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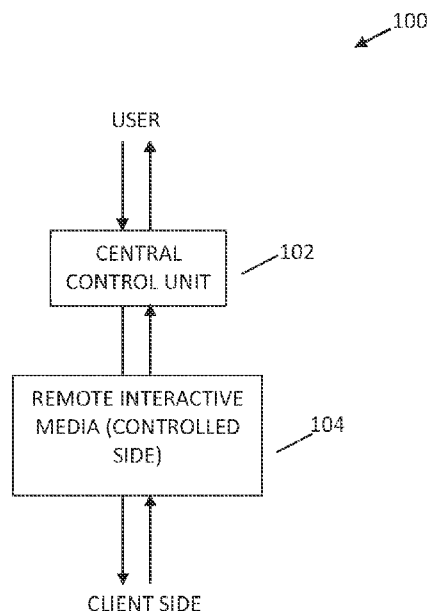
FIGURE 1

(57) **Abstract**: Embodiments allow a user to connect a control module to remote interactive media via wireless network, and allow a client side to connect the remote interactive media to a central control unit via wireless network, after which the user can send to the remote interactive media messages or instructions via the control module. At the same time, the remote interactive media collects the information from the client side and transmits it to the central control unit which is directly controlled by the user, enhancing the communications between the central control unit on the control side and the remote interactive media on the client side. This way allows communication to be more interesting and is completely different from traditional media for remote interaction.

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REMOTE INTERACTIVE MEDIA

FIELD

[0001]   Embodiments of the present application relate generally to communication systems and methods through remote interactive media and its use instructions.

BACKGROUND

[0002]   Many toy products attract children's attention by sounds and movements, while high-tech toy products have embedded intelligent software that reacts to the response of children. For example, some toys can repeat what the child said. However, existing toys do not have the capability of interacting remotely, or can be used as a media of remote interaction.

[0003]   Current media used for remote interaction often refers to mobile terminals such as portable computers and cell phones. And the majority of interactions are through direct video and audio interactions only.

SUMMARY

[0004]   Embodiments of the present application provide a method of communication through remote interaction media. In one embodiment, the following scheme may be employed:

[0005]   The 'remote interaction media' referred to herein may include either real or virtual media that serves as client side terminals that are controlled by a central control unit. Through the central control unit, the user can issue instructions, send information, control the remote interaction media to send out information and to collect the information and/or instructions from the client side

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simultaneously, and to send back the information collected to the central control unit in the meanwhile.

[0006] Through the above scheme, one can enable more intelligent, appropriate, real-time, and diversified means of interactions with the clients (e.g., children) under the control of a user connected to the central control unit, which is completely different from the usual reciprocal reaction and interaction that relies on pre-set control sequences and can thus achieve different perceived performance and new user experience than existing digital and non-digital toys.

[0007] To achieve better technical effect and improve user experience, some embodiments may involve the following technical developments:

[0008] Include voice, behavior, and audio-visual signals in the information that can be emitted by the remote interaction media.

[0009] Include voice, behavior, and various other sensor signals (e.g., audio-visual) in the information that can be collected and transmitted by the remote interaction media.

[0010] The central control unit and/or the remote interaction media can have a voice changer integrated that alters the voice message so that the user orally communicates with the central control unit.

[0011] Through the above techniques, some embodiments, when put into practical use, can enable the user (e.g., parents) to role-play by taking advantages of the various means of communication and information presentation enabled by the remote interaction media, bringing a rich and diversified set of new user experience to the end users.

[0012]   The remote interaction system may be appropriate for children to use and provides rich, multi-modal interaction experience for such users. For this purpose, some embodiments may include:

[0013]   The system may include both a client side remote interaction media and a corresponding central control unit that controls it. The remote interaction media may include a power module, an interaction module, and a control module. The control module is equipped with the wireless communication functionality and can receive the information collected and transmitted by the interaction module, receive the information and instructions sent from the central control unit, and transmit them to the interaction module. The power module provides power for the control and the interaction modules. In the central control unit, central control software may communicate with the control module in the interaction media via wireless networks, receives the information from the control module and sends instructions and information to the control module.

[0014]   Via the above-mentioned techniques, the user can send instructions to remote interactive media through the central control software and respond in a proper and diversified form based on the information received from the interactive media, therefore enabling effective real-time communication. In particular, when the user is a parent and the client is a child, this invention allows the parent to do role-play and to interact with their child in a deep and meaningful way, through the remote interactive media.

[0015]   To achieve better technical effect and improve user experience, this invention may involve the following technical developments such as to integrate

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with a voice changer module at the remote interactive media and/or central control unit sides. This voice changer will be used to change the parent's voice to that of the role he/she tries to play, reinforcing the effect of role-play.

[0016]   Embodiments of the present invention also provide the use instructions for the abovementioned remote interaction system, including the following:

[0017]   Step 1: The user of the central control unit connects to the remote interactive media on the Internet through wireless network, or to the client side via wireless network that connects the remote interactive media to the central control unit on the Internet;

[0018]   Step 2: The user sends instructions and messages to the remote interactive media via the central control software;

[0019]   Step 3: The remote interactive media collects information and/or instruction from the client side and transmits it to the central control unit; and

[0020]   Step 4: The remote interactive media responds according to the information and/or instructions;

[0021]   Steps 2-4 can overlap in time.

[0022]   Embodiments allow a user to connect a control module to remote interactive media via wireless network, and allow a client side to connect the remote interactive media to a central control unit via wireless network, after which the user can send to the remote interactive media messages or instructions via the control module. At the same time, the remote interactive media collects the information from the client side and transmits it to the central control unit which is

directly controlled by the user, enhancing the communications between the central

control unit on the control side and the remote interactive media on the client side.

