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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	FXT315CON8
		Application Number	
Title of Invention	SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
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Inventor Information:

Inventor	1				Remove
Legal Name					
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	William	Ho	Chang		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
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Inventor	2				Remove
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For further information see 37 CFR 1.33(a).

ROKU EXH. 1003

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	FXT315CON8
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☐ An Address is being provided for the correspondence information of this application.

Customer Number	23581		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE		
Attorney Docket Number	FXT315CON8	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	14	Suggested Figure for Publication (if any)	1

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	23581		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	FXT315CON8
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Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Continuation of	10053765	2002-01-18		
Prior Application Status	Expired	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
10053765	Claims benefit of provisional	60262764	2001-01-19		
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Continuation in part of	09992413	2001-11-18		
Prior Application Status	Expired	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
09992413	Claims benefit of provisional	60252682	2000-11-20		
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Continuation in part of	13710299	2012-12-10		
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13710299	Continuation of	12903048	2010-10-12	8332521	2012-12-11
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12903048	Continuation of	10016223	2001-11-01	7941541	2011-05-10
Prior Application Status	Expired	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
10016223	Claims benefit of provisional	60245101	2000-11-01		

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Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	FXT315CON8
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Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	FXT315CON8
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Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1	Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear		
☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		
Name of the Deceased or Legally Incapacitated Inventor:		
If the Applicant is an Organization check here. ☒		
Organization Name	Flexiworld Technologies, Inc.	
Mailing Address Information For Applicant:		
Address 1	P.O. Box 87237	
Address 2		
City	Vancouver	State/Province
Country	US	Postal Code
Phone Number		Fax Number
Email Address		
Additional Applicant Data may be generated within this form by selecting the Add button. Add		

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	FXT315CON8
		Application Number	
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Assignee	1		
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.			
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If the Assignee or Non-Applicant Assignee is an Organization check here. ☒			
Organization Name	Flexiworld Technologies, Inc.		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
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Country i	US	Postal Code	98687
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NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is **not** checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Peter D. Sabido/		Date (YYYY-MM-DD)	2017-05-12	
First Name	Peter	Last Name	Sabido	Registration Number	50353
Additional Signature may be generated within this form by selecting the Add button.					Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	FXT315CON8
		Application Number	
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This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE

Cross-Reference to Related Applications

[0001] This application is a continuation of U.S. Patent Application Serial No. 10/053,765 filed January 18, 2002, which claims priority to U.S. Provisional Patent Application Serial No. 60/262,764, filed January 19, 2001. Additionally, this application is a continuation-in-part of U.S. Patent Application Serial No. 09/992,413 filed November 18, 2001, which claims benefit of U.S. Provisional Patent Application Serial No. 60/252,682 filed November 20, 2000. Moreover, this application is a continuation-in-part of U.S. Patent Application Serial No. 13/710,299 filed December 10, 2012, which is a continuation of U.S. Patent Application Serial 12/903,048 filed October 12, 2010 and now issued as U.S. Patent No. 8,332,521, which is a continuation of U.S. Patent Application Serial No. 10/016,223 filed November 1, 2001 and now issued as U.S. Patent No. 7,941,541, and which claims benefit of U.S. Provisional Patent Application Serial No. 60/245,101, filed November 1, 2000. The complete disclosures of the above patent applications are hereby incorporated by reference for all purposes.

Technical Field of the Invention

[0002] Present invention relates to providing content to an output device and, in particular, to providing universal output in which an information apparatus can pervasively output content to an output device without the need to install a dedicated device dependent driver or applications for each output device.

Background of the Disclosure

[0003] The present invention relates to universal data output and, in particular, to providing a new data output method and a new raster image process for information apparatuses and output devices.

[0004] As described herein, information apparatuses refer generally to computing devices, which include both stationary computers and mobile computing devices (pervasive devices). Examples of such information apparatuses include, without limitation, desktop computers, laptop computers, networked computers, palmtop computers (hand-held computers), personal digital assistants (PDAs), Internet enabled

mobile phones, smart phones, pagers, digital capturing devices (e.g., digital cameras and video cameras), Internet appliances, e-books, information pads, and digital or web pads. Output devices may include, without limitation, fax machines, printers, copiers, image and/or video display devices (e.g., televisions, monitors and projectors), and audio output devices.

[0005] For simplicity and convenience, hereafter, the following descriptions may refer to an output device as a printer and an output process as printing. However, it should be understood that the term printer and printing used in the discussion of present invention refer to one embodiment used as a specific example to simplify the description of the invention. The references to printer and printing used here are intended to be applied or extended to the larger scope and definition of output devices and should not be construed as restricting the scope and practice of present invention.

[0006] Fueled by an ever-increasing bandwidth, processing power, wireless mobile devices, and wireless software applications, millions of users are or will be creating, downloading, and transmitting content and information using their pervasive or mobile computing devices. As a result, there is a need to allow users to conveniently output content and information from their pervasive computing devices to any output device. As an example, people need to directly and conveniently output from their pervasive information apparatus, without depending on synchronizing with a stationary computer (e.g., desktop personal computer) for printing.

[0007] To illustrate, a mobile worker at an airport receiving e-mail in his hand-held computer may want to walk up to a nearby printer or fax machine to have his e-mail printed. In addition, the mobile worker may also want to print a copy of his to-do list, appointment book, business card, and his flight schedule from his mobile device. As another example, a user visiting an e-commerce site using his mobile device may want to print out transaction confirmation. In still another example, a user who takes a picture with a digital camera may want to easily print it out to a nearby printer. In any of the above cases, the mobile user may want to simply walk up to a printer and conveniently print a file (word processing document, PDF, HTML etc) that is stored on the mobile device or downloaded from a network (e.g., Internet, corporate network).

[0008] Conventionally, an output device (e.g., a printer) is connected to an information

apparatus via a wired connection such as a cable line. A wireless connection is also possible by using, for example, radio communication or infrared communication. Regardless of wired or wireless connection, a user must first install in the information apparatus an output device driver (e.g., printer driver in the case the output device is a printer) corresponding to a particular output device model and make. Using a device-dependent or specific driver, the information apparatus may process output content or digital document into a specific output device's input requirements (e.g., printer input requirements). The output device's input requirements correspond to the type of input that the output device (e.g., a printer) understands. For example, a printer's input requirement may include printer specific input format (e.g., one or more of an image, graphics or text format or language). Therefore, an output data (or print data in the case the output device is a printer) herein refers to data that is acceptable for input to an associated output device. Examples of input requirements may include, without limitation, audio format, video format, file format, data format, encoding, language (e.g., page description language, markup language etc), instructions, protocols or data that can be understood or used by a particular output device make and model.

[0009] Input requirements may be based on proprietary or published standards or a combination of the two. An output device's input requirements are, therefore, in general, device dependent. Different output device models may have their own input requirements specified, designed or adopted by the output device manufacturer (e.g., the printer manufacturer) according to a specification for optimal operation. Consequently, different output devices usually require use of specific output device drivers (e.g., printer drivers) for accurate output (e.g., printing). Sometimes, instead of using a device driver (e.g., printer driver), the device driving feature may be included as part of an application software.

