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(54) **Method and system to provide a complex functionality to an electronic consumer device**

(57) The invention relates to a method and a system to provide a complex functionality to a software controlled electronic consumer device. There is a first software controlled electronic consumer device (1) that has an advanced user interface (2) and a second software controlled electronic consumer device (3) that has a restricted user interface (4). The first electronic consumer device (1) and the second electronic consumer device (3) are connected by a wired or a short-range wireless commu-

nication link (5). On the first electronic consumer device (1) there is run a software that is configured to allow programming of a desired functionality on the second electronic consumer device (3). The user defines the desired functionality of the second electronic consumer device (3) using the user interface (2) of the first electronic consumer device (1).

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Description

[0001] The invention relates to a method to provide a complex functionality to a software controlled electronic consumer device. In particular the present invention relates to a method with the features of the preamble of claim 1. Likewise, the invention relates to a system with the features of the preamble of claim 7.

[0002] The prior art forming the starting point of the invention is extensively known from practical applications. It can be seen as a mobile phone with associated headset connected with each other by a short-range wireless communication link, preferably based on the Bluetooth standard.

[0003] The prior art can be considered to be applicable with all kinds of short-range wireless communication links and standards (Bluetooth, Wi-Fi, IR, WPAN and also with future standards still to be developed, see also Weyers "Integrated Circuits for a WPAN System", Verlag Dr. Hut, Munich 2010, ISBN 978-3-86853-355-2).

[0004] In the prior art the first software controlled electronic consumer device that has an advanced user interface is typically a mobile phone, but can also be e.g. a PDA, a PC, a laptop or the like. It is typical that this first electronic consumer device has an advanced user interface, preferably a graphical user interface with not only keys but a graphical display, in particular a touch screen.

[0005] The first electronic consumer device is connected to a second software controlled electronic consumer device that has a restricted user interface. While the advanced user interface of the first electronic consumer device provides many options of interaction with the device (display, text, keys etc.), the restricted user interface of the second electronic consumer device has no sophisticated features. Although the second electronic consumer device may have a reasonable level of technical complexity, e.g. as in a headset or a car-kit for car telephony, the user interface is mostly restricted to an on/off button and a volume setting key.

[0006] The short-range connection can be a wired one by e.g. USB, or a short-range wireless communication link using a present communication standard like Bluetooth, Wi-Fi, IR, WPAN or any future standard still to be developed.

[0007] In the prior art discussed above programming of the second electronic consumer device is restricted to very simple input steps. So the available functionalities on the second electronic consumer device that can be adjusted, selected or otherwise defined by a user are very limited. This is the case although the hardware and software of this consumer device would be able to provide much more complex functionalities.

[0008] The object of the present invention is to provide complex functionalities to electronic consumer devices which have a restricted user interface like headsets, car-kits or the like.

[0009] Above mentioned object is met by a method comprising the features of the preamble of claim 1 together with the features of the characterizing part of claim 1.

gether with the features of the characterizing part of claim 1.

[0010] Likewise, the above mentioned object is met by a system with the features of the preamble of claim 7 which additionally provides the features of the characterizing part of claim 7.

[0011] For the purpose of this patent application a number of terms used are defined as follows:

[0012] A "software" means a software program or a group of interlinked software programs to be run on the first electronic consumer device or the second electronic consumer device.

[0013] The term "to program" means not always a complex multistep programming activity. It is a general term that includes also simple programming tasks like adjusting a specific parameter or selecting a specific setting of a parameter.

[0014] The term "software-controlled" means that a device is digitally controlled by software apart from the fact that obviously the settings of some parameters will be done by keys or buttons in a more conventional way.

[0015] An "advanced user interface" is an interface that provides many options and has preferably a display able to convey text messages and graphical information (see the discussion in the prior art above).

[0016] A "restricted user interface" is an interface that provides only limited options, mainly only an on/off switch and/or a volume setting.

[0017] According to the invention the user can use the advanced user interface of the first electronic consumer device to run a software on that device that is configured to program a desired functionality on the second electronic consumer device. So it is possible to change certain configuration settings of the second electronic consumer device with the restricted user interface just by using the advanced user interface of the first electronic consumer device. The invention provides the possibility for the user to interact with the second electronic consumer device on a level of complexity that is appropriate for the technical complexity of its hardware but was up to now impossible to reach due to the restrictions of the second electronic device's user interface.

[0018] Of course, it is preferable that an appropriate communication protocol is implemented in the data processing and communication units of the first and the second electronic consumer device. Such a protocol can be implemented on Bluetooth, Wi-Fi, IR etc.

[0019] A short-range wireless communication link typically permits communication up to a distance of 10 to 20 m. It is usually based on Bluetooth, Wi-Fi, IR, WPAN (see the prior art references above).

