



US007574693B1

(12) **United States Patent**
Kemink

(10) **Patent No.:** **US 7,574,693 B1**
(45) **Date of Patent:** **Aug. 11, 2009**

(54) **INTERNET-BASED SERVICE FOR UPDATING A PROGRAMMABLE CONTROL DEVICE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **09/311,128**

(22) Filed: **May 13, 1999**

Related U.S. Application Data

(60) Provisional application No. 60/100,826, filed on Sep. 17, 1998.

(51) **Int. Cl.**
G06F 9/44 (2006.01)
G06F 9/445 (2006.01)
G06F 15/16 (2006.01)

(52) **U.S. Cl.** **717/121**; 717/120; 717/122;
717/168; 717/174; 709/218

(58) **Field of Classification Search** 345/716–866;
717/120–123, 168–178; 709/217–219; 341/173–178;
715/513–516

See application file for complete search history.

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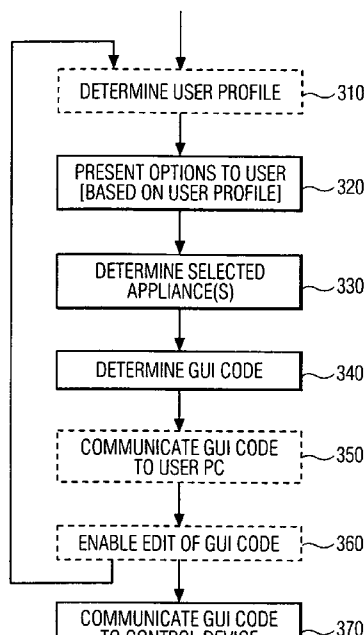
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(57) **ABSTRACT**

An Internet based service is provided for updating a programmable control device. An Internet site contains links to appliance-dependent control and feature option information which can be downloaded to the programmable control as a graphic user interface (GUI). A user interface is provided at the site for the user to easily specify a target appliance, and thereafter selectively download the interface and control information that is available for the target appliance. The Internet site also contains links to other providers of configurations and macros, such as system integrators who provide interfaces based on an inventory of the user's controllable equipment, hobbyist who share configurations and macros that they've found useful, and so on.