[0010] Installation of a device driver (e.g., printer driver) or application may be accomplished by, for example, manual installation using a CD or floppy disk supplied by the printer manufacturer. Or alternatively, a user may be able to download a particular driver or application from a network. For a home or office user, this installation process may take anywhere from several minutes to several hours depending on the type of driver and user's sophistication level with computing devices and networks. Even with plug-and-

play driver installation, the user is still required to execute a multi-step process for each printer or output device.

[0011] This installation and configuration process adds a degree of complexity and work to end-users who may otherwise spend their time doing other productive or enjoyable work. Moreover, many unsophisticated users may be discouraged from adding new peripherals (e.g., printers, scanners, etc.) to their home computers or networks to avoid the inconvenience of installation and configuration. It is therefore desirable that an information apparatus can output to more than one output device without the inconvenience of installing multiple dedicated device dependent drivers.

[0012] In addition, conventional output or printing methods may pose significantly higher challenges and difficulties for mobile device users than for home and office users. The requirement for pre-installation of a device-dependent driver diminishes the benefit and concept of mobile (pervasive) computing and output. For example, a mobile user may want to print or output e-mail, PowerPoint® presentation documents, web pages, or other documents at an airport, gas station, convenience store, kiosk, hotel, conference room, office, home, etc. It is highly unlikely that the user would find at any of these locations a printer of the same make and model as is at the user's base station. As a consequence, under the conventional printing method, the user would have to install and configure a printer driver each time at each such remote location before printing. It is usually not a viable option given the hundreds, or even thousands of printer models in use, and the limited storage, memory space, and processing power of the information apparatus.

[0013] Moreover, the user may not want to be bothered with looking for a driver or downloading it and installing it just to print out or display one page of email at the airport. This is certainly an undesirable and discouraging process to promote pervasive or mobile computing. Therefore, a more convenient printing method is needed in support of the pervasive computing paradigm where a user can simply walk up to an output device (e.g., printer or display device) and easily output a digital document without having to install or pre-install a particular output device driver (e.g., printer driver).

[0014] Another challenge for mobile users is that many mobile information apparatuses have limited memory space, processing capacity and power. These limitations are more apparent for small and low-cost mobile devices including, for

example, PDAs, mobile phones, screen phones, pagers, e-books, Internet Pads, Internet appliances etc. Limited memory space poses difficulties in installing and running large or complex printer or device drivers, not to mention multiple drivers for a variety of printers and output devices. Slow processing speed and limited power supply create difficulties driving an output device. For example, processing or converting a digital document into output data by a small mobile information apparatus may be so slow that it is not suitable for productive output. Intensive processing may also drain or consume power or battery resources. Therefore, a method is needed so that a small mobile device, with limited processing capabilities, can still reasonably output content to various output devices.

[0015] To output or render content (e.g. digital document) to an output device, a raster image processing (RIP) operation on the content is usually required. RIP operation can be computationally intensive and may include (1) a rasterization operation, (2) a color space conversion, and (3) a halftoning operation. RIP may also include other operations such as scaling, segmentation, color matching, color correction, GCR (Grey component replacement), Black generation, image enhancement compression/decompression, encoding/decoding, encryption/decryption GCR, image enhancement among others.

[0016] Rasterization operation in RIP involves converting objects and descriptions (e.g. graphics, text etc) included in the content into an image form suitable for output. Rasterization may include additional operations such as scaling and interpolation operations for matching a specific output size and resolution. Color space conversion in RIP includes converting an input color space description into a suitable color space required for rendering at an output device (e.g. RGB to CMYK conversion). Digital halftoning is an imaging technique for rendering continuous tone images using fewer luminance and chrominance levels. Halftoning operations such as error diffusion can be computationally intensive and are included when the output device's bit depth (e.g. bits per pixel) is smaller than the input raster image bit depth.

[0017] Conventionally, RIP operations are included either in an information apparatus, or as part of an output device or output system (e.g. in a printer controller). FIG. 1A illustrates a flow diagram of a conventional data output method 102 in which RIP 110 is implemented in the information apparatus. Output devices that do not include a printer controller to perform complex RIP operations, such as a lower-cost, lower speed inkjet

printer, normally employ data output method 102. In data output method 102, an information apparatus obtains content (e.g. a digital document) in step 100 for rendering or output at an output device. The information apparatus may includes an application (e.g. device driver), which implements RIP operation 110. The information apparatus generates an output data in step 120 and transmits the output data to the output device in step 130 for rendering. The output data relating to the content is in an acceptable form (e.g. in an appropriate output size and resolution) to the output engine (e.g. display engine, printer engine etc.) included in the output device. The output data in a conventional output method 102 is usually device dependent.

[0018] One drawback for the data output method 102 of FIG. 1A is that the information apparatus performs most if not the entire raster image processing operations 110 required for output. The RIP operations may require intensive computation. Many information apparatus such as mobile information device might have insufficient computing power and/or memory to carry out at an acceptable speed the RIP operations 110 required in an output process.

[0019] Another drawback for the conventional data output method 102 of FIG. 1A is that the generated output data is device dependent and therefore is typically not very portable to other output devices. As a result, the information apparatus may need to install multiple applications or device drivers for multiple output devices, which may further complicate its feasibility for use in information apparatuses with limited memory, storage and processing power.

[0020] FIG. 1B illustrates a flow diagram of another conventional data output method 104 in which the RIP is implemented in an output device. An example of an output device that implements process 104 is a high-speed laser printer which includes a printer controller for performing RIP operations and an output engine (e.g. printer engine) for rendering content. Printer controller may be internally installed or externally connected to an output device (printer in this example). In data output method 104, an information apparatus obtains content for output in step 100 and generates in step 160 an output data or print data for transmitting to the output device in step 170. Print data includes information related to the content and is usually encoded in a page description language (PDL) such as PostScript and PCL etc. In step 180, the printer receives the output data

or print data (in a PDL). In step 190, a printer controller included in the printer interprets the PDL, performs RIP operations, and generates a printer-engine print data that is in a form acceptable to the printer engine (e.g. a raster image in an appropriate output size, bit depth, color space and resolution). In step 150 the printer engine renders the content with the printer-engine print data.

[0021] It will be understood that a reference to print data or output data including a language, such as PDL, should be interpreted as meaning that the print data or output data is encoded using that language. Correspondingly, a reference to a data output process generating a language, such as PDL, should be interpreted as meaning that the data output process encodes data using that language.

[0022] There are many drawbacks in the conventional data output method 104 shown in FIG. 1B. These drawbacks are especially apparent for mobile computing devices with limited processing power and memory. One such drawback is that the output data or print data, which include a page description language (PDL) such as PostScript or PCL, can be very complex. Generating complex PDL may increase memory and processing requirements for an information apparatus. Furthermore, interpreting, decoding and then raster image processing complex PDL can increase computation, decrease printing speed, and increase the cost of the output device or its printer controller.

[0023] Another drawback is that the output data that includes PDL can create a very large file size that would increase memory and storage requirements for the information apparatus, the output device and/or the printer controller etc. Large file size may also increase the bandwidth required in the communication link between the information apparatus and the output device.

[0024] Finally, to rasterize text in an output device, a printer controller may need to include multiple fonts. When a special font or international characters is not included or missing in the printer controller, the rendering or output can potentially become inaccurate or inconsistent.