This way allows communication to be more interesting and is completely different

from traditional media for remote interaction.

[0023]   According to one aspect: a communication method through remote

interactive media, comprises:

        providing a remote interactive media that is either real or virtual media and is

located on a user-controlled side at any apparatus,

        providing a central control unit on a user-controller side at a user's device;

        sending, from the central control unit of the user's device, instructions or

messages through the central control unit, to control the remote interactive media to

send out information, and

        at the same time as the sending, the remote interactive media collects the

information and instructions from the apparatus and sends such data to the central

control unit of the user's device.

[0024]   According to another aspect: a remote interaction system comprises

                a central control unit; and

                a controlled side remote interactive media comprising a power module, an

interaction module and a control module,

                wherein the interaction module is controlled by the control module and

comprises a multimedia interaction device and an action interaction device,

                wherein the control module has a wireless communication function,

receives the information collected by the interaction module, sends the

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information to the central control unit, receives information or instructions from the central control unit and transmits the information or instructions to the interaction module,

wherein the power module provides power supply to the interaction and the control modules,

wherein the central control unit includes a main control module software which communicates with the control module of the said media via a network, receives the information from the control module and sends instructions and information to the control module in the remote interactive media.

[0025] According to yet another aspect: a method of using a remote interaction system comprises:

establishing a connection, using a processor, between a main control module software of a user device and a remote interactive media of an apparatus via a wireless network, wherein the user device and apparatus are separate devices on the network;

sending, via a main control module software of the user device, information and instructions to the remote interactive media;

collecting, at the remote interactive media, the information and instructions from the remote interactive media and transmitting the data to the central control unit of the user device; and

using an embedded software program at the apparatus, controlling the apparatus to react according to the information or instructions.

<u>BRIEF DESCRIPTION OF THE DRAWINGS</u>

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[0026]   Aspects of the present invention is further described in the detailed

description which follows in reference to the noted plurality of drawings by way of

non-limiting examples of embodiments of the present invention in which like

reference numerals represent similar parts throughout the several views of the

drawings and wherein:

[0027]   Figure 1. A diagram of a method of communication through remote

interactive media according to some embodiments.

[0028]   Figure 2. A system diagram a remote interaction system according to

some embodiments.

[0029]   Figure 3. A flow chart of a method for operating a remote interaction

media system according to some embodiments.

<u>DETAILED DESCRIPTION OF SOME EMBODIMENTS</u>

[0030]   A discussion of some aspects of the invention will now be discussed

with reference to the figures.

[0031]   As shown in Figures 1-2, embodiments of this application are directed

to methods 100 and 300 and systems 200 of communication via remote interactive

media 104. The remote interactive media 104 can be either real or virtual media.

The remote interactive media 104 is located on the controlled client side which is

the corresponding controller side. The user 202 controls the remote interactive

media 104 to send out messages via controlling a central control unit 102 to issue

instructions or messages. The remote interactive media 104 simultaneously collects

the information and/or instructions from the client side and sends such data to the

central control unit 102.

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[0032]   The data/information that can be emitted by the remote interactive media 104 may include audio, behavior, and/or audio-visual data/information.

[0033]   The information that can be collected by the remote interactive media 104 may include video, audio, and/or sensor information.

[0034]   The central control unit 102 and/or remote interactive media 104 will perform voice changing operation on the user's voice message sent to the central control unit 102. In this regard, the user's voice is received by the central control unit 102 and is audibly altered prior to being presented at the client side, such as by changing the pitch, tone, accent, frequency and other audible characteristics so that the voice is purposely changed so that the client 204 on the client side perceives a voice message with different audible characteristics.

[0035]   The remote interactive media 104 mentioned in this disclosure, the so-called controlled side on the client side, can take the form of toys such as a teddy bear, a Barbie doll, or take the form of a virtual character such as QQ pets, or take some other real/virtual forms, or any other toy or object that the controlled side can be controlled by the central control unit for communication. In this regard, the client side, as shown in Figure 2 may be completely (or partially) embodied in a toy, such as a teddy bear, a doll, a toy vehicle, a book or any other toy. This allows the user to communicate remotely over a network 208 so that the client believes the sounds are coming from the toy itself instead of from the user (or instead of potentially recognizing the user's voice).

[0036]   In this application, the central control unit 102 corresponding to the remote interactive media is directly controlled by the user 202 and can be

implemented as a remote controlled system embedded with the control module

software 210, or as simply as a control module software (App) 210 installed on a

computer or cell phone through which the user can control the remote interactive

media. Thus, element 206 may be a computing device, such as a user's cell phone or

could be implemented on any other computing device, such as a computer.

[0037]   The client 204 of the client side mentioned in this disclosure may

refer to the communication targets of the remote interactive media, which could be

children or adults. The user 202 can disguise himself in role-playing purpose

through the use of this remote interactive media system 200, which can be

especially useful when the client 204 on the client side is one or more children.

Children may not know that the apparatus 220 with the remote interactive media

104 is controlled by the central control unit 102, but that does not hinder the

communication between the child and the remote interactive media and even

facilitates the communication.

[0038]   In operation, the remote interactive media 104 collects data and the

instructions of the user 204 of the client side. Such data includes audio-visual

information and the various data collected by input output devices 234 (e.g., sensors,

camera, microphones, etc.). The remote interactive media 104 transmits such

gathered data and user instructions to the central control unit 102 over network

208, waits for the information and instructions from the user 202 of the central

control unit 102, reacts to such information and instructions accordingly through

the embedded software 210, and converts such information and instructions to

audio-visual and audio-optical data as output via the input/output devices 216 (e.g., display screen, speaker, etc.) of the control unit 102.

