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(54) Title
METHOD FOR DISPLAYING TELEVISION CONTENT AND ADDITIONAL INFORMATION RETRIEVED FROM THE INTERNET

(57) Abstract
Method for displaying multimedia and television contents comprising the steps of setting up a device comprising a first input port suitable for receiving a digital television signal from an antenna or a digital line, a second input port suitable for receiving the multimedia contents from an Internet line, and an output port to a screen, the device further comprising means for selecting the multimedia and television contents to be displayed on the screen, connecting the first input port to the antenna or to the digital line, the second input port to the Internet line and the output port to the screen, selecting television contents and displaying them on the screen. The method requires inserting a code in the digital television signal, the device receives and detects the code and transmits it to an Internet server connected to the Internet line, the Internet server transmits a plurality of multimedia contents associated to the code received from the device, the device displays a list of the plurality of multimedia contents associated to the code.
DESCRIPTION

Field of application

The present invention relates to a method for displaying multimedia and/or television contents comprising the step of setting up a device comprising a first input port suitable for receiving a digital television signal from an antenna or a digital line, a second input port suitable for receiving the multimedia contents from an Internet line, an output port to a screen, as well as means for selecting the multimedia and/or television contents to be displayed on the screen.

In particular, the present invention relates to a method of the type mentioned above that provides for connecting the first input port to the antenna or to the digital line, the second input port to the Internet line, and the output port to the screen, electrically supplying the device, and selecting television contents and displaying them on the screen.

The present invention further relates to a device for displaying multimedia and/or television contents comprising a first input port suitable for receiving a digital television signal from an antenna or a digital line, a second input port suitable for receiving said multimedia contents from an Internet line, an output port to a screen, and means for selecting the multimedia and television contents to be displayed on the screen.

Prior art

As is known, the methods for displaying multimedia and/or television contents require a display device set up for receiving such contents to display, in separate portions of a screen or monitor, also indicated as windows, one or more and/or multimedia contents selected by a user.

In particular, such methods require the electronic device to acquire a digital television signal that is broadcast by a television station and received by an antenna or transmitted by such station through a digital line. In particular, a first input port of the display device is connected to the antenna or to the digital line for acquiring the digital television signal.
The antenna may be a terrestrial or satellite digital antenna receiving a signal broadcast by the television station whereas the digital line may be a coaxial cable or an Internet line receiving a signal multicast by the television station.

The display device is connected through a second input port to an Internet line, for example an ADSL Internet line, for receiving multimedia contents. The second input port may be a connector RJ45, RJ10 or any known connector, for example of the Wi-Fi type.

The multimedia contents are sent to the display device on demand only, according to a so-called "on-demand" mode, which substantially requires the user of the display device to specify an Internet address associated to the multimedia contents.

According to known methods, it is required for the user to select, for example by a remote control of the display device, which multimedia and/or television contents to be displayed. The selected contents are transmitted by the display device to an output port connected to a screen, of the known type.

For example, a display device used in known methods is a personal computer provided with a connection to a network or to an Internet line and with an electronic card for receiving the digital television signal. The electronic card comprises an interface for the personal computer, for example PCIMCI or USB, and a connector for the antenna or the digital line.

The step of selecting the multimedia contents is quite complicated as it requires typing, for example through a keyboard and using a mouse connected to the personal computer, an Internet address associated to the multimedia contents to be displayed.

In particular, if the user knows such Internet address, he/she may type it directly into a browser of the known type, which after having requested and downloaded the contents from a server associated to the Internet address, displays it.

More frequently, the user does not know the Internet address of the multimedia contents and uses the browser to search for Internet
addresses potentially related to the desired multimedia contents, through a search engine. However, this type of search implies at least one search engine to be known, which is in turn associated to an Internet address.

Especially for users not quite to make use of personal computer and Internet, these display methods are quite inconvenient and the relevant display methods are difficult to use.

In other words, the display methods of the type mentioned above are advantageous as they allow displaying, concurrently and in separate windows, both television contents and multimedia contents, but they exhibit several drawbacks as they require the user to know and type the Internet addresses associated to the multimedia contents or at least to know a search engine and select, among a plurality of Internet addresses found by the engine, the address associated to the desired multimedia contents.