Summary of the Invention

[0025] Accordingly, this invention provides a convenient universal data output method in which an information apparatus and an output device or system share the raster image processing operations. Moreover, the new data output method eliminates the need to

install a plurality of device-dependent dedicated drivers or applications in the information apparatus in order to output to a plurality of output devices.

[0026] In accordance with present invention, an electronic system and method of pervasive and universal output allow an information apparatus to output content conveniently to virtually any output device. The information apparatus may be equipped with a central processing unit, input/output control unit, storage unit, memory unit, and wired or wireless communication unit or adapters. The information apparatus preferably includes a client application that may be implemented as a software application, a helper application, or a device driver (a printer driver in case of a printer). The client application may include management and control capabilities with hardware and software components including, for example, one or more communication chipsets residing in its host information apparatus.

[0027] The client application in the information apparatus may be capable of communicating with, managing and synchronizing data or software components with an output device equipped with an output controller of present invention.

[0028] Rendering content in an output device refers to printing an image of the content onto an substrate in the case of a printing device; displaying an image of the content in the case of a displaying device; playing an audio representation of the content in a voice or sound output device or system.

[0029] An output controller may be a circuit board, card or software components residing in an output device. Alternatively, the output controller may be connected externally to an output device as an external component or "box." The output controller may be implemented with one or more combinations of embedded processor, software, firmware, ASIC, DSP, FPGA, system on a chip, special chipsets, among others. In another embodiment, the functionality of the output controller may be provided by application software running on a PC, workstation or server connected externally to an output device.

[0030] In conventional data output method 102 as described with reference to FIG. 1A, an information apparatus transmits output data to an output device for rendering. Output data corresponds to content intended for output and is mostly raster image processed (RIPed) and therefore is device dependent because raster image processing

is a typical device dependent operation. Output data may be encoded or compressed with one or more compression or encoding techniques. In present invention, an information apparatus generates an intermediate output data for transmitting to an output device. The intermediate output data includes a rasterized image corresponding to the content; however, device dependent image processing operations of a RIP (e.g. color matching and halftoning) have not been performed. As a result, an intermediate output data is more device independent and is more portable than the output data generated by output method with reference to FIG. 1A.

[0031] In one implementation of this invention, the intermediate output data includes MRC (Mixed raster content) format, encoding and compression techniques, which further provides improved image quality and compression ratio compared to conventional image encoding and compression techniques.

[0032] In an example of raster image process and data output method of the present invention, a client application such as a printer driver is included in an information apparatus and performs part of raster image processing operation such as rasterization on the content. The information apparatus generates an intermediate output data that includes an output image corresponding to the content and sends the intermediate output data to an output device or an output system for rendering. An output controller application or component included in the output device or output system implements the remaining part of the raster image processing operations such as digital halftoning, color correction among others.

[0033] Unlike conventional raster image processing methods, this invention provides a more balanced distribution of the raster image processing computational load between the Information apparatus and the output device or the output system. Computational intensive image processing operations such as digital halftoning and color space conversions can be implemented in the output device or output system. Consequently, this new raster image processing method reduces the processing and memory requirements for the information apparatus when compared to conventional data output methods described with reference to FIG. 1A in which the entire raster image process is implemented in the information apparatus. Additionally, in this invention, a client application or device driver included in the information apparatus, which performs part of

the raster image processing operation, can have a smaller size compared to a conventional output application included in the information apparatus, which performs raster image processing operation.

[0034] In another implementation, the present invention provides an information apparatus with output capability that is more universally accepted by a plurality of output devices. The information apparatus, which includes a client application, generates an intermediate output data that may include device independent attributes. An output controller includes components to interpret and process the intermediate output data. The information apparatus can output content to different output devices or output systems that include the output controller even when those output devices are of different brand, make, model and with different output engine and input data requirements. Unlike conventional output methods, a user does not need to preinstall in the information apparatus multiple dedicated device dependent drivers or applications for each output device.

[0035] The combination of a smaller-sized client application, a reduced computational requirement in the information apparatus, and a more universal data output method acceptable for rendering at a plurality of output devices enable mobile devices with less memory space and processing capabilities to implement data output functions which otherwise would be difficult to implement with conventional output methods.

[0036] In addition, this invention can reduce the cost of an output device or an output system compared to conventional output methods 104 that include a page description language (PDL) printer controller. In the present invention, an information apparatus generates and sends an intermediate output data to an output device or system. The intermediate output data in one preferred embodiment includes a rasterized output image corresponding to the content intended for output. An output controller included in an output device or an output system decodes and processes the intermediate output data for output, without performing complex interpretation and rasterization compared to conventional methods described in process 104. In comparison, the conventional data output process 104 generates complex PDL and sends this PDL from an information apparatus to an output device that includes a printer controller (e.g. a PostScript controller or a PCL5 controller among others). Interpretation and raster image processing of a PDL

have much higher computational requirements compared to decoding and processing the intermediate output data of this invention that include rasterized output image or images. Implementing a conventional printer controller with, for example, PDL increases component cost (e.g. memories, storages, ICs, software and processors etc.) when compared to using the output controller included in the data output method of this present invention.

[0037] Furthermore, an output data that includes PDL can create a large file size compared to an intermediate output data that includes rasterized output image. The data output method for this invention comparatively transmits a smaller output data from an information apparatus to an output device. Smaller output data size can speed up transmission, lower communication bandwidth, and reduce memory requirements. Finally, this invention can provide a convenient method to render content at an output device with or without connection to a static network. In conventional network printing, both information apparatus and output device must be connected to a static network. In this invention, through local communication and synchronization between an information apparatus and an output device, installation of hardware and software to maintain static network connectivity may not be necessary to enable the rendering of content to an output device.

[0038] According to the several aspects of the present invention there is provided the subject matter defined in the appended independent claims.

[0039] Additional objects and advantages of the present invention will be apparent from the detailed description of the preferred embodiment thereof, which proceeds with reference to the accompanying drawings.

Brief Description of the Drawings

[0040] FIG. 1A is a flow diagram of a conventional data output method and its corresponding raster image process in accordance with prior art.

[0041] FIG. 1B is a flow diagram of a second conventional data output method and its corresponding raster image process for an output device that includes a conventional printer controller in accordance with prior art.

[0042] FIGS. 2A and 2B are block diagrams illustrating components of an operating environment that can implement the process and apparatus of the present invention.

[0043] FIG. 3A is a schematic block diagram illustrating hardware/software components of an information apparatus implementation in accordance with the present invention. The information apparatus includes an operating system.

[0044] FIG. 3B is a second schematic block diagram illustrating hardware/software components of an information apparatus implementation in accordance with the present invention.

[0045] FIG. 4A is a block diagram of a conventional printing system or printer with a conventional printer controller.

[0046] FIG. 4B is a block diagram of a second conventional output system or output device.

[0047] FIG. 5A is a schematic block diagram of a printing system or printer with a conventional printer controller and an output controller in accordance with present invention.

[0048] FIG. 5B is a schematic block diagram of a second output system or output device that includes an output controller in accordance with present invention.

[0049] FIG. 6A is a schematic block diagram illustrating hardware/software components of an output controller in accordance with present invention. The output controller includes an operating system.

[0050] FIG. 6B is a second schematic block diagram illustrating hardware/software components of an output controller in accordance with present invention. The output controller does not include an operating system.