10 Claims, 3 Drawing Sheets



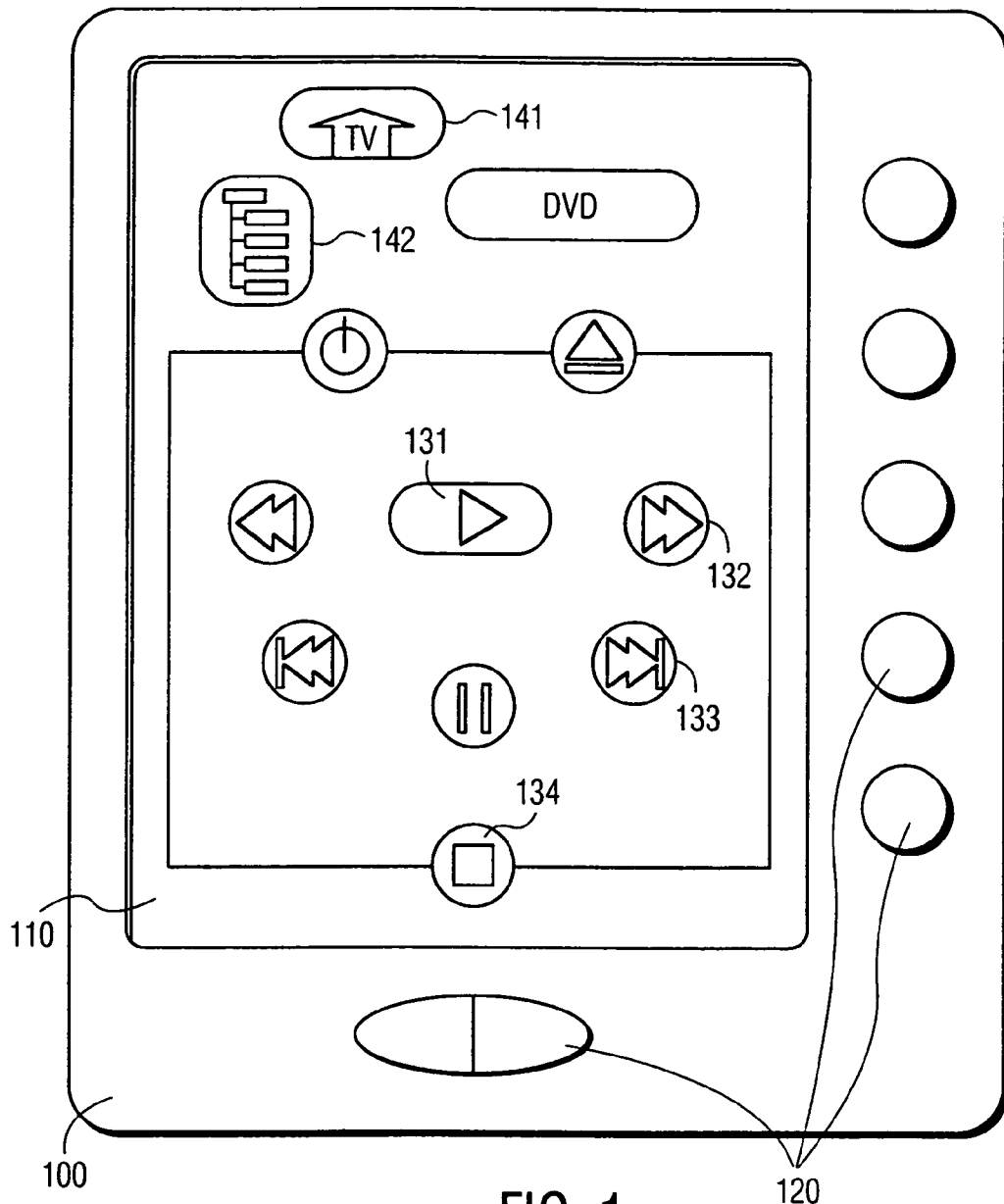


FIG. 1
(PRIOR ART)