[0020] In a preferred embodiment the first electronic consumer device is a mobile phone with its complex user interface and the second electronic consumer device is a headset for such mobile phone. Here new features can be realized on the headset which are not yet possible or features can be realized in a more user-friendly way by use of the advanced user interface that nowadays are

cumbersome to implement by means of the restricted user interface. Examples for such functionalities are as follows:

- show the charging status of the headset on the mobile phone display,
- show and modify the list of paired devices that the headset connects to,
- choose a specific ring tone for the headset,
- assign a specific ring tone or optical signal to a certain contact number,
- configure the user interface of the device, e.g. LED indicator colors,
- change the Bluetooth name of the headset,
- change the Bluetooth PIN code of the headset.

[0021] Similarly the paired communication devices can be a mobile phone and a car-kit. Above mentioned examples apply for such a combination, too. In addition it is possible to configure a complex functionality on a car-kit like music equalizer settings.

[0022] It is possible also, to choose a completely different setting for the devices. It is possible that the first electronic consumer device is a PDA (personal digital assistant) or PC (personal computer) or laptop etc. with its complex user interface and the second electronic consumer device is a headset for said device.

[0023] For the inventive system a similar line of arguments holds as for the inventive method. So reference can be made to the claims 7 to 12.

[0024] Implementation on a mobile phone as an example of a first electronic consumer device is particularly simple with an open operating system such as Android, iPhone, Symbian or Windows Mobile. Also a Java JSR environment would be suitable for the majority of mobile phones.

[0025] The software that is to be run on the first electronic consumer device and the second electronic consumer device can be downloaded from specific data bases (application markets) or can be specifically loaded onto a PC or PDA.

[0026] A possible alternative version is to have the specific software stored in the memory of the second electronic consumer device and send it over the wired or short-range wireless communication link to the associated first electronic consumer device as soon as said first electronic consumer device was properly identified by the second electronic consumer device.

[0027] It is preferable that the software has a generic interface so that any kind of data can be configured.

[0028] In the second electronic consumer device the software and hardware should be designed so that all relevant settings can be changed over this communication link from the first electronic consumer device and new settings can be stored permanently.

[0029] Hereafter the basic ideas of the inventive method and system are explained for the example of a mobile phone with a headset displayed in the sole Figure of the

drawings.

[0030] The drawings show a system of electronic communication devices comprising a first software controlled electronic consumer device 1 that has an advanced user interface 2 and a second software controlled electronic consumer device 3 that has a restricted user interface 4. The first electronic consumer device 1 and the second electronic consumer device 3 are connected by a wired or, here, a short-range wireless communication link 5.

[0031] The first electronic consumer device 1 here is a mobile phone with a touch screen as advanced user interface 2.

[0032] The second electronic consumer device 3 here is a headset with a combined on/off-switch and volume setting key 4 as the restricted user interface.

[0033] The communication link here is a short-range wireless communication link 5, here a state of the art Bluetooth link.

[0034] Programming of the characteristics of the second electronic consumer device 3, e.g. programming of a desired, preferably complex functionality of that device 3, is done by a user using the advanced user interface 2 of the first electronic consumer device 1. On that device 1 there is run a software that is configured to allow programming of the desired functionality on the second electronic consumer device 3. The data are transmitted via the short-range wireless communication link 5.

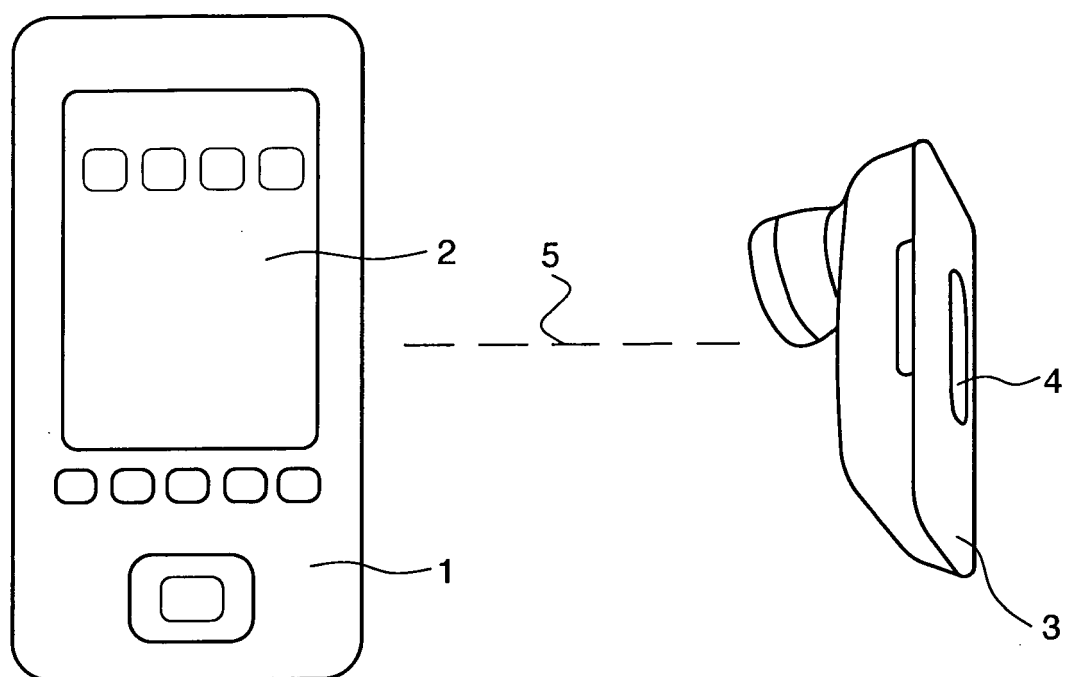
[0035] So the advanced user interface 2 can be used for programming the second electronic consumer device 3 although this interface 2 is not a part of that device 3.