[0039]   One portion of this apparatus 200 is to enable and facilitate communications through remote interactive media, which is situated between the user and the client side and reacts via emitting sounds and actions (via input/output devices 234) according to the instructions and messages sent by the user 202 of the central control unit 102 via the main control module 230. This system 200 allows for more diversified interactions and communications between people. The media can be either real or virtual and is able to collect and transmit information, receive instructions and convert it to sounds and/or actions, and to collect the client side information (and instructions) and send it to the central control unit, enabling effective real-time communications.

[0040]   It is noted that software module 210 may be stored in memory 214 of the central control unit 102. Software module 210 may be accessed from memory 214 and run on a processor 212 associated with central control unit 102. Similarly, power module 222, interaction module 224, and control module 230 of the remote interactive media 104 may be stored in memory 236 of the remote interactive media 104. Power module 222, interaction module 224, and control module 230 may be accessed from memory 236 and run on a processor 212 associated with remote interactive media 104.

[0041]   Additionally, the main control module 210 of the central control unit 102 may include graphical user interfaces ("GUIs"). The main control module 210 may present one or more predetermined GUIs to permit the user to input/select

data into the system 102, direct the remote interactive media 104 to perform

certain functions or allow the user to input any other data and/or define settings.

The GUIs may be predetermined and/or presented in response to the user (or

client) attempting to perform operations, queries or enter information and/or

settings. The GUIs can be custom-defined and execute in conjunction with other

modules and devices on the central control unit 102 or the remote interactive media

104, such as I/O devices 216, 234, any modules (e.g., software module 210) to

interface with the central control unit 102, or any other module (power module 222,

interaction module 224, and control module 230) of the remote interactive media

104 or of the central control unit 102.

[0042]   As mentioned above, the central control unit 102 and the remote

interactive media 104 may include one or more input devices, output devices or

combination input and output device, collectively I/O devices 216, 236. I/O devices

216, 236 may include a speaker, microphone, sensors, or similar means to control/

operation of or receive data related to interaction features described herein. I/O

devices 216, 236 may also include disk drives or devices for reading computer

media, including computer-readable or computer-operable instructions.

[0043]   Network 512 may be a local area network (LAN) or wide area

network (WAN), such as the Internet. It should be noted that the present

application could work without a network such as via a short range connection or a

wired connection between central control unit 102 and the remote interactive

media 104.

[0044]   Processor 212 of central control unit 102 and processor 232 of the remote interactive media 104 may perform one or more functions as described herein. That is, some of the features or functions of the presently described methods may be performed by processor 212, and other features or functions of the presently described methods may be performed by processor 232. In another embodiment, all of the features or functions of the presently described methods may be performed by processors 212 and 232 in conjunction with each other. In any event, the processor may function to call data or computer instructions from memory (214 or 236).

[0045]   Some exemplary examples are provided below.

[0046]   Implementation example 1:

[0047]   A toy 220 serves as the remote interactive media in this first example. This toy is able to make sound and change actions according to the instructions received from the central control unit. The client 204 is a child, while the user 202 of the central control unit 102 is the mom. The main control module 210 is installed on the mom's cell phone 206. The mom interacts with the main control module to control the toy 220 to send out information to the child; the toy collects the audio-visual information of the client side (the child) and sends it to the main control module 210 on the mom's cell phone. The child can also send a communication request or command, which can be implicitly activated via the child's interactions with the toy (e.g., the child may greet the toy as if it were a real person), to the toy. Such requests will be sent by the toy 220 to the central control unit 102. Compared with toys that have fixed preset software, this toy, as the remote interactive media

in the present system, although also has preset software and instructions, mainly

conveys the idea and the instructions of the mom's which are not preset and can

only be captured and rendered at the run time via real time interactions. This new

method of communication enables more intelligent, proper, real-time, and

diversified interactions and feedback between the mom and the child, improving the

communication, with the mom controlling the toy via the central control unit over

network 208. This is completely different from traditional interaction mechanisms

enabled by preset artificial intelligence software, bringing unprecedented new

experience to children and enabling the mom to reach the inner world of the child.

Also this toy can collect the audio-visual information on the client side and sends it

to the central control unit, not only facilitating the mom to react properly but also

enabling her to monitor the child's safety.

[0048]   Implementation example 2:

[0049]   In this example, the remote interactive media 104 is a virtual doll

game software installed on a computer 220 or a tablet PC 220. This software

presents a virtual doll through which to communicate with the client side child.

This virtual doll can sound and act according the received instructions from the

central control unit102. The client 204 is a child, and the user of the central control

unit is the mom. The main control module software is installed on the mom's cell

phone or computer 206. Through interacting with the main control module

software 210, the mom controls the remote interactive media 104, the virtual doll

software, to send out messages, and at the same time to collect the client side child's

feedback information, as well as the audio-visual information on the client side, and

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transmit it back to the main control module 210. Under the mom's control, the

virtual doll character is able to interact with the child more directly, improving

communications, bringing the child new experience, and enabling the mom to reach

the inner world of the child. Also this toy can collect the audio-visual information on

the client side and sends it to the central control unit, not only facilitating the mom

to react properly but also enabling her to monitor the child's safety.

[0050]   Implementation example 3:

[0051]   A toy 220 serves as the remote interactive media. This toy 220, upon

receiving instructions from the central control unit 102 over a network 208, can

make sound and perform actions. The client 204 is a child with autism, while the

user 202 of the central control unit 102 is the medical team. The main control

module software 210 is installed on the computer 206 of the medical team. Via the

main control module software 210, the doctor controls the toy to send out

information, collects the audio-visual data from the client side child who has autism

and sends such data to the main control module software 210. The communication

with the child 204 is conducted through role-playing in various types of forms of

presentations including actions, sounds and audio-optics, etc. This way of role-

playing via remote interactive media, with the user (e.g., adults) behind the scene,

makes it easier to reach the inner world of the child, especially of those with autism.