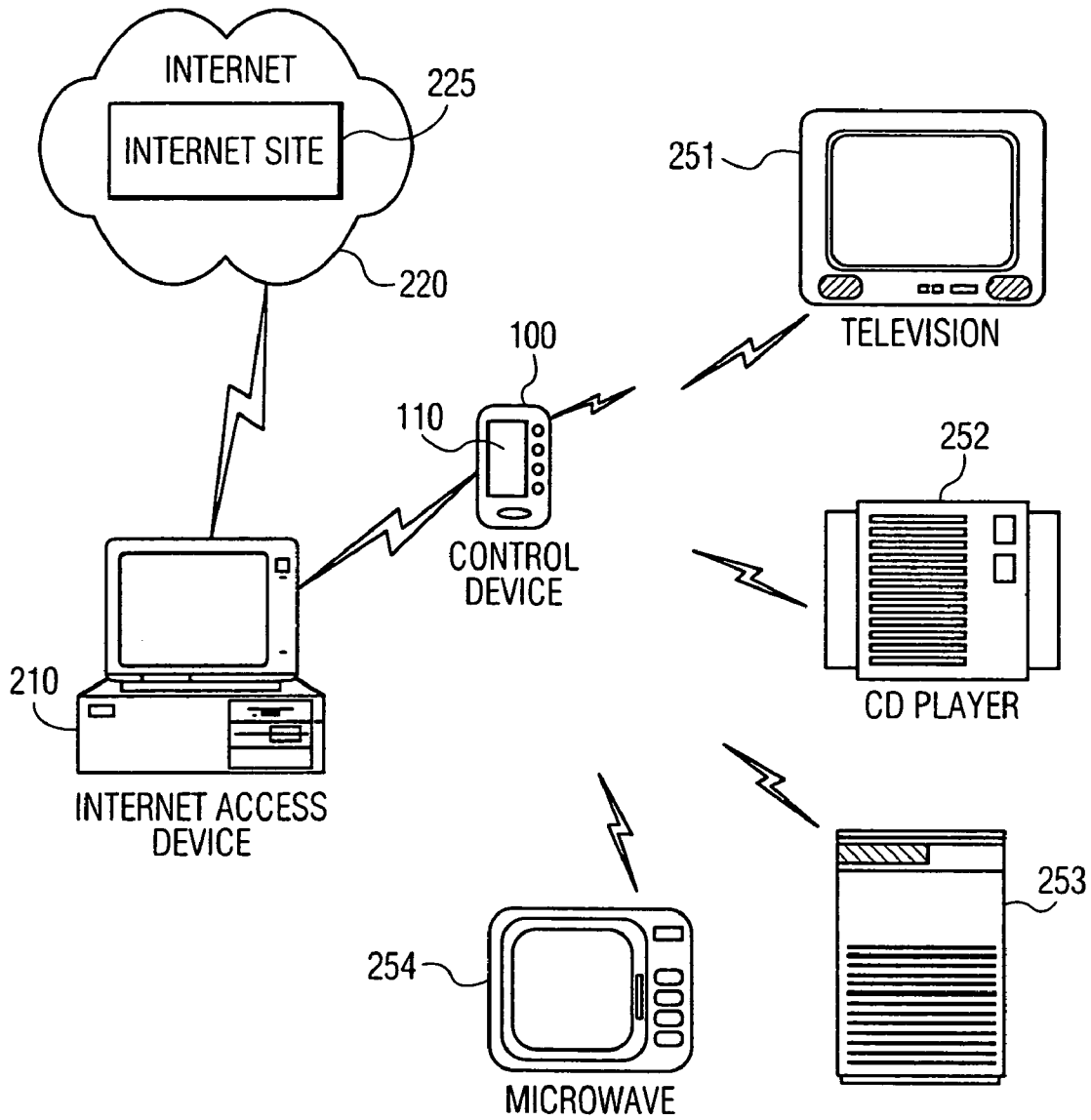


FIG. 2

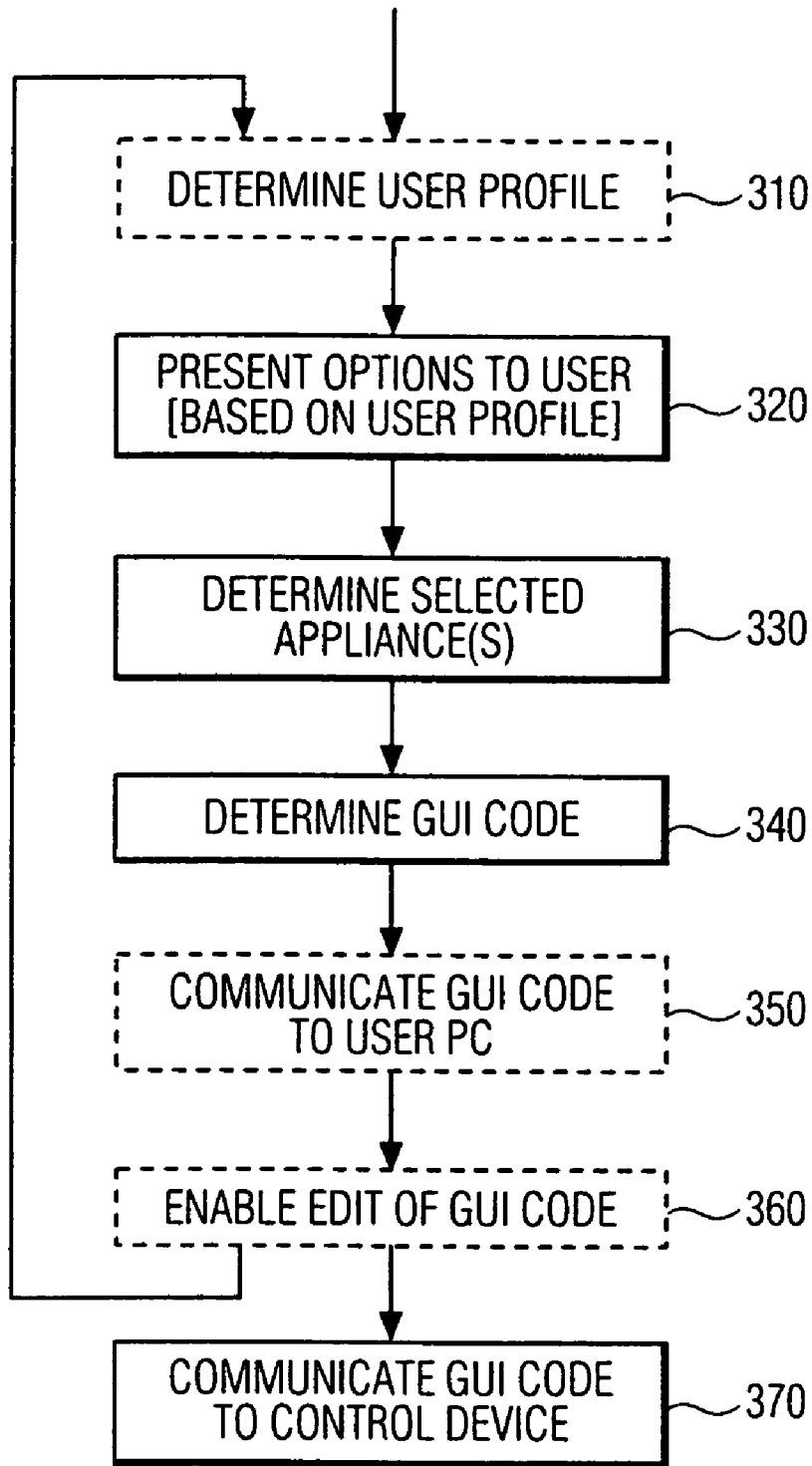


FIG. 3

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INTERNET-BASED SERVICE FOR UPDATING A PROGRAMMABLE CONTROL DEVICE

This application claims the benefit of U.S. Provisional Application No. 60/100,826, filed Sep. 17, 1998.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the field of consumer electronics, and in particular to devices having a programmable graphics user interface, such as programmable remote control devices, telephones, household appliances, and the like.