The technical problem at the basis of the present invention is to devise a method and a device for displaying multimedia and/or television contents which should be capable of greatly simplifying the detection and selection of the multimedia contents potentially interesting to the user, overcoming the drawbacks that still affect the methods and the devices according to the prior art.

Summary of the invention

The solution idea at the basis of the present invention is to provide a method for displaying multimedia and/or television contents that inserts a code in the digital television signals and finds a list of multimedia contents associated to the code, which are potentially interesting to the user.

In other words, the solution idea is to automate the search for multimedia contents, based on a code inserted in the television signal. In this way, the interaction between the user and the display device is automated and enriched, since the code supplied by the broadcast or multicast signal provides the code for searching for multimedia contents on the Internet line and the user can simply select, among the
automatically found multimedia contents, the most interesting ones.

As will be clear from the following description, in one embodiment of the present invention, the display device is a set-top box connected to a television set and is remotely controlled by a remote control comprising a common keypad for selecting the television or multimedia contents. For example, a plurality of numbered keys of the remote control is associated to corresponding television broadcasting stations and some navigation keys, such as "up, down, right, left", are associated to a menu for selecting the automatically found multimedia contents. According to a preferred embodiment of the present invention, the display device is built in the television set.

On the basis of such solution idea, the technical problem is solved by a method for displaying multimedia and/or television contents comprising the steps of:

- setting up a device comprising a first input port suitable for receiving a digital television signal from an antenna or a digital line, a second input port suitable for receiving the multimedia contents from an Internet line, and an output port to a screen, the device further comprising means for selecting the multimedia and/or television contents to be displayed on the screen;

- connecting the first input port to the antenna or to the digital line, the second input port to the Internet line and the output port to the screen;

- selecting television contents and displaying them on the screen; characterised by:

- inserting a code in the digital television signal;

- receiving and detecting the code in the device;

- transmitting the code from the device to an Internet server connected to the Internet line;

- searching, through the Internet server, for a plurality of multimedia contents associated to the code and transmitting a list of such
- displaying the list of multimedia contents on the screen.

Advantageously, the list of multimedia contents associated to the code is displayed automatically, without any manual user's operation and without typing an Internet address associated to the contents, for determining the Internet addresses of such contents. The user's interaction with the device substantially is of the "television type" as the multimedia contents are searched for automatically based on the code inserted in the digital television signal and automatically displayed on the screen.

The code may be inserted in the television signal by a television station that broadcasts the digital television signal according to a predetermined programme schedule or by a telecommunication provider that distributes multimedia contents on the Internet line, for example in on-demand mode.

Advantageously, the association of the code and of the television contents may be of the thematic type, transmitting a code to search for multimedia contents thematically associated to the selected television program (contents), or non thematic, for example transmitting a code to search for advertising contents.

According to the display method, the list of multimedia contents is displayed in a first portion of the screen and is selectable by the user.

Advantageously, the user may select the television contents, for example by a common remote control, and by the same remote control and with extraordinary simplicity, he/she may also select the multimedia contents from the list, without typing Internet addresses or making searches through search engines.

The selected television contents, the list of multimedia contents automatically proposed and the selected multimedia contents are concurrently displayable in separate portions of the screen. Advantageously, the user may concurrently display the television contents, the multimedia contents, as well as the list of multimedia contents associated to the code.
The method according to the invention comprises a step of expanding full screen the selected television content or the associated and selected multimedia content. Advantageously, when the television or the multimedia contents are displayed full screen, the display is undisturbed by the presence of secondary windows.

The step of displaying the list of multimedia contents comprises a three-dimensional graphical representation of such contents. The graphics is synthesized by the Internet server and thereby sent to the device, achieving the great advantage of preventing not just the typing of the Internet address associated to the multimedia contents or the use of a search engine for the location thereof. Moreover, displaying the list of contents as a three-dimensional graphics allows a smooth and intuitive navigation through the remote control navigation keys. The multimedia contents are associated to a text description, preferably displayed at the bottom of the screen.

The method also provides for sending a user code to the device other than the code automatically inserted in the digital television signal, for displaying multimedia contents associated to the user code.

In particular, the method requires typing the user code through the remote control and transmitting the user code to the device. Even more in particular, the device transmits the user code to the Internet server, the Internet server searches for multimedia contents associated to the user code and transmits them to the device, which displays a list of the plurality of multimedia contents associated to the user code on the screen.

