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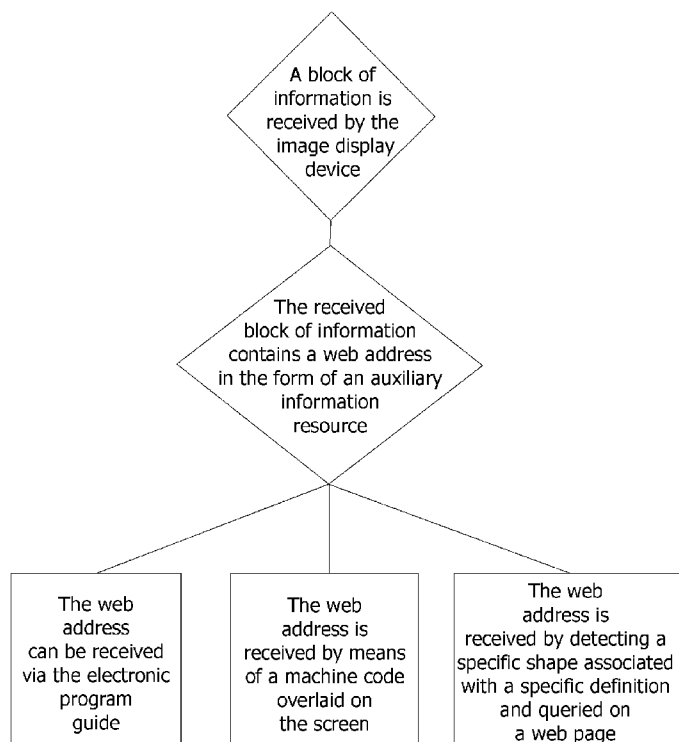
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OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
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(54) Title: IMAGE DISPLAY DEVICE CAPABLE OF RETRIEVING SECONDARY NON-DIRECT INFORMATION IN A BROADCAST PROGRAM

Figure 1



(57) Abstract: A method for operating an image display device is proposed, said image display device receiving a plurality of broadcasting services, the method for operating the image display device comprising the steps of, automatically retrieving a block of information in association with a program content being actually viewed, such block of information being not directly obtainable from the program content itself, automatically accessing a remote information resource in association with the retrieved block of information, the remote information resource containing auxiliary information relevant to the program content being actually viewed.



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Description**IMAGE DISPLAY DEVICE CAPABLE OF RETRIEVING SECONDARY
NON-DIRECT INFORMATION IN A BROADCAST PROGRAM**

- [0001] The present invention relates to an image display device capable of retrieving secondary non-direct information in a broadcast program to be delivered to the users.
- [0002] Digital and interactive TV systems provide a comprehensive amount of TV channels and programs leading to the general outcome that although a vast number of programs can be presented, user-interaction is limited in the sense that only the program content being directly visible and/or audible serves as a direct source of information and no secondary or auxiliary information relevant to the context of the directly displayed content can be retrieved and delivered to the users. Assuming that a TV service may have hundreds of channels, there might be many occasions where a user is interested in obtaining a piece of information relevant to the directly presented context of the program being viewed but since no such opportunity is available, he/she is only able to use alternative methods and means for obtaining the information of interest.
- [0003] Accordingly, individual program contents can be processed in order for obtaining secondary or auxiliary information not directly presented in the program being viewed and such secondary or auxiliary information can be offered to the users.
- [0004] Among others, one of the prior art disclosures in the technical field of the present invention can be referred to as US2011219398, which defines a system of delivering a personalized media item to a user of an interactive television. The system comprises a television terminal, a computing device and a remote control device. The computing device further comprises a set top box. The computing device may be connected to a server through a communication network. The system stores a personal profile for each of its users. The user's identity is determined after a user switches on the television. Personalized text messages for selected media items are displayed as scrolling tickers on the television display screen. The media items may include advertisement messages, headlines of news and

selected stock prices. One of the tickers may be selected by the user employing the remote control device to display the next level of details using an enlarged display space or using the full television screen.

[0005] The present invention provides a system and a method by which an image display device is operated such that users are automatically offered secondary or auxiliary information not directly presented in the program being viewed.

[0006] The present invention therefore provides a system and method by which an image display device is operable to automatically provide secondary or auxiliary information relevant to the context of the directly displayed content to be retrieved and delivered to the users as provided by the characterizing features defined in Claim 1.

[0007] Primary object of the present invention is to provide a system and method by which an image display device automatically delivers secondary or auxiliary information relevant to the context of the directly displayed content being viewed.