2. Description of Related Art

Ever increasingly more sophisticated electronic audio/video (AV) equipment and home automation equipment are being introduced on the consumer electronics (CE) market. Typically, the equipment is programmable by the end-user in order to tailor the numerous functionalities and settings to the individual preferences. The user-interactivity and synergy aspects of the equipment are determined substantially by software such as interactive applications, control software and user interfaces. See, for example, the HAVi architecture and the Home API initiative, both involving substantial contributions from Philips Electronics, the Jini technology of Sun Microsystems, Inc., etc.

A step forward in user-friendliness regarding interacting with the equipment is the universal programmable remote controller, such as the "RC-2000" of Marantz and the "Pronto" made by Philips Electronics. The term "universal remote" refers to a device that enables the end-user to control the majority of his/her collection of remotely controllable apparatus, regardless of the type or brand of the individual apparatus. This universal controllability is achieved by accommodating on the remote a data base of multiple sets of existing control (IR or RF) codes, each particular set being associated with a particular type of apparatus of a particular brand. In addition, the universal remote is programmable to learn or adopt new codes and to associate them with a particular user-defined input. The "Pronto", for example, has built-in RC-5 and RC-6 codes for Philips and Marantz equipment, IR-sending and IR-learning eyes, and an RS232 serial port connector for after-market expandability, e.g., via a PC.

As the advantages of programmable control are realized, the market demand for programmable control can be expected to result in programmable graphic user interfaces on devices other than remote controllers. For example, consumers may find that the conventional numeric key pad on a telephone device is antiquated in light of new communications means and dialing options provided by their communications service provider. Some consumers may prefer only two options to appear on their washing machine: "white wash" or "color wash", wherein each selectable option is preprogrammed to provide the appropriate wash duration, water temperature, cool down cycle, and so on. In like manner, common settings for a microwave oven can be preprogrammed and presented on a control panel that is customized for a particular user.

OBJECT OF THE INVENTION

The customization capability of programmable user interfaces raises the issue of user-friendliness regarding controllability, reliability and accessibility, as well as the user-

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the consumer if he/she cannot get it to do what he/she wants it to do and when he/she wants it be done.

FIG. 1 illustrates an example programmable remote control 100 similar to the "Pronto". The remote control 100 provides a graphic user interface (GUI) via an LCD touch screen 110 and also has direct-access buttons 120 for frequently used control functions. Typically, the remote control 100 includes customizable device templates for full control of the device being controlled. For example, the remote control 100 comprises one or more templates for the GUI that contains illustrations or icons of the controls typically found on a playback device such as a DVD, including a play button icon 131, fast forward 132, go to end 133, stop 134, and so on. The user merely touches the icon 131-134 on the LCD touch screen 110 to effect the desired function. Also illustrated on the LCD touch screen 110 is an icon 141 to switch to another related device, such as a TV, and an icon 142 to switch to an index of controllable devices and function.

An advanced programmable remote control 100 such as the "Pronto" also provides options to assign control functions to icons or buttons; options to delete and create icons or buttons; to program and edit macros; a keyboard with soft keys for (re-) labeling buttons, icons and templates or the GUI's control panels. For example, a user may desire some of the control options for the television, such as volume control, to be displayed on the LCD touch screen 110 whenever the controls 131-134 of the example DVD are displayed. Different users of the control device 100 in the same household may each prefer a different layout for the same device. To accommodate such preferences, programmable control devices such as the "Pronto" are highly customizable in terms of the layout, appearance, labeling, organization and in terms of programming and editing the control functions. As the use of graphic user interfaces becomes commonplace, the availability of programmable graphic user interfaces on other devices, such as telephones, hand-held radios, household appliances, navigation devices, and so on, can be expected to also become commonplace.

An ergonomically designed programmable control, such as the "Pronto" remote controller for example, may help to lower the acceptance-threshold for home theater and home automation systems, owing to the controller's user-friendliness, personalizing options and wide applicability, but many capabilities of the programmable control system may go unused if the consumer is reluctant to program the device, or if the programming of the device is perceived as a daunting task. Similarly, the synergistic aspects of a programmable control system may also go unused if the user is not aware of, or sensitive to, the possibility of such synergy. That is, a cluster of appliances may be synergistically controlled so as to enhance a sense of being embedded in the experience. The playback of a DVD movie, for example, may be enhanced by enabling surround sound on the user's audio appliance, dimming the lights in the room where the user's television is located, and placing the user's telephone in an auto-answer mode.

The capabilities of the programmable control system may also go unused if the capabilities of the device being controlled, herein termed the appliance, are difficult to obtain or the commands that effect the control of the appliance are difficult to map to the available capabilities of the programmable control. To ease the programming task, the Pronto system includes an infrared (IR) receiver that receives the appliance commands from a remote control device that is specific to the appliance. This feature, however, presupposes

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