[0051] FIG. 6C is a third schematic block diagram illustrating hardware/software components of an output controller in accordance with present invention. The output controller combines the functionality of a printer controller and an output controller of present invention.

[0052] FIGS. 7A-7F illustrate various configurations and implementations of output controller with respect to an output device such as a printer.

[0053] FIG. 8A is a block diagram illustrating an exemplary implementation of hardware/software components of wireless communication unit.

[0054] FIG. 8B is block diagram illustrating a second exemplary implementation of hardware/software components of wireless communication unit.

[0055] FIG. 9 is a flow diagram of a universal data output method and its corresponding raster imaging process of the present invention.

[0056] FIG. 10 is a block diagram of a universal data output method of the present invention with respect to the components, system and apparatus described with reference to FIG. 2.

[0057] FIG. 11 is a flow diagram illustrating one way of implementing a discovery process optionally included in the output process of FIG. 10.

[0058] FIG. 12A and 12B are flow diagrams of exemplary client application process included in the output process of FIG. 10.

[0059] FIG. 13A and 13B are flow diagrams of exemplary output device or output system process included in the output process of FIG. 10.

Detailed Description of Preferred Embodiments

[0060] Sets forth below are definitions of terms that are used in describing implementations of the present invention. These definitions are provided to facilitate understanding and illustration of implementations of the present invention and should in no way be construed as limiting the scope of the invention to a particular example, class, or category.

[0061] Output Device Profile (Or Object)

[0062] An output device profile (or object) includes software and data entity, which encapsulates within itself both data and attributes describing an output device and instructions for operating that data and attributes. An output device profile may reside in different hardware environments or platforms or applications, and may be transported in the form of a file, a message, a software object or component among other forms and techniques. For simplicity of discussion, a profile or object may also include, for example, the concept of software components that may have varying granularity and can consist of one class, a composite of classes, or an entire application.

[0063] The term profile or object used herein is not limited to software or data as its media. Any entity containing information, descriptions, attributes, data, instructions etc. in any computer-readable form or medium such as hardware, software, files based on or including voice, text, graphics, image, or video information, etc., are all valid forms of profile and object definition.

[0064] A profile or object may also contain in one of its fields or attributes a reference or pointer to another profile or object, or a reference or pointer to data and or content. A reference to a profile or object may include one or more, or a combination of pointers, identifiers, names, paths, addresses or any descriptions relating to a location where an object, profile, data, or content can be found.

[0065] An output device profile may contain one or more attributes that may identify and describe, for example, the capabilities and functionalities of a particular output device such as a printer. An output device profile may be stored in the memory component of an output device, an information apparatus or in a network node. A network node includes any device, server or storage location that is connected to the network. As described below in greater detail, an information apparatus requesting output service may communicate with an output device. During such local service negotiation, at least a partial output device profile may be uploaded to the information apparatus from the output device. By obtaining the output device profile (or printer profile in the case of a printer), the information apparatus may learn about the capability, compatibility, identification, and service provided by the output device.

[0066] As an example, an output device profile may contain one or more of the following fields and or attribute descriptions. Each of following fields may be optional, and furthermore, each of the following fields or attributes may or may not exist in a particular implementation (e.g., may be empty or NULL):

[0067] Identification of an output device (e.g., brand, model, registration, IP address etc.)

[0068] Services and feature sets provided by an output device (e.g., color or grayscale output, laser or inkjet, duplex, output quality, price per page, quality of service, etc.)

[0069] Type of input languages, formats, output data and/or input requirements (e.g., PostScript, PCL, XML, RTL, etc.) supported by an output device.

[0070] Device specific or dependent parameters and information (e.g., communication protocols, color space, color management methods and rendering intents, resolution, halftoning methods, dpi (dots-per-inch), bit depth, page size, printing speed, number of independent colors channels or ink etc.)

[0071] Data and tables needed for image processing such as color table, halftone table, scale factor, encoding/decoding parameters and methods, compression and decompression parameters and method etc.

[0072] Another profile which contain parameters and information about the output device and its service (e.g. color profiles, halftoning profiles, communication profiles, rasterization profiles, quality of service etc.).

[0073] Payment information on a plurality of services provided by an output device.

[0074] Information or security requirements and type of authentication an output device supports.

[0075] Date and version of the output device profile, history of its modification and updates.

[0076] Software components containing algorithms or instructions or data, which may be uploaded to run in an information apparatus. For example, a graphical user interface (GUI) software component may be uploaded to an information apparatus. The software component may be incorporated into or launched in the information apparatus by a client application of present invention to capture a user's preferences (e.g., print quality, page layout, number of copies, number of cards per page, etc.). In another example, software components may include methods, instructions or executables for compression/decompression, encoding/decoding, color matching or correction, segmentation, scaling, halftoning, encryption/decryption among others.

[0077] Pointer or reference to one or more output device parameters, including one or more of the above described output device profile or object fields and or attribute descriptions. For example, a more up-to-date or original version of output device parameters may sometimes be stored in a network node (any device, server or storage location that is connected to the network), or within the information apparatus where it can be obtained by the client application. An output device profile may include pointer or pointers to these output device parameters.

[0078] Content (Or Data Content, Digital Content, Output Content)

[0079] Content (or data content, digital content, output content) is the data intended for output, which may include texts, graphics, images, forms, videos, audio among other content types. Content may include the data itself or a reference to that data. Content may be in any format, language, encoding or combination, and it can be in a format, language or encoding that is partially or totally proprietary. A digital document is an example of content that may include attributes and fields that describe the digital document itself and or reference or references to the digital document or documents. Examples of a digital document may be any one or combination of file types: HTML, VHTML, PostScript, PCL, XML, PDF, MS Word, PowerPoint, JPEG, MPEG, GIF, PNG, WML, VVML, CHTML, HDML, ASCII, 2-byte international coded characters, etc. Content may be used interchangeably with the term data content, output content or digital content in the descriptions of present invention.

[0080] Intermediate Output Data

[0081] Output data (or print data in case of a printer) is the electronic data sent from an information apparatus to an output device. Output data is related to the content intended for output and may be encoded in a variety of formats and languages (e.g. postscript, PCL, XML), which may include compressed or encrypted data. Some output device manufacturers may also include in the output data (or print data) a combination of proprietary or non-proprietary languages, formats, encoding, compression, encryption etc.

[0082] Intermediate output data is the output data of the present invention, and it includes the broader definition of an output file or data generated by an information apparatus, or a client application or device driver included in the information apparatus. An intermediate output data may contain text, vector graphics, images, video, audio, symbols, forms or combination and can be encoded with one or more of a page description language, a markup language, a graphics format, an imaging format, a metafile among others. An intermediate output data may also contain instructions (e.g. output preferences) and descriptions (e.g. data layout) among others. Part or all of an intermediate output data may be compressed, encrypted or tagged.

[0083] In a preferred embodiment of this invention, intermediate output data contains rasterized image data. For example, vector graphics and text information or objects that are not in image form included in content can be rasterized or conformed into image data in an information apparatus and included in an intermediate output data. Device dependent image processing operations of a RIP such as digital halftoning and color space conversions can be implemented at an output device or an output system.