[0008] The present invention proposes a method for operating an image display device by which a block of information in association with a program content being actually viewed in the form of a web address is received, a remote information resource containing auxiliary information relevant to the program content being actually viewed is connected and the auxiliary information received from said remote information resource is dynamically presented to the users.

[0009] Said block of information can be directly received from a broadcasting service provider by way of using the electronic program guide in a dynamic manner, the web address contained in said block of information being used to reach remote information resource for obtaining the complete content of the auxiliary information.

[0010] Alternatively, said block of information can be obtained by way of analysing frames of a broadcast program such that a special visual object is detected by a digital image processor of the image display device. Said object can then be matched with a specific object in a database, the specific object having a specific definition in the database. In this manner,

the block of information is obtained by way of querying said specific definition in a remote information resource such as a web resource, containing the auxiliary information relevant to the program content being actually viewed. In sum, by querying the specific definition in a remote information resource, a web page address which contains the complete content of the auxiliary information is obtained.

- [0011] Alternatively, the block of information is contained in a machine readable code directly received from a broadcasting service provider. Said image display device periodically receives machine readable codes containing a block of information in the form of a web address. Said machine readable codes are intermittently displayed on the image display device screen in a manner to be overlaid on an actual program to be detected by a digital image processor of the image display device.
- [0012] Accompanying drawings are given solely for the purpose of exemplifying a system and method by which an image display device is operable, whose advantages over prior art were outlined above and will be explained in brief hereinafter.
- [0013] The drawings are not meant to delimit the scope of protection as identified in the claims nor should they be referred to alone in an effort to interpret the scope identified in said claims without recourse to the technical disclosure in the description of the present invention.
- [0014] Fig. 1 demonstrates a general diagram according to which the image display device of the invention executes the method of operation according to the present invention.
- [0015] The present invention proposes an image display device enabling a user to reach relevant information content according to her/his personal preferences. More particularly, the present invention provides that an image display device automatically retrieves a certain piece of information in association with the program content being actually viewed, such piece of information, on the other hand, being not directly obtainable from the program content itself. Program contents within the technical context of the present invention may be defined as any sort of programs in different categories as well as commercial streams presented during a program

broadcast or inserted between two programs as provided by the broadcaster. The present invention therefore provides a method for technically associating a program content being viewed with secondary or auxiliary information not directly provided by the program content itself. More specifically, the present invention provides a technical method for obtaining and providing information non-directly available in a program content to the users.

- [0016] It is known that digital broadcasting services generally provide information in regards to the genre of the programs being watched. The genre information may typically define a certain number of categories characterizing the content of a program. A content identifier therefore describes the contextual category of the digital program so as to let the users obtain information as to the classification of an event or a program.
- [0017] According to the present invention, the secondary or auxiliary information can be directly received from the broadcaster. A significant amount of data in the form of metadata information containing a multitude of attribute names, types and parameter descriptions is receivable by way of using the electronic program guide. Therefore, it is also possible to receive secondary or auxiliary information in association with the program content being viewed directly from the broadcaster in a dynamic manner by way of using the electronic program guide.
- [0018] In a more specific manner, a documentary program presenting architecture of a city in a certain geographic region of a country may be accompanied by historical information in the form of secondary or auxiliary information not being directly communicated in the program, such auxiliary information being received through the electronic program guide in the form of a web page address from which the image display device can retrieve the complete content of the auxiliary information.
- [0019] The image display device in accordance with the present invention is alternatively configured to obtain the auxiliary or secondary type of information by analysing frames of a broadcast program to catch a visual pattern indicative of a specific object by means of a digital image processor. A visual pattern indicative of an object, for example in the form

of a specific figure or shape may be detected as a specific object by analysing consecutive frames of the broadcast program. Such image processing techniques are presently used on an extensive basis and readily available to the skilled worker, they therefore need not be mentioned in the present description in detail.