Advantageously, the possibility of specifying a user code other than the code automatically inserted in the digital television signal allows displaying a list of multimedia contents not predetermined by the television station, through a simple operation that consists in typing the user code. The selection is extremely simple as it requires the typing, for example by a remote control of the display device, of the user code only.

The technical problem described above is also solved by a device for displaying multimedia and/ or television contents comprising:
- a first input port suitable for receiving a digital television signal from an antenna or a digital line, a second input port suitable for receiving the multimedia contents from an Internet line, and an output port to a screen, as well as means for selecting the multimedia and television contents to be displayed on the screen, characterised in that it comprises:

- a detector for detecting a code inserted in the selected digital television signal;

- a communication interface with an Internet server for communicating the code to the server and for receiving a plurality of multimedia contents associated to the code from the Internet server;

- a display interface, for displaying a list of the plurality of multimedia contents on the screen.

Further features and advantages of the display device and method according to the present invention will appear even more clearly from the following description of an embodiment thereof, made by way of an indicative non-limiting example with reference to the annexed drawings.

Brief description of the drawings

Figure 1 schematically shows a display device according to the present invention.

Figures 2a-2f schematically show some steps of the display method according to the present invention.

Detailed description

With reference to figure 1, below there is described a method for displaying multimedia and/or television contents according to the present invention, which requires setting up a device 1 comprising a first input port 3 for connecting an antenna or a digital line suitable for receiving a digital television signal, and a second input port 2 for connecting an Internet line suitable for transmitting multimedia contents.

The digital television signal is broadcast by a television station
according to a predetermined programme schedule or by a telecommunication provider that transmits multiple multimedia contents on the Internet line, for example according to an on-demand mode.

The device further comprises an output port 12 for connecting a screen 4, and means for selecting the multimedia MM and television TV contents to be displayed on the screen. As will be clear from the description of an embodiment of the present invention, it is provided for screen 4 and device 1 to be built in a single television set connectable, through the first 3 and the second input port 2, both to the antenna or digital line, and to the Internet line.

Without limiting the scope of protection of the method according to the invention, the antenna may be a terrestrial digital antenna or a satellite digital antenna receiving a signal broadcast by the station whereas the digital line may be a coaxial cable or an Internet line receiving a signal multicast by such station. It is provided for the device to comprise a plurality of inputs for respectively, a terrestrial digital antenna, a satellite antenna, an Internet line and a coaxial cable.

Again without limiting the scope of protection of the present invention, the selection means comprise a remote control or similar control device, preferably in remote connection and in radio-frequency with the device, for selecting the television contents TV broadcast by the television station or by the telecommunication provider.

The first input port 3 of the device is connected to the antenna or to the digital line, the second input port 2 is connected to the Internet line and the output port 12 to screen 4. When device 1 and the screen are supplied by mains current, a user selects television contents TV by the remote control, which are displayed full screen on screen 4, as schematically shown in figure 2a.

According to the method of the present invention, a code 6 is inserted in the digital television signal and transmitted, along with the television contents TV, to device 1. In particular, code 6 is inserted by the television station or by the telecommunication provider in a predetermined portion of the terrestrial digital signal, which does not
deteriorates the reproduction of the television contents on the screen.

As will be clear from the following description, code 6 is substantially used as a search key to search for multimedia contents MM over the Internet network. In particular, device 1 sends code 6 to an Internet server 7, connected to the Internet network, which makes a selection of multimedia contents MM associated to code 6, through an application that searches for such contents MM in a plurality of servers connected to the same Internet network.

Code 6 may identify multimedia contents MM thematically associated to the television contents TV selected or associated to a promotional message.

For example, a national television station may insert, in the digital television signal of a football match, a code 6 associated to the playing teams, the Internet server 7 automatically searches for multimedia contents MM, that is, videos, documents, images, sounds, relating to such football teams and device 1 receives and displays such list 8 of multimedia contents on screen 4, as schematically shown in figure 2b.

Likewise, the television station or the telecommunication provider may insert a code 6 associated to a known brand of football shoes, for providing the user with advertising information on such brand. In particular, according to the method of the present invention, device 1 receives and detects code 6, transmits code 6 to the Internet server 7 and waits for a response from the Internet server 7. The Internet server 7 receives code 6 and searches the Internet network, through the search application, and saves the corresponding Internet addresses thereof. Finally, the Internet server 7 sends the list 8 of multimedia contents MM associated to code 6 to device 1 and device 1 displays such list 8 on screen 4. In particular, list 8 sent by the Internet server 7 comprises the Internet addresses of the respective multimedia contents MM.