[0084] The intermediate output data can be device dependent or device independent. In one implementation, the rasterized output image is device dependent if the rasterization parameters used, such as resolution, scale factor, bit depth, output size and or color space are device dependent. In another implementation of this invention, the rasterized image may be device independent if the rasterization parameters used are device independent. Rasterization parameter can become device independent when those parameters include a set of predetermined or predefined rasterization parameters based on a standard or a specification. With predefined or device independent rasterization parameters, a client application of present invention can rasterize at least a portion of the content and generate a device independent image or images included in the intermediate output data. By doing so, the intermediate output data may become device independent and therefore, become universally acceptable with output devices that have been pre-configured to accept the intermediate output data.

[0085] One advantage of rasterizing or converting text and graphics information into image data at the information apparatus is that the output device or printer controller no longer needs to perform complex rasterization operation nor do they need to include multiple fonts. Therefore, employing the intermediate output data and the data output method described herein could potentially reduce the cost and complexity of an output controller, printer controller and or output device.

[0086] One form of image data encoding is known as mixed raster content, or MRC. Typically, an image stored in MRC includes more than one image or bitmap layers. In MRC, an image can be segmented in different layers based on segmentation criteria such as background and foreground, luminance and chrominance among others. For example, an MRC may include three layers with a background layer, a foreground layer and a toggle or selector layer. The three layers are coextensive and may include different

resolution, encoding and compression. The foreground and background layers may each contain additional layers, depending on the manner in which the respective part of the image is segmented based on the segmentation criteria, component or channels of a color model, image encoding representation (HLS, RGB, CMYK, YCC, LAB etc) among others. The toggle layer may designate, for each point, whether the foreground or background layer is effective. Each layer in a MRC can have different bit depths, resolution, color space, which allow, for example, the foreground layer to be compressed differently from the background layer. The MRC form of image data has previously been used to minimize storage requirements. Further, an MRC format has been proposed for use in color image fax transmission.

[0087] In one embodiment of present invention, the intermediate output data includes one or more rasterized output images that employ MRC format, encoding and or related compression method. In this implementation, different layers in the output image can have different resolutions and may include different compression techniques. Different information such as chrominance and luminance and or foreground and background information in the original content (e.g. digital document) can be segmented and compressed with different compression or encoding techniques. Segmented elements or object information in the original content can also be stored in different image layers and with different resolution. Therefore, with MRC, there is opportunity to reduce output data file size, retain greater image information, increase compression ratio, and improve image quality when compared to other conventional image encoding and compression techniques. Implementations of rasterization, raster image processing and intermediate output data that include MRC encoding in the present invention are described in more detail below.

[0088] Rasterization

[0089] Rasterization is an operation by which graphics and text in a digital document are converted to image data. For image data included in the digital document, rasterization may include scaling and interpolation. The rasterization operation is characterized by rasterization parameters including, among others bit depth and resolution. A given rasterization operation may be characterized by several more rasterization parameters, including output size, color space, color channels etc. Values

of one or more of the rasterization parameters employed in a rasterization operation may be specified by default; values of one or more of the rasterization parameters may be supplied to the information apparatus as components of a rasterization vector. In a given application, the rasterization vector may specify a value of only one rasterization parameter, default values being employed for other rasterization parameters used in the rasterization operation. In another application the rasterization vector may specify values of more than one, but less than all, rasterization parameters, default values being employed for at least one other rasterization parameter used in the rasterization operation. And in yet another application the rasterization vector may specify values of all the rasterization parameters used in the rasterization operation.

[0090] FIG. 2A and 2B are block diagrams illustrating components of an operating environment that can implement the process and apparatus of present invention. FIG. 2A shows an electronic system which includes an information apparatus 200 and an output device 220. The output device 220 includes an output controller 230. FIG. 2B illustrates a second implementation of an electronic system that includes an information apparatus 200 and an output system 250. The output system 250 includes an output device 220 and an output controller 230 which may be externally connected to, or otherwise associated with, the output device 220 in the output system 250.

[0091] Information apparatus 200 is a computing device with processing capability. In one embodiment, information apparatus 200 may be a mobile computing device such as palmtop computer, handheld device, laptop computer, personal digital assistant (PDA), smart phone, screen phone, e-book, Internet pad, communication pad, Internet appliance, pager, digital camera, etc. It is possible that information apparatus 200 may also include a static computing device such as a desktop computer, workstation, server, etc.

[0092] FIG. 3A and 3B are block diagrams illustrating examples of hardware/software components included in an information apparatus 200 of present invention.

[0093] Information apparatus 200 may contain components such as a processing unit 380, a memory unit 370, an optional storage unit 360 and an input/output control unit (e.g. communication manager 330). Information apparatus 200 may include an interface (not shown) for interaction with users. The interface may be implemented with software or hardware or a combination. Examples of such interfaces include, without limitation, one

or more of a mouse, a keyboard, a touch-sensitive or non-touch-sensitive screen, push buttons, soft keys, a stylus, a speaker, a microphone, etc.

[0094] Information apparatus 200 typically contains one or more network communication unit 350 that interfaces with other electronic devices such as network node (not shown), output device 220, and output system 230. The network communication unit may be implemented with hardware (e.g., silicon chipsets, antenna), software (e.g., protocol stacks, applications) or a combination.

[0095] In one embodiment of the present invention, communication interface 240 between information apparatus 200 and output device 220 or output system 250 is a wireless communication interface such as a short-range radio interface including those implemented according to the Bluetooth or IEEE 802.11 standard. The communication interface may also be realized by other standards and/or means of wireless communication that may include radio, infrared, cellular, ultrasonic, hydrophonic among others for accessing one or more network node and/or devices. Wired line connections such as serial or parallel interface, USB interface and fire wire (IEEE 1394) interface, among others, may also be included. Connection to a local network such as an Ethernet or a token Ring network, among others, may also be implemented in the present invention for local communication between information apparatus 200 and output device 220. Examples of hardware/software components of communication units 350 that may be used to implement wireless interface between the information apparatus 200 and the output device 220 are described in more detail with reference to FIGS. 8A and 8B below.

[0096] For simplicity, FIG. 3 illustrates one implementation where an information apparatus 200 includes one communication unit 350. However, it should be noted that an information apparatus 200 may contain more than one communication unit 350 in order to support different interfaces, protocols, and/or communication standards with different devices and/or network nodes. For example, information apparatus 200 may communicate with one output device 220 through a Bluetooth standard interface or through an IEEE 802.11 standard interface while communicating with another output device 220 through a parallel cable interface. The information apparatus 200 may also be coupled to a wired or wireless network (e.g. the Internet or corporate network) to send, receive and/or download information.

[0097] Information apparatus 200 may be a dedicated device (e.g., email terminal, web terminal, digital camera, e-book, web pads, Internet appliances etc.) with functionalities that are pre-configured by manufacturers. Alternatively, information apparatus 200 may allow users to install additional hardware components and or application software 205 to expand its functionality.