An immediate benefit is better and more effective communication between adults

(e.g., the medical team) and children, improving treatment outcome.

[0052]   Implementation example 4:

[0053]   Multiple toys 220 serve as remote interactive media in this example. Each toy 220 can make sounds and perform actions according to the instructions received from the central control unit 102. The clients 204 are students who are studying English. The user 202 of the central control unit 102 is the teacher. The main control module software 210 is installed on the teacher's computer. Via interacting with the main control module 210, the teacher communicates in English with the clients (students) using different voices via controlling different toys 220. The toys 220 collect the students' audio-visual data and transmit them to the teacher's main control module software. There can be multiple teachers controlling multiple different remote interactive media (toys) via which to communicate with students in English. Such kind of a role-playing will greatly improve the teaching efficacy.

[0054]   To better implement the abovementioned method, this system 200 implements the following method aspects:

[0055]   This system includes the client side remote interactive media and the corresponding central control unit that controls the client side. The remote interactive media includes the power module 222, the interaction module 224 and the control module 230. The interaction module 224 is controlled by the control module 230, including multimedia interaction device 226 and the action interaction device 228. The control module 230 has wireless communication capability, and thus, receives the data collected by the interaction module 226 and sends such received data to the central control unit 102, receives the message and/or instructions from the central control unit 102 and transmits such message to the

interaction module 228. The power module 222 provides power supply to the interaction and the control modules 224 and 230.

[0056]   The central control unit 102 includes the main control module software 210 which communicates with the control module 230 of the interactive media 104 via the wireless network 208 (for example), receives information from the control module 102 and sends control instructions and messages to the control module 102 (similar to the instructions and messages discussed above).

[0057]   The remote interactive media 104 and the central control unit 102 mentioned in this disclosure both have a voice-changer module (not shown). The voice-changer module alters the received voice data so that the client does not recognize the user is the voice.   In this regard, the voice may be increased in frequency or pitch to match the sound of the toy.

[0058]   The main control module software 210 supports multiple platforms and can be installed on any electronic device (e.g., a phone) that has internet access and can be installed with such software.

[0059]   The multimedia interaction user device 206 may include video cameras, other cameras, one or more microphones, speakers or any other input/output devices, as previously mentioned.

[0060]   The action interaction device or apparatus 220 may include various devices, including acceleration sensors, pressure sensors, obliquity sensors, electric motor and its associated mechanical structure (where the electric motor controls its associated mechanical structure), LED lights, infrared sensors, or any other device -

each of which works with the modules of the remote interactive media 104 to send data remotely to the central control unit 102.

[0061]   For example, in the 1st implementation example, the toy 220 contains an electric motor and its associated mechanical structure. The motor controls the mechanical structure; the control module receives information and instructions, performs analysis, and sends instructions to the motor. For example, if the mom sees the child make a big yawn, she can send a 'yawn' instruction from the user device 206 (via the central control unit 102) to the remote interactive media 104 of the toy 220 which then the toy 220 yawns in response thereto and the toy 220 also tells the child that he/she is also drowsy and would like to go to sleep together with the child in response thereto. The language the toy speaks can be preset, or could be whatever the mom says, delivered to the child via the voice-changer module in the main control module software. When the child 204 is talking to the toy 220, the toy 220 can transmit the video of the child talking to the mom's cell phone 206, and the mom can control the toy to react to the child properly and promptly. If the mom is busy, she can control the toy 220 to tell the child that "I am having a rest," making the child 204 think that the toy 220 is alive and easing the communication between the mom 202 and the child 204 anytime and anywhere they want.

[0062]   In the 3rd implementation example, the toy 220 has a pressure sensor and an obliquity sensor (elements 234). The medical team can tell the mental status of the child 204 with autism through analyzing the information such as the reaction of the child 204 to the toy 220, how intensely the child bangs the toy, etc. Then the medical team can communicate with the child 204 via role play, e.g. by saying "You

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hurt me! Why did you do that to me?", and adjust the toy's reaction according to the child's reaction. For example, if the child 204 likes some particular color of light, or a particular move of the toy, the control module 102 can adjust the toy 220 accordingly after receiving the instruction from the user 202 and transmits such instruction to the remote interactive media 104 of the toy 220. With this way of non-invasive role-playing, we can improve the communication and mutual understanding with the child.

[0063]   This disclosure also provides use instructions for the abovementioned system.

[0064]   The steps of method 300 to follow in using the said system according to some embodiments:

[0065]   Step 1: The user of the central control unit establishes a connection between the main control module and the remote interactive media on the internet via wireless network. Or, the client side establishes a connection between the remote interactive media and the central control unit on the Internet via wireless network (step 302).

[0066]   Step 2: The user sends information and/or instructions to the remote interactive media via the main control module software (step 304).

[0067]   Step 3: The remote interactive media collects the data and/or instructions from the client side and transmits it to the central control unit (step 306).

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[0068]   Step 4: The remote interactive media, using the embedded software,

reacts to the information and/or instructions from 2); Steps 2), 3), and 4) can be

initiated at about the same time, with no specific order to follow (step 308).

[0069]   Prior to Step 1), there is also a initialization step applied to the remote

interactive media.

[0070]   Step 3) includes collecting audio-visual information and the sensor

data via the interaction module and sending such data to the central control unit

[0071]   Step 4) includes the control module controlling the action interaction

device to perform appropriate actions.

[0072]   Step 4) includes the control module controlling the multimedia

interaction device to make sounds.

[0073]   Step 2) includes the control module controlling the multimedia

interaction device to change the voice/sound emitted according to the needs.