- [0020] The image display device may try to spot a visual object in the broadcast program and match the same with a specific object in a pre-loaded internal database and the auxiliary information as to the specific definition provided in the database can be requested from a remote server, such as a reliable web resource. In a further alternative, the image display device may transmit a screenshot of the channel being presently viewed to a remote server and a digital image processor in association with the remote server may determine a particular object the auxiliary information as to which being conveyed back to the image display device. In a more specific manner, the digital image processor may spot a certain object on the screen such as for instance a famous painting and retrieve auxiliary information in association therewith to be presented to the user.
- [0021] Alternatively, the image display device may periodically receive machine readable codes such as barcode, two-dimensional or matrix code as in the case of Quick Response (QR) codes containing links to auxiliary information websites, such information being relevant to the actual program content and such links dynamically changing to accompany the program content. The machine readable codes may hence contain a web page address from which the image display device can retrieve the complete content of the auxiliary information. Alternatively, the machine readable codes may contain more sensitive information such as very brief summary text information, such direct textual information may be including telephone numbers, e-mail addresses etc.
- [0022] The machine readable codes may be discontinuously displayed on the TV screen in a non-intrusive manner, i.e. interfering with the actual program content in a minimal level. The machine readable code will be displayed on the screen in a manner to be overlaid on an actual program so as to be updated periodically as long as necessary, i.e. at times when new auxiliary

information is available. The machine readable codes can be detected by the digital image processor of the image display device.

- [0023] In accordance with the present invention, it is to be noted that no information is conveyed back to a third party such as the broadcaster, regarding in which way the auxiliary information is used. The image display device undertakes the processing itself, i.e. it receives or collects the required information and presents the secondary or auxiliary information upon confirmation.
- [0024] According to the present invention, in an alternative manner, the auxiliary information retrieving function can be launched by the users anytime by selecting the corresponding menu option or pressing a corresponding button so as to access the resource. To this end, the image display device of the invention may operate in a so-called non-automatic mode in which case the auxiliary information retrieving function will be launched only in response to the calling of an auxiliary information retrieving function by means of a button being actuatable on the TV front panel or by means of a remote control.
- [0025] The auxiliary information may directly be displayed on the screen, i.e. by way of accessing the source web page containing the information. Alternatively, the auxiliary information can be sent to a specified e-mail address, displayed on a home network device such as a predefined portable device or saved on a connected storage device such as a USB drive.
- [0026] In a nutshell, the present invention proposes a method for operating an image display device, the image display device receiving a plurality of broadcasting services, said method for operating the image display device comprising the steps of, a) automatically retrieving a block of information in association with a program content being actually viewed, such block of information being not directly obtainable from the program content itself, b) automatically accessing a remote information resource in association with the retrieved block of information, the remote information resource containing auxiliary information relevant to the program content being actually viewed and, c) dynamically presenting the auxiliary information

received from the remote information resource.

- [0027] In an embodiment of the invention, the block of information is directly received from a broadcasting service provider by way of using the electronic program guide in a dynamic manner.
- [0028] In a further embodiment of the invention, the block of information received through the electronic program guide contains a web page address from which the image display device retrieves the complete content of the auxiliary information.
- [0029] In a still further embodiment of the invention, the block of information is obtained by way of analysing frames of a broadcast program to spot a visual object by means of a digital image processor of the image display device.
- [0030] In a yet still further embodiment of the invention, the block of information is obtained by way of matching the spotted visual object with a specific object in a database, the specific object having a specific definition in the database.
- [0031] In a yet still further embodiment of the invention, the block of information is obtained by way of querying the specific definition in a remote information resource containing auxiliary information relevant to the program content being actually viewed.
- [0032] In a yet still further embodiment of the invention, the block of information obtained by way of querying the specific definition in a remote information resource contains a web page address from which the image display device retrieves the complete content of the auxiliary information.
- [0033] In a yet still further embodiment of the invention, the database is either a pre-loaded internal database of the image display device or a database in association with a remote server.
- [0034] In a yet still further embodiment of the invention, the block of information is contained in a machine readable code directly received from a broadcasting service provider.
- [0035] In a yet still further embodiment of the invention, the image display device periodically receives machine readable codes containing an updated block of information.

- [0036] In a yet still further embodiment of the invention, the updated block of information contains either a web page address from which the image display device retrieves the complete content of the auxiliary information or direct textual information.
- [0037] In a yet still further embodiment of the invention, the machine readable codes are discontinuously displayed on the image display device screen in a manner to be overlaid on an actual program to be detected by a digital image processor of the image display device.
- [0038] In a yet still further embodiment of the invention, auxiliary information retrieving function is directly launchable by selecting a corresponding menu option or pressing a corresponding button. In a yet still further embodiment of the invention, the function is called by means of a remote control button.
- [0039] In a yet still further embodiment of the invention, said auxiliary information is automatically sent to a specified e-mail address. In a yet still further embodiment of the invention, the auxiliary information is automatically displayed on a home network device and in a yet still further embodiment of the invention, the auxiliary information is automatically saved on a connected storage device.
- [0040] In this regard, the invention ensures that a user is dynamically offered a second source of information relevant to the directly provided information on the screen of an image display device and will therefore be provided with an opportunity to reach the information of interest relevant to the directly presented content and context of the program being viewed.