[0098] Information apparatus 200 may contain a plurality of applications 205 to implement its feature sets and functionalities. As an example, a document browsing or editing application may be implemented to help user view and perhaps edit, partially or entirely, digital documents written in certain format or language (e.g., page description language, markup language, etc.). Digital documents may be stored locally in the information apparatus 200 or in a network node (e.g., in content server). An example of a document browsing application is an Internet browser such as Internet Explorer, Netscape Navigator, or a WAP browser. Such browsers may retrieve and display content (e.g. digital content) written in mark-up languages such as HTML, WML, XML, CHTML, HDML, among others. Other examples of software applications in the information apparatus 200 may include a document editing software such as Microsoft Word™ which also allows users to view and or edit digital documents that have various file extensions (e.g., doc, rtf, html, XML etc.) whether stored locally in the information apparatus 200 or in a network node. Still, other example of software applications 205 may include image acquisition and editing software.

[0099] As illustrated previously with reference to FIG. 1, there are many difficulties in providing output capability to an information apparatus 200 that has limited memory and processing capability. To address theses difficulties, information apparatus 200 includes a client application 210 that helps provide the universal data output capability of the present invention. Client application 210 may include software and data that can be executed by the processing unit 380 of information apparatus 200. Client application 210 may be implemented as a stand-alone software application or as a part of or feature of another software application, or in the form of a device driver, which may be invoked, shared and used by other application software 205 in the information apparatus 200. Client application 210 may also include components to invoke other applications 205 (e.g., a document browsing application, editing application, data and/or image acquisition

application, a communication manager, a output manager etc.) to provide certain feature sets, as described below. FIG. 3 illustrates a configuration where the client application 210 is a separate application from the other application 205 such as the case when the client application is a device driver; however, it should be noted that the client application 210 can be combined or being part of the other application not shown in FIG. 3. Client application 210 may be variously implemented in an information apparatus 200 and may run on different operating systems or platforms. The client application 210 may also run in an environment with no operating system. For example, FIG. 3A illustrates an implementation where the information apparatus 200A includes an operating system 340A; while FIG. 3B illustrates an implementation where the information apparatus 200B does not include an operating system.

[00100] Client application 210 includes a rasterization component 310 to conform content into one or more raster output images according to one or more rasterization parameters; an intermediate output data generator component 320 that generates and/or encodes intermediate output data that includes the one or more output images; and a communications manager 330 that manages the communication and interaction with an output device 220 or system 250 or output controller 230. Communications manager can be implemented as part of the client application 210 (shown in FIG. 3) or as a separate application (not shown). Components in a client application can be implemented in software, hardware or combination. As an example, client application 210 may include or utilize one or more of the following:

[00101] Components or operations to obtain content (e.g. digital document) for output. The client application 210 may obtain a digital document from other applications 205 (e.g. document browsing application, content creation and editing application, etc.), or the client application 210 may provide its own capability for user to browse, edit and or select a digital document.

[00102] Components or operations to rasterize content that includes text, graphics and images among others objects or elements into one or more raster images according to a set of rasterization parameters such as scale factor, output size, bit depth, color space and resolution. The rasterization parameters may be obtained in various ways, for example, from an output device profile uploaded from

an output device 220, or stored locally in information apparatus 200, or manually inputted by a user. Alternatively, rasterization parameters may be based on a predefined standard or specification stored in the information apparatus 200 as a set of defaults, or hard-coded in the client application 210, or calculated by the client application 210 after communicating with an output device 220, output controller 230, and/or a user.

[00103] Components or operations to generate intermediate output data that includes at least one rasterized output image corresponding to the content (e.g. digital document). This process may further include one or combination of compression, encoding, encryption and color correction among others. The intermediate output data may include, for example, images, instructions, documents and or format descriptions, color profiles among others.

[00104] Components or operations to transmit the intermediate output data to an output device 220 or system 250 through wired or wireless communication link 240.

[00105] The client application 210 may also optionally include or utilize one or more of the following components or operations:

[00106] Components or operations to communicate with one or more output devices 220 to upload an output device profile.

[00107] Components or operations to communicate directly or indirectly (such as through an operating system or component or object model, messages, file transfer etc.) with other applications 205 residing in the same information apparatus 200 to obtain objects, data, and or content needed, or related to the pervasive output process of present invention (e.g. obtain a digital document for printing).

[00108] Components or operations to manage and utilize directly or indirectly functionalities provided by hardware components (e.g. communication unit 350) residing in its host information apparatus 200.

[00109] Components or operations to provide a graphical user interface (GUI) in host information apparatus to interact with user.

[00110] Components or operations to obtain user preferences. For example, a user may directly input his or her preferences through a GUI. A set of default values may also be employed. Default values may be pre-set or may be obtained by information apparatus 200 as result of communicating and negotiating with an output device 220 or output controller 230.

[00111] The above functionalities and process of client application 210 of present invention are described in further detail in the client application process with reference to FIG. 12.

[00112] Output device 220 is an electronic system capable of outputting digital content regardless of whether the output medium is substrate (e.g., paper), display, projection, or sound. A typical example of output device 220 is a printer, which outputs digital documents containing text, graphics, image or any combination onto a substrate. Output device 220 may also be a display device capable of displaying still images or video, such as, without limitation, televisions, monitors, and projectors. Output device 220 can also be a device capable of outputting sound. Any device capable of playing or reading digital content in audio (e.g., music) or data (e.g., text or document) formats is also a possible output device 220.

[00113] A printer is frequently referred to herein as an example of an output device to simplify discussion or as the primary output device 220 in a particular implementation. However, it should be recognized that present invention applies also to other output devices 220 such as fax machines, digital copiers, display screens, monitors, televisions, projectors, voice output devices, among others.

[00114] Rendering content with an output device 220 refers to outputting the content on a specific output medium (e.g., papers, display screens etc). For example, rendering content with a printer generates an image on a substrate; rendering content with a display device generates an image on a screen; and rendering content with an audio output device generates sound.

[00115] A conventional printing system in general includes a raster image processor and a printer engine. A printer engine includes memory buffer, marking engine among other components. The raster image processor converts content into an image form

suitable for printing; the memory buffer holds the rasterized image ready for printing; and the marking engine transfers colorant to substrate (e.g., paper).

[00116] The raster image processor may be located within an output device (e.g. included in a printer controller 410) or externally implemented (in an information apparatus 200, external controller, servers etc). Raster image processor can be implemented as hardware, software, or a combination (not shown). As an example, raster image processor may be implemented in a software application or device driver in the information apparatus 200. Examples of raster image processing operations include image and graphics interpretation, rasterization, scaling, segmentation, color space transformation, image enhancement, color correction, halftoning, compression etc.

[00117] FIG. 4A illustrates a block diagram of one conventional printing system or printer 400A that includes a printer controller 410 and a printer engine 420A. The printer controller 410 includes an interpreter 402 and a raster image processor 406, and the printer engine 420 includes memory buffer 424A and a marking engine 426A.

[00118] Marking engine may use any of a variety of different technologies to transfer a rasterized image to paper or other media or, in other words, to transfer colorant to a substrate. The different marking or printing technologies that may be used include both impact and non-impact printing. Examples of impact printing may include dot matrix, teletype, daisywheel, etc. Non-impact printing technologies may include inkjet, laser, electrostatic, thermal, dye sublimation, etc.

[00119] The marking engine 426 and memory buffer 424 of a printer form its printer engine 420, which may also include additional circuitry and components, such as firmware, software or chips or chipsets for decoding and signal conversion, etc. Input to a printer engine 420 is usually a final rasterized printer-engine print data generated by a raster image processor 406. Such input is usually device dependent and printer or printer engine specific. The printer engine 420 may take this device dependent input and generate or render output pages (e.g. with ink on a substrate).