[0074]   In this disclosure, the user 202 connects the main control module

software 210 to the controlled remote interactive media 104 via wireless network,

208 to send via the main control module software messages and instructions to the

remote interactive media 104. At the same time, the remote interactive media 104

collects information and sends it to the central control unit 102. The central control

unit 102 is controlled by real people, and can better communicate with the

controlled side remote interactive media 104 and present the real user's feedback

via the media in its own (different) way, making the interaction more interesting

and completely different from traditional interactive media.

[0075]   As will be appreciated by one skilled in the art, aspects of the present

invention may be embodied as a system, method or computer program product.

Accordingly, aspects of the present invention may take the form of an entirely

hardware embodiment, an entirely software embodiment (including firmware,

resident software, micro-code, etc.) or an embodiment combining software and

hardware aspects that may all generally be referred to herein as a "circuit,"

"module" or "system." Furthermore, aspects of the present invention may take the

form of a computer program product embodied in one or more computer readable

medium(s) having computer readable program code embodied thereon.

[0076]   Any combination of one or more computer readable medium(s) may

be utilized. The computer readable medium may be a computer readable signal

medium or a computer readable storage medium. A computer readable storage

medium may be, for example, but not limited to, an electronic, magnetic, optical,

electromagnetic, infrared, or semiconductor system, apparatus, or device, or any

suitable combination of the foregoing. More specific examples (a non-exhaustive

list) of the computer readable storage medium would include the following: an

electrical connection having one or more wires, a portable computer diskette, a hard

disk, a random access memory (RAM), a read-only memory (ROM), an erasable

programmable read-only memory (EPROM or Flash memory), an optical fiber, a

portable compact disc read-only memory (CD-ROM), an optical storage device, a

magnetic storage device, or any suitable combination of the foregoing. In the

context of this document, a computer readable storage medium may be any tangible

medium that can contain, or store a program for use by or in connection with an instruction execution system, apparatus, or device.

[0077]   A computer readable signal medium may include a propagated data signal with computer readable program code embodied therein, for example, in baseband or as part of a carrier wave. Such a propagated signal may take any of a variety of forms, including, but not limited to, electro-magnetic, optical, or any suitable combination thereof. A computer readable signal medium may be any computer readable medium that is not a computer readable storage medium and that can communicate, propagate, or transport a program for use by or in connection with an instruction execution system, apparatus, or device.

[0078]   Program code embodied on a computer readable medium may be transmitted using any appropriate medium, including but not limited to wireless, wireline, optical fiber cable, RF, etc., or any suitable combination of the foregoing. Computer program code for carrying out operations for aspects of the present invention may be written in any combination of one or more programming languages, including an object oriented programming language such as Java, Smalltalk, C++ or the like and conventional procedural programming languages, such as the "C" programming language or similar programming languages. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer or server. In the latter scenario, the remote computer may be connected to the user's computer through any type of network, including a local area network (LAN) or a wide area

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network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider).

[0079]   Aspects of the present invention are described above with reference to flowchart illustrations and/or block diagrams of methods, apparatus (systems) and computer program products according to embodiments of the invention. It will be understood that each block of the flowchart illustrations and/or block diagrams, and combinations of blocks in the flowchart illustrations and/or block diagrams, can be implemented by computer program instructions. These computer program instructions may be provided to a processor of a general purpose computer, special purpose computer, or other programmable data processing apparatus to produce a machine, such that the instructions, which execute via the processor of the computer or other programmable data processing apparatus, create means for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks.

[0080]   These computer program instructions may also be stored in a computer readable medium that can direct a computer, other programmable data processing apparatus, or other devices to function in a particular manner, such that the instructions stored in the computer readable medium produce an article of manufacture including instructions which implement the function/act specified in the flowchart and/or block diagram block or blocks.

[0081]   The computer program instructions may also be loaded onto a computer, other programmable data processing apparatus, or other devices to cause a series of operational steps to be performed on the computer, other programmable

apparatus or other devices to produce a computer implemented process such that the instructions which execute on the computer or other programmable apparatus provide processes for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks.

[0082]   All of the above description is some optimized implementation method and design choices. Therefore, the foregoing is considered as illustrative only of the principals of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact composition and use shown and described, and accordingly, all suitable modifications and equivalents may be restored to, falling within the scope of this invention.

[0083]   The flowcharts and block diagrams in the Figures illustrate the architecture, functionality, and operation of possible implementations of systems, methods and computer program products according to various embodiments of the present invention. In this regard, each block in the flowchart or block diagrams may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified logical function(s). It should also be noted that, in some alternative implementations, the functions noted in the block may occur out of the order noted in the figures. For example, two blocks shown in succession may, in fact, be executed substantially concurrently, or the blocks may sometimes be executed in the reverse order, depending upon the functionality involved. It will also be noted that each block of the block diagrams and/or flowchart illustration, and combinations of blocks in the block diagrams

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and/or flowchart illustration, can be implemented by special purpose hardware-based systems which perform the specified functions or acts, or combinations of special purpose hardware and computer instructions.

[0084]   The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of embodiments of the invention. As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0085]   The corresponding structures, materials, acts, and equivalents of all means or step plus function elements in the claims below are intended to include any structure, material, or act for performing the function in combination with other claimed elements as specifically claimed. The description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to embodiments of the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of embodiments of the invention. The embodiment was chosen and described in order to best explain the principles of embodiments of the invention and the practical application, and to enable others of ordinary skill in the art to understand embodiments of the invention for various

embodiments with various modifications as are suited to the particular use

contemplated.

[0086]   Although specific embodiments have been illustrated and described

herein, those of ordinary skill in the art appreciate that any arrangement which is

calculated to achieve the same purpose may be substituted for the specific

embodiments shown and that embodiments of the invention have other applications

in other environments. This application is intended to cover any adaptations or

variations of the present invention. The following claims are in no way intended to

limit the scope of embodiments of the invention to the specific embodiments

described herein.