Even more in particular, when the Internet server 7 has found the multimedia contents MM, the selected television contents TV are automatically reduced to a portion 10 of screen 4 and list 8 is displayed in another portion 11 of screen 4. Such list 8 comprises a plurality of
frames 8a, 8b, 8c wherein there is displayed an image or preview of the multimedia contents MM found by the Internet server 7.

A feature is provided for browsing the multimedia contents MM in list 8 comprising positioning one multimedia content in a predetermined frame 8b and displaying, in a further portion 80 of screen 4, a description of the multimedia content MM placed in frame 8b, as schematically shown in figure 2c. Preferably, portion 80 is located at the bottom.

The multimedia content MM in frame 8b may be selected from list 8, for example using navigation keys provided on the remote control, to be displayed in a further portion 9 of screen 4, whereas the selected television content TV concurrently remain displayed in portion 10 of screen 4. According to the method of the present invention, it is possible to expand full screen the selected television content TV or multimedia content MM, as schematically shown respectively in figure 2e and 2d.

The display of multimedia contents MM of list 8 comprises the step of representing such contents MM through corresponding three-dimensional images associated to respective frames, easily and intuitively recognisable by the user. In particular, each three-dimensional image is associated to an Internet address of respective multimedia contents, of which it graphically represents the contents, and is selectable by the described navigation arrows of the remote control.

Even more in particular, when an image is selected, device 1 connects through the Internet line to a server corresponding to the Internet address associated to the selected image and downloads the relevant multimedia contents, for example through known audio and video streaming techniques. In other words, the Internet server 7 identifies and transmits list 8 of multimedia contents MM to device 1 but the multimedia contents are downloaded through a connection of device 1 to the server that stores the saves the multimedia contents MM.

According to an embodiment of the method according to the present invention, there is further provided a step of receiving a similar search code from the Internet line 2, which is not associated to the current
television broadcast and to the digital television signal.

In particular, the multimedia contents MM transmitted by the Internet server 7 and displayed in list 8 is associated to a respective search code 18b, as schematically shown in figure 2f. In other words, according to this embodiment, device 1 detects the code to search for multimedia contents MM within multimedia contents MM already received from the Internet server 7, subsequent to a previous search.

Such search code 18b is sent by device 1 to the Internet server 7 by placing the relevant multimedia content MM in the predetermined frame 8b and sending a command for starting the search.

An example of use of the search code 18b is given hereinafter, without limiting the scope of protection of the invention. Subsequent to the reception of a code 6 sent by the television station or by the telecommunication provider, list 8 displays a plurality of multimedia contents MM that refer, for example, to the promotions of some films being produced. Each multimedia content MM is displayed in a respective frame 8a, 8b, 8c and is associated to a search code 18b, sent by the Internet server 7.

According to the present invention, the user browses the multimedia contents MM in list 8, placing the promotion of a desired film in the predetermined frame 8b and sends the command to start the search. Such command transmits code 18b associated to the film placed in frame 8b to the Internet server 7.

The Internet server 7 detects a plurality of multimedia contents MM associated to the search code 18b, that is, associated to the desired film, transmits them to device 1, which displays the multimedia contents into respective frames 8a, 8b, 8c of list 8, from which they may be selected and displayed in portion 9 of screen 4.

According to a further embodiment of the method according to the present invention, there is also provided a step for typing a user code 13 through remote control 5 and a step of transmitting the user code 13 to device 1. In particular, according to this embodiment, device 1 transmits the user code 13 to the Internet server 7 which in turn
searches for multimedia contents associated to the user code 13 and transmits a list of the contents found to device 1.

Always with reference to figure 1, a device is described below for implementing the display method according to the present invention.

The display device 1 comprises a first input port 3 suitable for receiving a digital television signal from an antenna or a digital line, a second input port 2 suitable for receiving the multimedia contents from an Internet line, and an output port 12 to a screen 4, as well as means for selecting the multimedia and television contents to be displayed on screen 4.

