.

FIG. 2A and 2B illustrate a TV 70 enclosed inside TV box 80. This configuration is maintained throughout the internal factory shipping process. In order to upgrade information prior to external factory shipping, TV 70 is removed from TV box 80 by lifting the TV box 80 in an upward direction to reveal service port 110, power connector 110 and power cable 90 on the back of the TV.

Once the TV 70 is removed from the TV box 80, power cable 90 is connected to an outside power source and power is provided to the TV via the power cable 90 and through the power connector 100. Service port 110 provides an access point for software diagnostics.

SUMMARY OF THE INVENTION

In light of the above issues, the current invention has been undertaken to overcome the difficulty in updating software of device while the shipping container remains closed.

In an embodiment of the current invention, there is provided a product packaging shipping container for housing and shipping a device and allowing connection to device interfaces while the product packaging container remains closed, the product packaging container comprising: a set of container interfaces configured to be accessible from an exterior of the product packaging container and respectively corresponding to a set of device interfaces; and a set of connections that respectively connect the set of container interfaces to the set of device interfaces, such that an external connection to the set of devices is provided while the product packaging container remains closed via access to the set of container interfaces.

The product packaging shipping container may include a set of container interfaces to accommodate a device upgrade while the product packaging container remains closed, and wherein the product packaging container is a shipping container, such that the device upgrade is carried out prior to shipment of the product packaging container without requiring direct access to the device within the product packaging container.

The product packaging shipping may also include a set of container interfaces includes a first container interface that corresponds to a power interface of the device to allow supply of power to the device and a second container interface that corresponds to a service interface of the device to allow a service upgrade to the device while the product packaging container remains closed.

The above and other objects, features and advantages of the present invention will become more apparent from the following description taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other more detailed and specific features of the present invention are more fully disclosed in the following specification, reference being had to the accompanying drawings, in which:

FIG. 1 is a perspective view of a through port on the outside of a container constructed in accordance with the prior art.

FIG. 2A is a perspective view of a conventional TV box housing a TV.
FIG. 2B is a perspective view of the back of the TV of FIG. 2A.

FIG. 3 is a perspective view of an example of a product package container in accordance with the present invention.

FIG. 4 is a cross-sectional view as seen from the top of the product package container of FIG. 3.

FIG. 5 is a perspective view of another example of a product package container in accordance with the present invention.

FIG. 6 is a cross-sectional view as seen from the top of the product package container of FIG. 5.

FIG. 7 is a flow chart illustrating the shipping process for the product packaging shipping container.

FIG. 8 is a perspective view of third example of a product package container in accordance with the present invention.

FIG. 9 is a cross-sectional view as seen from the top of the product package container of FIG. 8.

Detailed Description of the Invention

In the following description, for purposes of explanation, numerous details are set forth, such as flowcharts and system configurations, in order to provide an understanding of one or more embodiments of the present invention. However, it is and will be apparent to one skilled in the art that these specific details are not required in order to practice the present invention.

FIG. 3 shows device 300 encased in an unopened product packaging shipping container 200 with a set of container interfaces 220 and 270, such that the device 300 can be shipped both in an external and internal factory shipping process. The container interface 220 is configured to be accessible from an exterior of the product packaging shipping container 200 and respectively corresponds to a power interface 225 located on device 300 to allow supply of external power to the device 300. Power connector 221 is connected to container interface 220 to provide external power to device 300 via power interface 225.

Container interface 270 is configured to be accessible from the exterior of the product packaging shipping container 200 and respectively corresponds to a service interface 275 located on device 300 to allow for service upgrades for device 300. Jig 271 can be connected to service interface 275 via container interface 270 to provide service upgrades prior to external factory shipping.

As such, power is provided to container interface 220 through power connector 221 so as to relay power to power interface 225 such that device 300 is powered up to receive software and service upgrades.

FIG. 4 is a cross-sectional view as seen from the top of product packaging shipping container 200 of the first embodiment. Power connector 221 is connected to container interface 220 located on the back portion of product packaging shipping container 200. The location of container interface 220 corresponds to the location of the power interface 225. A set of power connections 230, respectively corresponding to the location of container interface 220, is configured to connect container interface 220 to power interface 225 to provide external power to device 300.

As such, external power can be supplied to device 300 by the power connector 221 via the power interface 225 through container interface 220 along the set of power connections 230 while the product packaging shipping container 200 remains close.

Jig 271 is connected to container interface 270 located on the back portion of product packaging shipping container 200. The location of container interface 270 corresponds to the location of the service interface 275. A set of service connections 280, respectively corresponding to location of container interface 270, is configured to connect container interface 270 to service interface 275 to accommodate service upgrades of device 300.

As such, service upgrades can be transmitted to device 300 by jig 271 via the service interface 275 through container interface 270 along the set of service connections 280 while the product packing shipping container 200 remains closed.

To accommodate device upgrade, while the product packaging container remains closed, the service upgrades provided by jig 271 and received by container interface 270 include updated product software information or product rework. The updated product software information or product rework from jig 271 is supplied to device 300 through the service interface 275 and service connections 280. In this manner, device upgrade is carried out prior to external factory shipment of the product packaging shipping container 200 without requiring direct access to device 300.