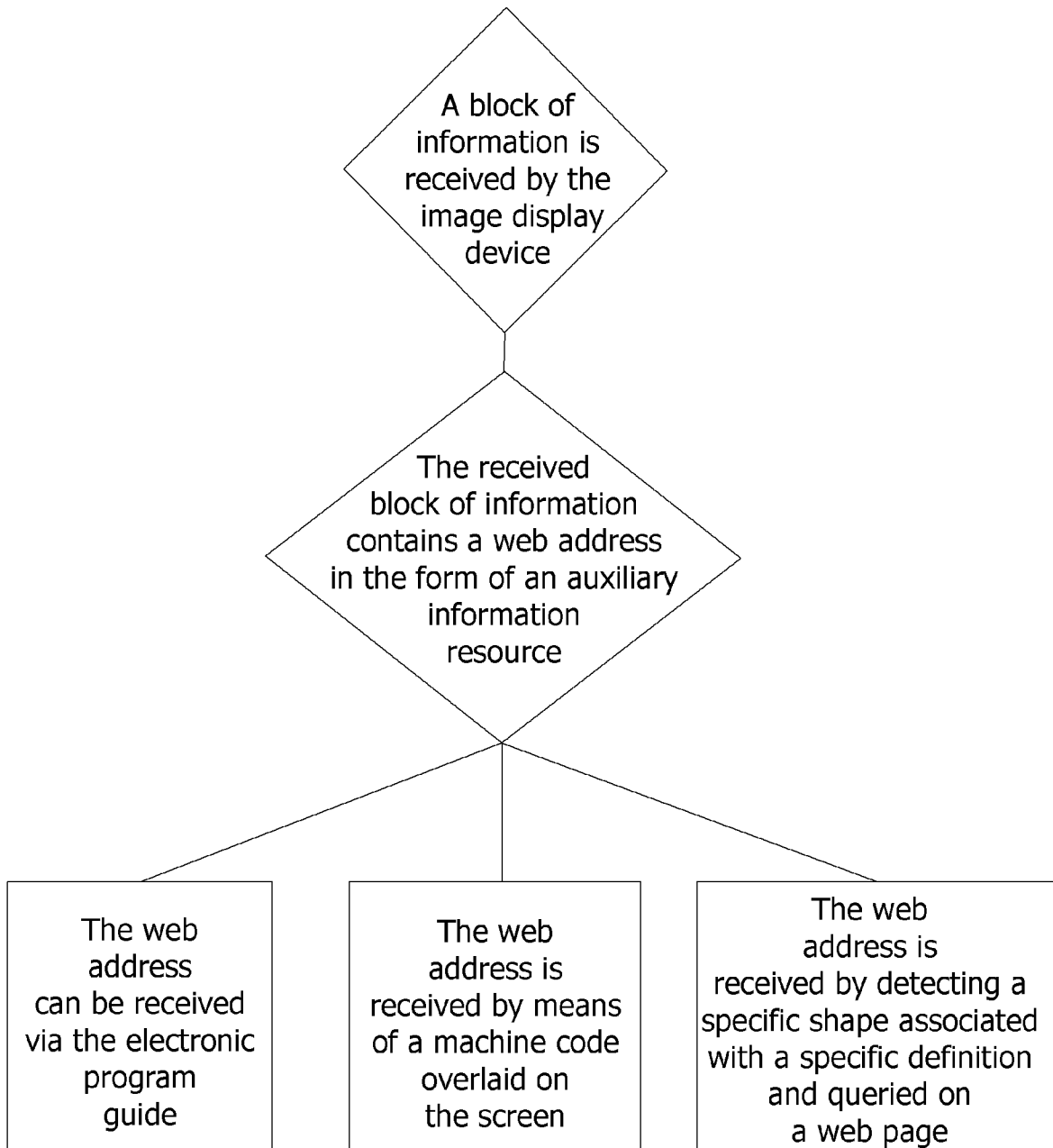
Claims

1. A method for operating an image display device, said image display device receiving a plurality of broadcasting services, said method for operating the image display device comprising the steps of:
 - automatically retrieving a block of information in association with a program content being actually viewed, such block of information being not directly obtainable from the program content itself,
 - automatically accessing a remote information resource in association with the retrieved block of information, the remote information resource containing auxiliary information relevant to the program content being actually viewed and,
 - dynamically presenting the auxiliary information received from the remote information resource.
2. A method for operating an image display device as in Claim 1, **characterized in that** the block of information is directly received from a broadcasting service provider by way of using electronic program guide in a dynamic manner.
3. A method for operating an image display device as in Claim 2, **characterized in that** the block of information received through the electronic program guide contains a web page address from which the image display device retrieves the complete content of the auxiliary information.
4. A method for operating an image display device as in Claim 1, **characterized in that** the block of information is obtained by way of analysing frames of a broadcast program to spot a visual object by means of a digital image processor of the image display device.
5. A method for operating an image display device as in Claim 4, **characterized in that** the block of information is obtained by way of matching the spotted visual object with a specific object in a database, the specific object having a specific definition in the database.
6. A method for operating an image display device as in Claim 5, **characterized in that** the block of information is obtained by way of querying the specific definition in a remote information resource containing auxiliary information relevant to the program content being actually viewed.
7. A method for operating an image display device as in Claim 6, **characterized in**

that the block of information obtained by way of querying the specific definition in a remote information resource contains a web page address from which the image display device retrieves the complete content of the auxiliary information.

8. A method for operating an image display device as in Claim 5, **characterized in that** the database is either a pre-loaded internal database of the image display device or a database in association with a remote server.
9. A method for operating an image display device as in Claim 1, **characterized in that** the block of information is contained in a machine readable code directly received from a broadcasting service provider.
10. A method for operating an image display device as in Claim 9, **characterized in that** the image display device periodically receives machine readable codes containing an updated block of information.
11. A method for operating an image display device as in Claim 9 and 10, **characterized in that** the updated block of information either contains a web page address from which the image display device retrieves the complete content of the auxiliary information or direct textual information.