According to the present invention, device 1 comprises:

- a detector 14 for detecting a code 6 in the digital television signal selected by the selection means;

- a communication interface 15 with an Internet server 7, for communicating code 6 to server 7 and receiving a plurality of multimedia contents associated to code 6 from the Internet server 7;

- a display interface 16 for displaying a list 8 of the multimedia contents on screen 4.

In particular, the first input port 3 may be a plug for a satellite antenna, for a coaxial cable, for a terrestrial digital antenna or for an Internet line.

According to a preferred embodiment of the invention, screen 4 is built in device 1 which actually is externally identical to a common television set but internally incorporates the detector, the communication interface and the display interface to the Internet server 7 described above.

Preferably, the selection means comprise a remote control 5 for selecting the multimedia contents and/or television contents from the list.

List 8 in the display interface comprises a plurality of frames 8a, 8b, 8c wherein there is displayed an image or preview of corresponding
multimedia contents MM searched for through code 6. A predetermined frame 8b comprises a multimedia content MM selectable by remote control 5.

The display interface 16 comprises a portion 9 wherein multimedia content placed in the predetermined frame 8b and selected for the display are executed. In frames 8a, 8b, 8c there are also displayed images or previews of corresponding multimedia contents MM searched for through a search code 18b, transmitted by the Internet server 7 to device 1. In particular, the search code 18b is associated to respective multimedia contents MM, transmitted by the Internet server 7 to device 1 in a previous search, made based on code 6.

The display interface 16 comprises a portion 80 wherein a description of the multimedia contents placed in the predetermined frame 8b is displayed, and a portion 10 wherein the selected television contents are displayed.

The display interface 16 concurrently displays, in separate portions of screen 4, the list, the selected television contents and the selected multimedia contents.

The device comprises a full screen interface for displaying full screen the multimedia contents or the television contents.

Preferably, the device comprises a rendering application for displaying three-dimensional images, corresponding to the associated multimedia contents.

In another embodiment of the present invention, the display device is a set-top box connected to a television set and is remotely controlled by a remote control comprising a common keypad for selecting the television or multimedia contents. For example, a plurality of numbered keys of the remote control is associated to corresponding television stations and some navigation keys, such as "up, down, right, left", are associated to a menu for selecting the multimedia contents.

The main advantages according to the present invention briefly are as follows.
The search for multimedia contents potentially interesting to a user is substantially automated based on the television contents selected by the user. Advantageously, the interaction between the user and the display device substantially is of the television type, since the broadcast or multicast signal broadcast by the television station provides the code for automatically searching for multimedia contents on the Internet network.

Advantageously, the user may select, through a simple remote control, both the television contents and the multimedia contents. In particular, the list of multimedia contents associated to the code is displayed automatically, without typing an Internet address associated to the contents and without searching through search engines, for determining the Internet addresses of such multimedia contents.

Advantageously, the selected television contents are displayable in one portion of the screen and the selected multimedia contents are concurrently displayable in a separate portion of the screen.

Advantageously, when the television or the multimedia contents are displayed full screen, the display is undisturbed by the presence of secondary windows.

Advantageously, the representation of the list of multimedia contents through three-dimensional images allows an immediate interaction with the device.
CLAIMS

1. Method for displaying multimedia (MM) and/or television (TV) contents comprising the steps of:

   - setting up a device (1) comprising a first input port (3) suitable for receiving a digital television signal from an antenna or a digital line, a second input port (2) suitable for receiving said multimedia contents (MM) from an Internet line, and an output port (12) to a screen (4), said device further comprising means for selecting the multimedia (MM) and/or television (TV) contents to be displayed on said screen (4);

   - connecting the first input port (3) to said antenna or digital line, the second input port (2) to said Internet line and the output port (12) to said screen (4);

   - selecting television contents (TV) and displaying them on said screen (4), characterised by:

     - inserting a code (6) in the digital television signal (TV);

     - receiving and detecting said code (6) in said device (1);

     - transmitting said code (6) from said device (1) to an Internet server (7) connected to the Internet line;

     - searching, through said Internet server (7), for a plurality of multimedia contents (MM) associated to the code (6) and transmitting a list (8) of the multimedia contents (MM) found to said device (1);

     - displaying said list (8) on said screen (4).

2. Method according to claim 1 characterised in that said step of inserting the code (6) is carried out by a television station of said digital television signal (TV).