FIG. 5 shows device 310 encased in an unopened product packaging container 200 with a container interface 290, such that the device 310 can be shipped both in an external and internal factory shipping process. The container interface 290 is configured to be accessible from an exterior of the product packaging shipping container 210 and respectively corresponds to service interface 285 located on devices 310 to allow supply of external power to the device 310 and to provide service upgrades from jig 271.

Power connector 281 is connected to container interface 290 to provide external power to device 310 via service interface 285. Jig 271 is connected to container interface 290 to provide service upgrades to device 310 via service interface 285 prior to external factory shipping. The location of power connector 281 is adjacent to the location of jig.

As such, power is provided to container interface 290 through power connector 281 so as to relay power to service interface 285 such that device 310 is powered up to receive software and service upgrades.

FIG. 6 is a cross-sectional view as seen from the top of product packaging shipping container 210 of the second embodiment. Power connector 281 is connected to container interface 290 located on the back portion of product packaging shipping container 210. The location of container interface 290 corresponds to the location of the service interface 285. A set of service connections 295, respectively corresponding to the location of container interface 290, is configured to connect container interface 290 to service interface 285 to provide external power to device 310.

Jig 271 is connected to container interface 290 located on the back portion of product packaging shipping container 210. The location of container interface 290 corresponds to the location of the service interface 285. A set of service connections 295, respectively corresponding to location of container interface 290, is configured to connect container interface 290 to service interface 285 to accommodate service upgrades of device 310.
As such, external power and service upgrades can be supplied and transmitted to device 310 by the power connector 281 and jig 271 via the service interface 285 through container interface 290 along the set of service connections 295 while the product packaging shipping container 210 remains closed.

To accommodate device upgrade, while the product packaging container 210 remains closed, the service upgrades provided by jig 271 and received by container interface 290 include updated product software information or product rework. The updated product software information or product rework from jig 271 is supplied to device 310 through the service interface 285 and service connections 295. In this manner, device upgrade is carried out prior to external factory shipment of the product packaging shipping container 210 without requiring direct access to device 310.

FIG. 8 shows device 410 encased in an unopened product packaging container 400 with a wireless container interface 406, such that the device 410 can be shipped both in an external and internal factory shipping process. The wireless container interface 406 is configured to be accessible from an exterior of the product packaging shipping container 400 and respectively corresponds to wireless service interface 409 located on devices 410 to allow supply of external power to the device 310 and to provide service upgrades from a “rich” wireless update device 405. The power requirements of updating device 410 may be provided by the device itself or a wired power connector as in FIG. 4. Alternatively, an inductive coupling device could provide the power through the walls of the product packaging shipping container 400.

FIG. 9 is a cross-sectional view as seen from the top of product packaging shipping container 400 of the third example. A “rich” wireless update device 405 is placed on wireless container interface 406 located on the back portion of product packaging shipping container 400. The location of wireless container interface 406 corresponds to the location of the wireless service interface 409. A set of wireless service connections 407, respectfully corresponding to the location of wireless container interface 406 and wireless service interface 409, is configured to connect wireless container interface 406 to wireless service interface 409 to accommodate service updates for device 410. Alternatively, the service upgrades may be provided through UBW, Bluetooth, ZigBee, and Wireless USB-C. These connections would be in that they are intended for short range communication between devices typically controlled by a single person.

Identification and initial recognition of device 300, 310, or 410 may be provided by an RFID (Radio Frequency Identification Device) 415. The RFID 415 would be placed on the back of product packaging shipping container 200, 210 or 400 to identify the device. After which, jig 271 or “rich” wireless update device 405 is used, in the manner specified above, to accommodate service upgrades of device 300, 310, or 410. As an RFID chip receives power from a radio signal, there would be no need for a separate power connector.

If desired, container interface 220, 270, 290, or 406 may be placed on the side portions of product packaging shipping container 200, 210, or 400 respectively corresponding to the location of the service interface of the device to accommodate service upgrades and supply power to the device.

During internal factory shipping but before external factory shipping, device 300, 310 and 410 can be configured to receive software upgrades, product upgrades, product rework, and service upgrades, while the product packaging container remains closed. This increases the cost effectiveness of product since device 300, 310, and 400 no longer need to be removed from the product packaging container in order to receive the software upgrades, product upgrades, product rework, and service upgrades.