<u>WHAT IS CLAIMED IS:</u>

1. A communication method through remote interactive media, comprising:

    providing a remote interactive media that is either real or virtual media and is located on a user-controlled side at any apparatus,

    providing a central control unit on a user-controller side at a user's device;

    sending, from the central control unit of the user's device, instructions or messages through the central control unit, to control the remote interactive media to send out information, and

    at the same time as the sending, the remote interactive media collects the information and instructions from the apparatus and sends such data to the central control unit of the user's device.

2. The communication method of claim 1, wherein the information that can be sent out by the remote interactive media includes sound, action, and audio-optical information.

3. The communication method of claim 1, wherein the information that can be collected by the remote interactive media includes video, audio, and sensor information.

4. The communication method of claim 1, wherein the central control unit and/or remote interactive media applies a voice changing operation on the sound information sent by the user through the central control unit.

5. A remote interaction system comprising

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a central control unit; and

a controlled side remote interactive media comprising a power module, an interaction module and a control module,

wherein the interaction module is controlled by the control module and comprises a multimedia interaction device and an action interaction device,

wherein the control module has a wireless communication function, receives the information collected by the interaction module, sends the information to the central control unit, receives information or instructions from the central control unit and transmits the information or instructions to the interaction module,

wherein the power module provides power supply to the interaction and the control modules,

wherein the central control unit includes a main control module software which communicates with the control module of the said media via a network, receives the information from the control module and sends instructions and information to the control module in the remote interactive media.

6. The remote interaction system of claim 5, wherein the remote interactive media or the central control unit comprises a voice changer module.

7. The remote interaction system of claim 5, wherein the main control module software supports multi-platforms and is installed on an electronic device that connects to the Internet and allows installation of control software.

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8. The remote interaction system of claim 5, wherein the multimedia interaction device includes at least one of a video camera, a microphone, a speaker, an acceleration sensor, a pressure sensor, or an obliquity sensor.

9. The remote interaction system of claim 5, wherein the multimedia interaction device includes a video camera, a microphone, a speaker, and at least one sensor.

10. The remote interaction system of claim 5, wherein the action device includes an electric motor and its associated mechanical structure that is controlled by the electric motor.

11. The remote interaction system of claim 5, wherein the said interaction module includes LED lights or an infrared sensor.

12. The remote interaction system of claim 5, wherein the controlled side remote interactive media is embedded in a child's toy.

13. A method of using a remote interaction system comprises:

    establishing a connection, using a processor, between a main control module software of a user device and a remote interactive media of an apparatus via a wireless network, wherein the user device and apparatus are separate devices on the network;

    sending, via a main control module software of the user device, information and instructions to the remote interactive media;

    collecting, at the remote interactive media, the information and instructions from the remote interactive media and transmitting the data to the central control unit of the user device; and

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using an embedded software program at the apparatus, controlling the

apparatus to react according to the information or instructions.

14. The method of using the remote interaction system of claim 13, further

comprising initiating an initialization process applied to the remote interactive

media prior to the establishing a connection.

15. The method of using the remote interaction system of claim 13, wherein the

sending comprises the control module of the user device controlling the apparatus

to change the sound/voice emitted by the device according to the needs.

16. The method of using the remote interaction system of claim 18, wherein the

collecting includes collecting video, audio, and sensor information via the

interaction module and transmits such information to the main control module

software.

17. The method of using the remote interaction system of claim 18, wherein the

controlling includes the control module controlling the action interaction device to

perform actions.