[00120] When a raster image processor is located inside an output device 220, it is usually included in a printer controller 410 (as shown in FIG. 4A). A printer controller 410 may interpret, rasterize, and convert input print data in the form of a page description language (e.g., PostScript, PCL), markup language (e.g., XML, HTML) or other special

document format or language (e.g. PDF, EMF) into printer-engine print data which is a final format, language or instruction that printer engine 420A can understand.

[00121] Print data sent to a printer with printer controller 410 is usually in a form (e.g. postscript) that requires further interpretation, processing or conversion. A printer controller 410 receives the print data, interprets, process, and converts the print data into a form that can be understood by the printer engine 420A. Regardless of the type of print data, conventionally, a user may need a device-specific driver in his or her information apparatus 200 in order to output the proper language, format, or file that can be accepted by a specific printer or output device 220.

[00122] FIG. 4B illustrates another conventional output device 400B. Output device 400B may be a printing device, a display device, a projection device, or a sound device. In the case that the output device is a printing device or a printer, the printer with reference to FIG. 4B does not include a printer controller 410. As an example, printer 400B may be a low-cost printer such as a desktop inkjet printer. RIP operations in this example may be implemented in a software application or in a device driver included in an information apparatus 200. The information apparatus 200 generates device dependent output data (or print data in case of a printer) by rasterizing and converting a digital document into output data (e.g. into a compressed CMKY data with one or more bits per pixel) that can be understood by an output engine (or printer engine in case of a printer) 420B.

[00123] Regardless of type or sophistication level, different output device 220 conventionally needs different printer drivers or output management applications in an information apparatus 200 to provide output capability. Some mobile devices with limited memory and processing power may have difficulty storing multiple device drivers or perform computational intensive RIP operations. It may also be infeasible to install a new device dependent or specific printer driver each time there is a need to print to a new printer. To overcome these difficulties, present invention provides several improvements to output device 220 or output system 250 as described in detail next.

[00124] In present invention, output device 220 may include an output controller 230 to help managing communication and negotiation processes with an information apparatus 200 and to process output data. Output controller 230 may include dedicated hardware or software or combination of both for at least one output device 220. Output

controller 230 may be internally installed, or externally connected to one or more output devices 220. The output controller 230 is sometimes referred to as a print server or output server.

[00125] FIG. 5A and 5B illustrate two exemplary internal implementations of the output controller 230 of present invention. FIG. 5A illustrates the implementation of an output controller 230 inside a conventional printer with reference to FIG. 4A, which includes a conventional printer controller 410(5A). The output controller 230(5A) includes an interpreter 510A component for decoding the intermediate output data of present invention; and a converter component 530A for converting one or more decoded output images into a printer-controller print data that is suitable for input to the printer controller 410(5A). An optional image processing component 520A may be included in the output controller 230(5A).

[00126] FIG. 5B illustrates the implementation of an output controller 230 included internally in a conventional output device 220 with reference to FIG. 4B, which does not include a printer controller. The output controller 230(5B) includes an interpreter 510B component for decoding the intermediate output data of present invention; an image processor 520B component for performing one or more image processing operations such as color space conversion, color matching and digital halftoning; and an optional encoder 530B component to conform the processed output images into an output-engine output data that is suitable for input to the output engine 420B if the result of the image processing is not already in required form suitable for the output engine 420B.

[00127] In one implementation, output device 220 may include a communication unit 550 or adapter to interface with information apparatus 200. Output device 220 may sometimes include more than one communication unit 550 in order to support different interfaces, protocols, or communication standards with different devices. For example, output device 220 may communicate with a first information apparatus 200 through a Bluetooth interface while communicating with a second information apparatus 200 through a parallel interface. Examples of hardware components of a wireless communication unit are described in greater detail below with reference to FIGS. 8A and 8B.

[00128] In one embodiment, output controller 230 does not include a communication unit, but rather utilizes or manages a communication unit residing in the associated output device 220 such as the illustration in FIG. 5. In another embodiment, output controller 230 may include or provide a communication unit to output device 220 as shown in FIG. 6. For example, an output controller 230 with a wireless communication unit may be installed internally or connected externally to a legacy printer to provide it with wireless communication capability that was previously lacking.

[00129] FIG. 6 includes three functional block diagrams illustrating the hardware/software components of output controller 230 in three different implementations. Each components of an output controller 230 may include software, hardware, or combination. For example, an output controller 230 may include components using one or more or combinations of an application-specific integrated circuit (ASIC), a digital signal processor (DSP), a field programmable gate array (FPGA), firmware, system on a chip, and various communication chip sets. Output controller 230 may also contain embedded processors 670 A with software components or embedded application software to implement its feature sets and functionalities.

[00130] Output controller 230 may contain an embedded operating system 680. With an operating system, some or all functionalities and feature sets of the output controller 230 may be provided by application software managed by the operating system. Additional application software may be installed or upgraded to newer versions in order to, for example, provide additional functionalities or bug fixes. FIG. 6A and FIG. 6C illustrates examples of implementation with an operating system 680 while FIG. 6B illustrates an example without the operating system 680 or the optional embedded processor 670.

[00131] Output controller 230 typically includes a memory unit 640, or may share a memory unit with, for example, printer controller 410. The memory unit and storage unit, such as ROM, RAM, flash memory and disk drive among others, may provide persistent or volatile storage. The memory unit or storage unit may store output device profiles, objects, codes, instructions or data (collectively referred to as software components) that implement the functionalities of the output controller 230. Part of the software components

(e.g., output device profile) may be uploaded to information apparatus 200 during or before a data output operation.

[00132] An output controller 230 may include a processor component 670A and 670C, a memory component 650, an optional storage component 640, and an optional operating system component 680. FIG. 6 shows one architecture or implementation where the memory 650, storage 640, processor 670, and operating system 680 components, if exist, can be share or accessed by other operational components in the output controller 230 such as the interpreter 610 and image processor 650. FIG. 6 shows two communication units 660A and 660B included in the output controller 230; however, the output controller 230 of present invention may include any number of communication units 660. It is also possible that the output controller does not contain any communication unit but rather utilizes the communication unit of an output device.

[00133] The output controller 230 may be connected externally to an output device 220 or integrated internally into the output device 220. FIG. 5A and 5B illustrate implementations of output controller 230 inside an output device 220. The output controller 230, however, may also be implemented as an external box or station that is wired or wirelessly connected to an output device 220. An output controller 230 implemented as an external box or station to an output device 220 may contain its own user interface. One example of such an implementation is a print server connected to an output device 220 in an output system 250. Another configuration and implementation is to integrate or combine the functionalities of an output controller 230 with an existing printer controller 410 (referred to as "combined controller") if the output device 220 is a printer as shown with reference to FIG. 7C or 7F. A combined controller can also be internally integrated or externally connected to output device 220, and include functionalities of both printer controller 410 (e.g., input interpretation and or raster image processing) and output controller 230 of present invention. One advantage of this configuration is that the functionalities or components of output controller 230 and printer controller 410 may share the same resources, such as processing unit, memory unit, etc. FIG. 6C illustrates an example of a combined controller implementation or output controller 230 where the printer controller 410C, interpreter 610C and converter 630C shares the use of the processor 670C, memory 650C and storage 640C, managed by an

operating system 680C. Various exemplary implementations and configurations of an output controller 230 with respect to an output device 220 or output system 250 are illustrated in further detail with reference to FIG. 7.