3. Method according to claim 1 characterised in that said step of
inserting the code (6) is carried out by a telecommunication provider on said Internet line.

4. Method according to one of the previous claims characterised in that said device (1) displays said list (8) in a first portion (11) of said screen (4), comprising a frame (8a, 8b, 8c) associated to each multimedia content (MM).

5. Method according to claim 4 characterised in that it comprises a step of browsing said multimedia contents (MM) in said list (8), said browsing step comprising a step of displaying one multimedia content (MM) in a predetermined frame (8b) and a step of displaying, in a second portion (80) of said screen (4), a description of the multimedia content (MM) placed in said predetermined frame (8b).

6. Method according to claim 5 characterised in that it comprises the step of selecting the multimedia content (MM) placed in said frame (8b) and of displaying the selected multimedia content (MM) in a third portion (9) of said screen (4).

7. Method according to claim 6 characterised in that said selected multimedia content (MM) and said selected television content (TV) are contemporarily displayed, respectively, in said third portion (9) and in a fourth portion (10) of said screen (4).

8. Method according to claim 7 characterised in that it comprises the step of expanding full screen the selected television content (TV) or the selected multimedia content (MM).

9. Method according to claim 8 characterised in that the multimedia contents (MM) transmitted by said Internet server (7) to said device (1) are associated to respective search codes (18b).

10. Method according to claim 9 characterised in that it further comprises a step of searching for multimedia contents (MM) associated to said search code (code 18b), comprising the steps of selecting multimedia content (MM) placed in said predetermined frame (8b); transmitting the search code (18b) associated to said selected multimedia content (MM) by said device (1) to said Internet server (7); searching, through said Internet server (7), searching, with said Internet
server (7), for multimedia contents (MM) associated to said search code (8b) and transmitting the list (8) of multimedia contents (MM) found to said device (1); displaying said list (8) on said screen (4).

11. Method according to one of the previous claims characterised in that said step of displaying said list (8) comprises the step of representing said multimedia contents (MM) in said frames (8a, 8b, 8c), with corresponding three-dimensional images.

12. Device (1) for displaying multimedia and television contents, comprising:

- a first input port (3) suitable for receiving a digital television signal from an antenna or a digital line, a second input port (2) suitable for receiving said multimedia contents from an Internet line, and an output port (12) to a screen (4), and means for selecting the multimedia and television contents to be displayed on said screen (4), characterised in that it comprises:

- a detector (14) for detecting a code (6) inserted in a the digital television signal selected by said selection means;

- a communication interface (15) with an Internet server (7), for communicating said code (6) to said server (7) and receiving a plurality of multimedia contents associated to the code (6) from said Internet server (7);

- a display interface (16) for displaying a list (8) of said plurality of multimedia contents on said screen (4).

13. Display device (1) according to claim 12 characterised in that said first input port (3) is a plug for a satellite antenna.

14. Display device (1) according to claim 12 characterised in that said first input port (3) is a plug for a coaxial cable.

15. Display device (1) according to claim 12 characterised in that said first input port (3) is a plug for a terrestrial digital antenna.

16. Display device (1) according to claim 12 characterised in that said first input port (3) is a plug for an Internet line.
17. Device according to claim 12 characterized in that said screen 4 is built in said device 1.

18. Device according to claim 9 characterised in that it comprises a remote control (5) for selecting multimedia contents (MM) from said list (8).

19. Device according to claim 18 characterised in that said display interface (16) provides for displaying said list (8) in a first portion (11) of said screen (4), comprising a frame (8a, 8b, 8c) for each multimedia content (MM), and for displaying, in a second portion (80) of said screen (4), a description of the multimedia content (MM) in a predetermined frame (8b).

20. Device according to claim 19 characterised in that said display interface (16) provides for displaying selected multimedia content (MM) in a third portion (9) and said selected television content (TV) in a fourth portion (10) of said screen (4).
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Electronic database consulted during the international search (name of database and where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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<td>EP 0 848 554 A2 (IBM [US]) 17 June 1998 (1998-06-17) column 6, line 12 - line 34</td>
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<td>column 7, line 47 - line 52 column 6, line 47 - line 56 column 8, line 16 - line 21</td>
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Further documents are listed in the continuation of Box C

See patent family annex

Special categories of cited documents

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
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Date of the actual completion of the international search

15 March 2010

Date of mailing of the international search report

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**C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT**

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