FIG. 7 is a flow chart illustrating the shipping process for the product packaging shipping container. After the manufacturing stage of device 300, 310, and 400 and placement into the product package shipping container, the container goes through a number of stages. In Stage one (S1), the service technician asks if device 300, 310, and 400 is in need of a service or software upgrade. If the answer to that question is yes, the service technician insert jig 271 or wireless update device 405 and the power connector to the back of the product package shipping container and powers up device 300, 310, and 400 and updates the software of device 300, 310, and 400. In Stage 2 (S2), after device has gone through quality assurance, the service technician once again asks if device 300, 310, and 400 is in need of a service or software upgrade. If the answer to that question is yes, the service technician insert jig 271 or wireless update device 405 and the power connector to the back of the product package shipping container and powers up device 300, 310, and 400 and updates the software of device 300, 310, and 400. In Stage 3, while the product packaging shipping container is in a storage facility, the service technician once again asks if device 300, 310, and 400 is in need of a service or software upgrade. If the answer to that question is yes, the service technician inserts jig 271 or wireless update device 405 and the power connector to the back of the product package shipping container and powers up device 300, 310, and 400 and updates the software of device 300, 310, and 400. In Stage 4, the service technician asks confirms if the product is in need of a service or software upgrade. After Stage 4, the product packaging shipping container with updated device 300, 310, and 400 is externally shipped from the factory storage facility.

Other costs effective measures can be appreciated. In handling, just the jig for software upgrades, product upgrades, product rework, and service upgrades of device 300, little if any damage can occur to device 300. If, on the other hand, device 300 needs to be removed from the product packaging container, the service technician may inadvertently damage device 300, resulting in the best case, a marrred device, or in the worst case, a defective and unusable device.

Along with the increase of cost effectiveness of the overall process of shipment and upgrading the software from the exterior, protection of device 300 will be appreciated. When the service technician provides software upgrades, product upgrades, product rework, and service upgrades of device 300 from the exterior of the product packaging container.

Safety concerns relating to removing device 300 from the product packaging container can also be addressed. Since the software upgrades, product upgrades, product rework, and service upgrades can be done from the exterior of the product packaging container, the possibility of harm to a service technician, while physically lifting and removing device 300 from the product packaging container to provide software upgrades, product upgrades, product rework, and service upgrades to device 300, diminishes.

Minimizing electrostatic discharge can be appreciated with this invention. Constantly removing and returning device 300 from the product packaging container, the service
technician comes in contact with the packing material. The packing material could inadvertently statically discharge when handled by the service technician. This discharge can damage or destroy device 300 while the service technician is removing device 300 from the product packaging container. By introducing the service and software upgrades from jig 217 from the exterior of product packaging container via the service interface, the probability of static discharge from the packing material is greatly reduced.

Environmental concerns can further be addressed and appreciated with the product packaging container. If the service technician removes device 300 from the product packaging container, the packaging material may be damaged and replaced. The accumulated trash resulting from the constant replacement should be put in a refuge area, where it can produce undesired waste and may take up much needed space.

Although the present invention has been described in terms of the foregoing embodiments, such descriptions have been made for illustrative and explanatory purposes only. It will be appreciated by those of ordinary skill in the art, modifications, alternatives, deletions, equivalents, and variations will fall within the scope of the invention as defined in the following claims.

Although the present invention has been described in considerable detail with reference to certain embodiments thereof, the invention may be variously embodied without departing from the spirit or scope of the invention. Therefore, the following claims should not be limited to the description of the embodiments contained herein in any way.

1. A product packaging shipping container for housing and shipping a device and allowing connection to device interfaces while the product packaging container remains closed, the product packaging container comprising:
   a set of container interfaces configured to be accessible from an exterior of the product packaging container and respectively corresponding to a set of device interfaces; and
   a set of connections that respectively connect the set of container interfaces to the set of device interfaces, such that an external connection to the set of devices is provided while the product packaging container remains closed via access to the set of container interfaces.

2. The product packaging shipping container of claim 1, wherein the set of container interfaces accommodate a device upgrade while the product packaging container remains closed, and wherein the product packaging container is a shipping container, such that the device upgrade is carried out prior to shipment of the product packaging container without requiring direct access to the device within the product packaging container.

3. The product packaging shipping container of claim 1, wherein the set of container interfaces includes a first container interface that corresponds to a power interface of the device to allow supply of power to the device while the product packaging container remains closed.

4. The product packaging shipping container of claim 3, wherein the set of container interfaces includes a second container interface that corresponds to a service interface of the device to allow a service upgrade to the device.

5. The product packaging shipping container of claim 4, wherein the second container interface receives updated product software information from an upgrade jig, which is supplied to the device through the second container interface.

6. The product packaging shipping container of claim 4, wherein the second container interface receives product rework from an upgrade jig, which is supplied to the device through the second container interface.

7. The product packaging shipping container of claim 1, wherein the set of container interfaces includes a wireless update device that corresponds to a service interface of the device to allow service upgrade and power to the device.

8. A method of accessing a device in a product packaging shipping container comprising the steps of:
   housing a device inside a product packaging container such that the location of a container interface corresponds to the location of a device interface,
   connecting a set of container interfaces and the device interfaces with a connection such that product software upgrades can be transmitted between the container interfaces and the device interfaces,
   providing power to the container interfaces through a power connector so as to relay power to the device interfaces such that the device is powered up to receive software upgrades.

9. A method according to claim 7, wherein product software upgrade is upgraded through a jig that is connected to a first container interface.

10. A method according to claim 7, wherein the power is provided through a power connector that is connected to a second container interface.