18. The method of using the remote interaction system of claim 18, wherein the

controlling includes the control module controlling the multimedia interaction

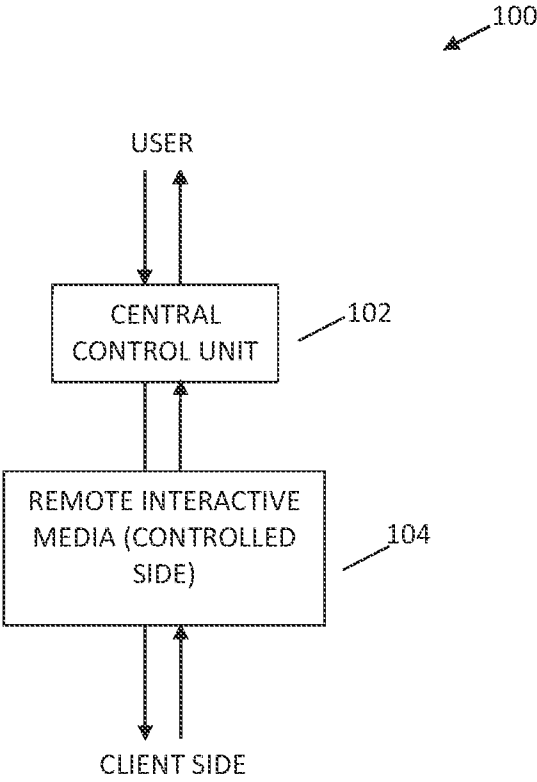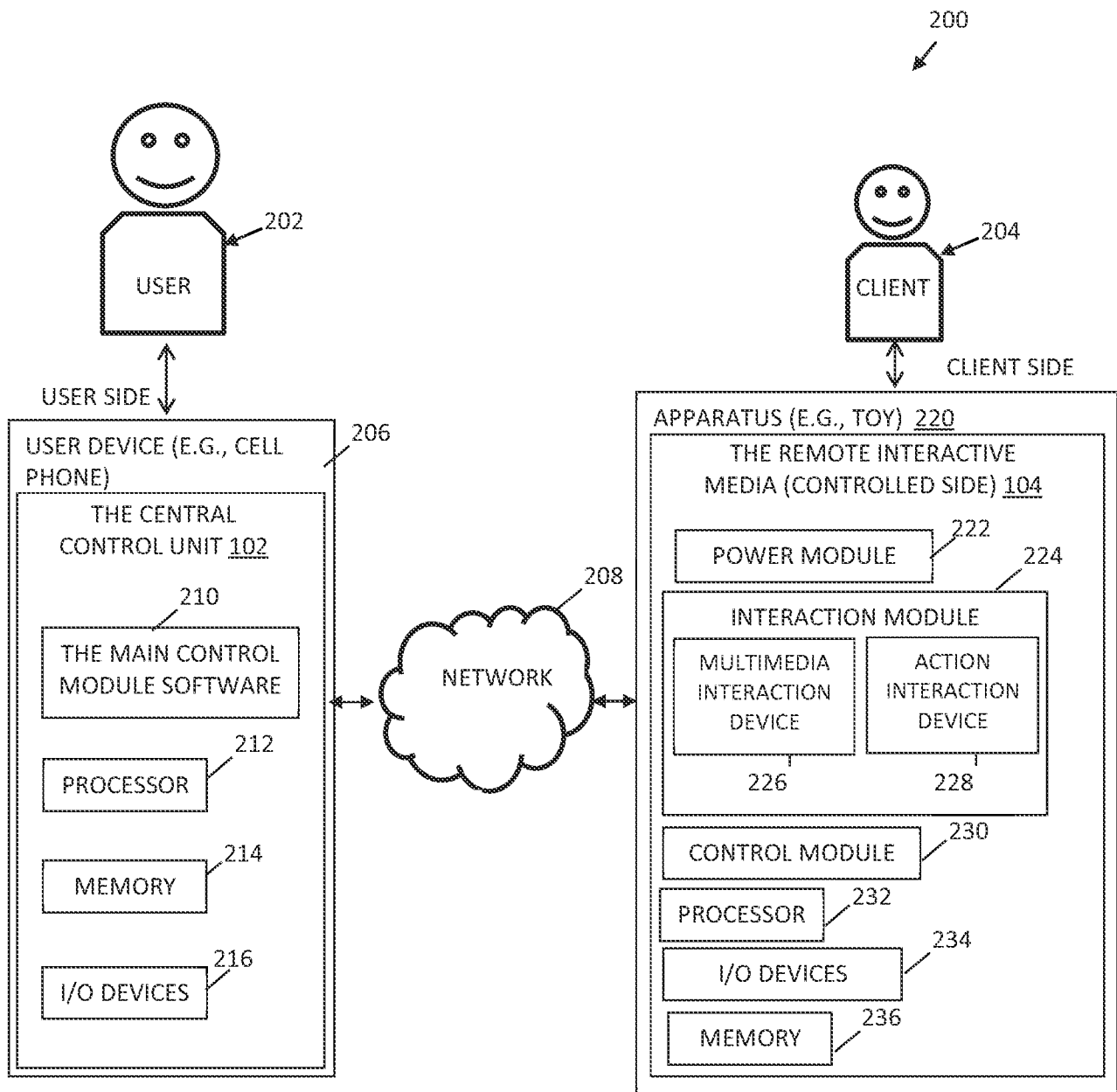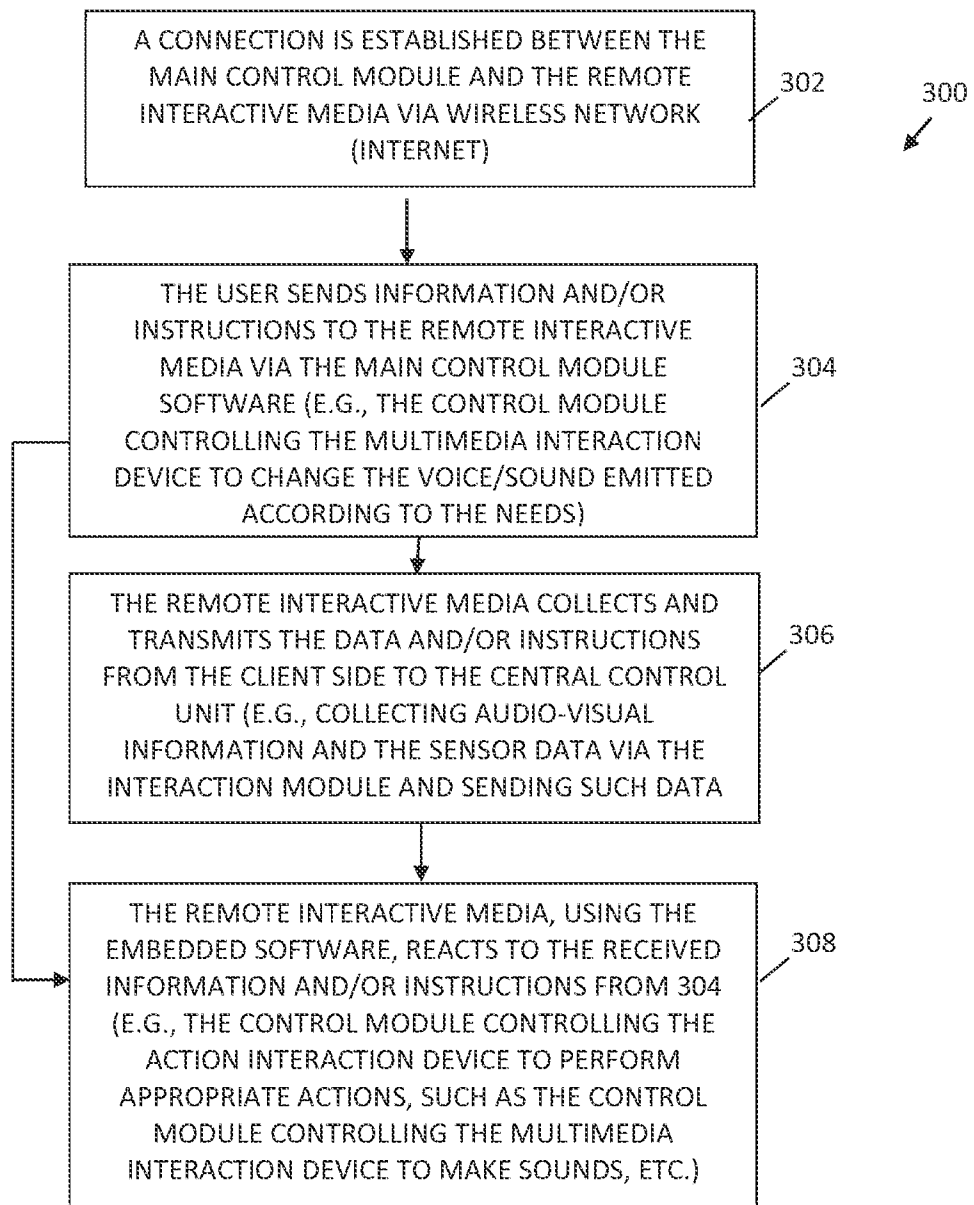device to generate sound and voice.