[0036] Similar situations can be found in a combination of PDA or PC on the one hand and headset on the other hand or the combination of a mobile phone on the one hand and a car-kit on the other hand. Also, similar applications can be found for a hearing aid as the second electronic consumer device in combination with a mobile phone for programming the hearing aid, the mobile phone being the first electronic consumer device.

Claims

1. Method to provide a complex functionality to a software controlled electronic consumer device, wherein there is a first software controlled electronic consumer device (1) that has an advanced user interface (2) and a second software controlled electronic consumer device (3) that has a restricted user interface (4), wherein the first electronic consumer device (1) and the second electronic consumer device (3) are connected by a wired or, preferably, a short-range wireless communication link (5),
characterized in that
 on the first electronic consumer device (1) there is run a software that is configured to allow programming of a desired, preferably complex functionality on the second electronic consumer device (3) and

- the user defines the desired functionality of the second electronic consumer device (3) using the user interface (2) of the first electronic consumer device (1).
2. Method according to claim 1, **characterized in that** an appropriate communication protocol is implemented in the data processing and communication units of the first and the second electronic consumer devices (1; 3). 5
 3. Method according to any one of the preceding claims, **characterized in that** the short-range wireless communication link (5) is a Bluetooth-link, a Wi-Fi-link or a WPAN-link. 10
 4. Method according to any one of the preceding claims, **characterized in that** the first electronic consumer device (1) is a mobile phone with its complex user interface (2) and the second electronic consumer device (3) is a headset for said mobile phone. 15
 5. Method according to any one of the preceding claims, **characterized in that** the first electronic consumer device (1) is a mobile phone with its complex user interface (2) and the second electronic consumer device (3) is a car-kit for said mobile phone. 20
 6. Method according to any one of the preceding claims, **characterized in that** the first electronic consumer device (1) is a PDA (personal digital assistant) or PC (personal computer) or laptop etc. with its complex user interface (2) and the second electronic consumer device (3) is a headset for said device. 25
 7. System of at least two electronic consumer devices comprising a first software controlled electronic consumer device (1) that has an advanced user interface (2) and a second software controlled electronic consumer device (3) that has a restricted user interface (4), wherein the first electronic consumer device (1) and the second electronic consumer device (3) are connected by a wired or, preferably, a short-range wireless communication link (5), **characterized in that** on the first electronic consumer device (1) there is provided a computer software that is configured to allow programming of a desired, preferably complex functionality on the second electronic consumer device (3) and the desired functionality of the second electronic consumer device (3) is definable by a user by means of the user interface (2) of the first electronic consumer device (1). 30
 8. System according to claim 7, **characterized in that** an appropriate communication protocol is implemented in the data processing and communication units of the first and the second electronic consumer devices (1; 3). 35
 9. System according to claim 7 or claim 8, **characterized in that** the short-range wireless communication link (5) is a Bluetooth-link, a Wi-Fi-link or a WPAN-link. 40
 10. System according to any one of the claims 7 to 9, **characterized in that** the first electronic consumer device (1) is a mobile phone with its complex user interface (2) and the second electronic consumer device (3) is a headset for said mobile phone. 45
 11. System according to any one of claims 7 to 9, **characterized in that** the first electronic consumer device (1) is a mobile phone with its complex user interface (2) and the second electronic consumer device (3) is a car-kit for said mobile phone. 50
 12. System according to any one of claims 7 to 9, **characterized in that** the first electronic consumer device (1) is a PDA (personal digital assistant) or PC (personal computer) or laptop etc. with its complex user interface (2) and the second electronic consumer device (3) is a headset for said device. 55





EUROPEAN SEARCH REPORT

Application Number
EP 10 00 2855

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2007/049198 A1 (WALSH SCOTT [GB] ET AL) 1 March 2007 (2007-03-01) * paragraph [0014] - paragraph [0019] * * paragraph [0026] - paragraph [0036] * -----	1-12	INV. G08C17/02
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			TECHNICAL FIELDS SEARCHED (IPC)
			G08C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 July 2010	Examiner Pham, Phong
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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REFERENCES CITED IN THE DESCRIPTION

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