12. A method for operating an image display device as in Claim 11, **characterized in that** the machine readable codes are discontinuously displayed on the image display device screen in a manner to be overlaid on an actual program to be detected by an digital image processor of the image display device.
13. A method for operating an image display device as in any preceding Claims, **characterized in that** auxiliary information retrieving function is directly launchable by selecting a corresponding menu option or pressing a corresponding button.
14. A method for operating an image display device as in Claim 13, **characterized in that** the function is called by means of a remote control button.
15. A method for operating an image display device as in any preceding Claims, **characterized in that** said auxiliary information is automatically sent to a specified e-mail address and/or automatically displayed on a home network device and/or automatically saved on a connected storage device.

Figure 1



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2014/061412

A. CLASSIFICATION OF SUBJECT MATTER INV. H04N21/235 H04N21/435 H04N21/44 H04N21/462 H04N21/4722 H04N21/4725 H04N21/488 H04N21/81 H04N21/858 ADD. 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) H04N Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data								
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; padding: 5px;">Category*</th> <th style="width: 70%; padding: 5px;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 20%; padding: 5px;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;"> US 2009/307721 A1 (AFRAM ANDREW J [US] ET AL) 10 December 2009 (2009-12-10) abstract figures 1,2,4-7,9 paragraphs [0002], [0014] - [0015], [0017] - [0018], [0020], [0023] - [0024], [0027], [0028], [0035], [0040], [0042], [0044] - [0053], [0056] - [0057] paragraphs [0062], [0065] - [0069], [0075] claims 1,5,6,11,20-21 ----- -/- </td> <td style="text-align: center; vertical-align: top; padding: 5px;">1,13-15</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 2009/307721 A1 (AFRAM ANDREW J [US] ET AL) 10 December 2009 (2009-12-10) abstract figures 1,2,4-7,9 paragraphs [0002], [0014] - [0015], [0017] - [0018], [0020], [0023] - [0024], [0027], [0028], [0035], [0040], [0042], [0044] - [0053], [0056] - [0057] paragraphs [0062], [0065] - [0069], [0075] claims 1,5,6,11,20-21 ----- -/-	1,13-15
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.						
X	US 2009/307721 A1 (AFRAM ANDREW J [US] ET AL) 10 December 2009 (2009-12-10) abstract figures 1,2,4-7,9 paragraphs [0002], [0014] - [0015], [0017] - [0018], [0020], [0023] - [0024], [0027], [0028], [0035], [0040], [0042], [0044] - [0053], [0056] - [0057] paragraphs [0062], [0065] - [0069], [0075] claims 1,5,6,11,20-21 ----- -/-	1,13-15						
☒ 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 application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family								
Date of the actual completion of the international search 30 January 2015	Date of mailing of the international search report 06/02/2015							
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Beaudet, J							

INTERNATIONAL SEARCH REPORT

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