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USER

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CENTRAL
CONTROL UNIT          102
```

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REMOTE INTERACTIVE
MEDIA (CONTROLLED        104
SIDE)
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CLIENT SIDE

FIGURE 1

FIGURE 2

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┌────────────────────────────────────┐
│  A CONNECTION IS ESTABLISHED BETWEEN THE      │
│  MAIN CONTROL MODULE AND THE REMOTE           │──── 302        ↙ 300
│  INTERACTIVE MEDIA VIA WIRELESS NETWORK       │
│  (INTERNET)                                   │
└────────────────────────────────────┘
                    │
                    ▼
┌────────────────────────────────────┐
│  THE USER SENDS INFORMATION AND/OR            │
│  INSTRUCTIONS TO THE REMOTE INTERACTIVE       │
│  MEDIA VIA THE MAIN CONTROL MODULE            │──── 304
│  SOFTWARE (E.G., THE CONTROL MODULE           │
│  CONTROLLING THE MULTIMEDIA INTERACTION       │
│  DEVICE TO CHANGE THE VOICE/SOUND EMITTED     │
│  ACCORDING TO THE NEEDS)                      │
└────────────────────────────────────┘
                    │
                    ▼
┌────────────────────────────────────┐
│  THE REMOTE INTERACTIVE MEDIA COLLECTS AND    │
│  TRANSMITS THE DATA AND/OR INSTRUCTIONS       │
│  FROM THE CLIENT SIDE TO THE CENTRAL CONTROL  │──── 306
│  UNIT (E.G., COLLECTING AUDIO-VISUAL          │
│  INFORMATION AND THE SENSOR DATA VIA THE      │
│  INTERACTION MODULE AND SENDING SUCH DATA     │
└────────────────────────────────────┘
                    │
                    ▼
┌────────────────────────────────────┐
│  THE REMOTE INTERACTIVE MEDIA, USING THE      │
│  EMBEDDED SOFTWARE, REACTS TO THE RECEIVED    │──── 308
│  INFORMATION AND/OR INSTRUCTIONS FROM 304     │
│  (E.G., THE CONTROL MODULE CONTROLLING THE    │
│  ACTION INTERACTION DEVICE TO PERFORM         │
│  APPROPRIATE ACTIONS, SUCH AS THE CONTROL     │
│  MODULE CONTROLLING THE MULTIMEDIA            │
│  INTERACTION DEVICE TO MAKE SOUNDS, ETC.)     │
└────────────────────────────────────┘
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FIGURE 3

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A63H 30/04 (2015.01)
CPC - A63H 30/04 (2015.04)

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)

IPC(8) - A63H 3/28; A63H 3/36; A63H 3/48; A63H 30/02; A63H 30/04 (2015.01)
USPC - 369/63; 434/169; 434/365; 434/393; 446/142; 446/175; 446/297; 446/298

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

CPC - A63H 3/28; A63H 3/36; A63H 2200/00; G09B 5/06 (2015.04) (keyword delimited)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Orbit, Google Patents, Google Scholar, Google.
Search terms used: communication, remote, interactive, apparatus, user, control, device, sending, instruction, instruct, send, collect, information

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 6,319,010 B1 (KIKINIS) 20 November 2001 (20.11.2001) entire document	1-2, 5, 7-8, 10, 12-14, 17, 18 --------- 3-4, 6, 9, 11, 15-16
Y	US 6,629,133 B1 (PHILYAW et al) 30 September 2003 (30.09/2003) entire document	3, 9, 16
Y	US 2004/0250210 A1 (HUANG et al) 09 December 2004 (09.12.2004) entire document	4, 6, 15
Y	US 2013/0059284 A1 (GIEDGOWD, JR. et al) 07 March 2013 (07.03.2013) entire document	11
A	US 2014/0038489 A1 (SHARMA et al) 06 February 2014 (06.02.2014) entire document	1-18
A	US 2012/0225645 A1 (SIVAN) 06 September 2012 (06.09.2012); [0007] - [0008]	7

☐ Further documents are listed in the continuation of Box C.   ☐ See patent family annex.

* Special categories of cited documents:	"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
"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	"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
"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)	"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
"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	"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 August 2015	14 SEP 2015

Name and mailing address of the ISA/	Authorized officer
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Blaine Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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