[00134] Other possible implementations of output controller 230 may include, for example, a conventional personal computer (PC), a workstation, and an output server or print server. In these cases, the functionalities of output controller 230 may be implemented using application software installed in a computer (e.g., PC, server, or workstation), with the computer connected with a wired or wireless connection to an output device 220. Using a PC, server, workstation, or other computer to implement the feature sets of output controller 230 with application software is just another possible embodiment of the output controller 230 and in no way departs from the spirit, scope and process of the present invention.

[00135] The difference between output controller 230 and printer controller 410 should be noted. Printer controller 410 and output controller 230 are both controllers and are both dedicated hardware and or software for at least one output device 220. Output controller 230 refers to a controller with feature sets, capabilities, and functionalities of the present invention. A printer controller 410 may contain functions such as interpreting an input page description language, raster image processing, and queuing, among others. An output controller 230 may include part or all of the features of a printer controller 410 in addition to the feature sets, functionalities, capabilities, and processes of present invention.

[00136] Functionalities and components of output controller 230 for the purpose of providing universal data output may include or utilize:

[00137] Components and operations to receive output data from a plurality of information apparatus 200; the output data may include an intermediate output data containing at least one rasterized image related to the data content intended for output.

[00138] Components and operations to interpret and/or decode the intermediate output data.

[00139] Components and operations to process the intermediate output data. Such components and operations may include image processing functions such

as scaling, segmentation, color correction, color management, GCR, image enhancement, decompression, decryption, and or halftoning among others.

[00140] Components and operations to generate an output-engine output data, the output-engine output data being in an output data format acceptable for input to an output engine.

[00141] Components and operations to send the output-engine output data to the output engine.

[00142] When associated with an output device 220 that includes a printer controller 410, the output controller of present invention may further include or utilize:

[00143] Components and operations to convert the intermediate output data into a printer-controller print data (e.g. a PDL such as PostScript and PCL), the printer-controller print data being in a format acceptable to a printer controller.

[00144] Components and operations to send printer-controller print data to one or more printer controllers.

[00145] In addition to the above components and functionalities, output controller 230 may further include one or more of the following:

[00146] Components and operations to communicate with one or more information apparatus 200 through a wired or wireless interface.

[00147] Components and operations to communicate and or manage a communication unit included in the output controller 230 or output device 220.

[00148] Components and operations to store at least part of an output device profile (a printer profile in case of a printer) in a memory component.

[00149] Components and operations to respond to service request from an information apparatus 200 by transmitting at least part of an output device profile to the information apparatus requesting service. The output controller 230 may transmit the output device profiles or object in one or multiple sessions.

[00150] Components and operations to broadcast or advertise the services provided by a host output device 220 to one or more information apparatus 200 that may request such services.

[00151] Components and operations to implement payment processing and management functions by, for example, calculating and processing payments

according to the services requested or rendered to a client (information apparatus 200).

[00152] Components and operations to provide a user interface such as display screen, touch button, soft key, etc.

[00153] Components and operations to implement job management functions such as queuing and spooling among others.

[00154] Components and operations to implement security or authentication procedures. For example, the output controller 230 may store in its memory component (or shared memory component) an access control list, which specifies what device or user may obtain service from its host (or connected) output device 220. Therefore, an authorized information apparatus 200 may gain access after confirming with the control list.

[00155] When output controller 230 is implemented as firmware, or an embedded application, the configuration and management of the functionalities of output controller 230 may be optionally accomplished by, for example, using controller management software in a host computer. A host computer may be a desktop personal computer (PC), workstation, or server. The host computer may be connected locally or through a network to the output device 220 or the controller 230. Communication between the host computer and the output controller 230 can be accomplished through wired or wireless communication. The management application software in the host computer can manage the settings, configurations, and feature sets of the output controller 230. Furthermore, host computer's configuration application may download and or install application software, software components and or data to the output controller 230 for the purpose of upgrading, updating, and or modifying the features and capabilities of the output controller 230.

[00156] Output device 220 in one implementation includes or is connected to output controller 230 described above. Therefore, functionalities and feature sets provided by output controller 230 are automatically included in the functionalities of output device 220. The output device 220 may, however, implement or include other controllers and/or applications that provide at least partially the features and functionalities of the output controller 230.

[00157] Therefore, the output device 220 may include some or all of the following functionalities:

[00158] Components and operations to receive multiple service requests or queries (e.g., a service request, a data query, an object or component query etc.) from a plurality of information apparatus 200 and properly respond to them by returning components, which may contain data, software, instructions and/or objects.

[00159] Components and operations to receive output data from a plurality of information apparatus 200; the output data may include an intermediate output data containing one or more rasterized image related to the content intended for output.

[00160] Components and operations to interpret and/or decoding the intermediate output data.

[00161] Components and operations to process and/or convert the intermediate output data into a form (e.g. output-engine print data) suitable for rendering at an output engine associated with the output device.

[00162] Components and operations to render a representation or an image related to the content onto an output medium (e.g. substrate or a display screen).

[00163] An output device 220 may further comprise optionally one or more of the following functionalities:

[00164] Components and operations for establishing and managing a communication link with an information apparatus 200 requesting service; the communication link may include wired or wireless communication.

[00165] Components and operations for storing at least part of an output device profile (e.g. printer profile) in a memory component.

[00166] Components and operations to provide at least part of an output device profile (e.g., printer profile in case of a printer) to one or more information apparatus 200 requesting service. The output device 220 may transmit the output device profile in one or multiple sessions.

[00167] Components and operations to advertise or broadcast services provided or available to one or more information apparatus 200.

[00168] Components and operations to implement payment processing and management functions by, for example, calculating and processing payments according to the services requested by or rendered to a client (information apparatus 200).

[00169] Components and operations to implement job management functionalities such as queuing and spooling among others.

[00170] Components and operations to provide a user interface such as display screen touch button, soft key, power switch, etc.

[00171] Components and operations to implement security or authentication procedures. For example, the output device 220 may store in its memory component (or a shared memory component) an access control list, which specifies what device or user may obtain service from it. Therefore, an authorized information apparatus 200 may gain access after confirming with the control list.

[00172] FIGS. 7A-7F illustrate various alternative configurations and implementations of output controller 230 with respect to an output device 230. Printer is sometimes used as an exemplary output device 230 to demonstrate the various configurations. It should be understood, however, the output device 230 of present invention is not limited to printers.

[00173] As described with reference to FIG. 4., a printer may or may not contain a printer controller 410. Printer 400A that includes a printer controller 410 typically has higher speed and is more expensive than printer 400B which does not include a printer controller 410.

[00174] FIG. 7A shows that output controller 230 may be cascaded externally to one or more printers (only one shown). Information apparatus 200 communicates with output controller 230A, which then communicates with output device 220 such as a printer 220A. The communication link between the output controller 230A and the printer 220A may be a wired link or a wireless link, as described above. FIG. 6A and 6B illustrates two examples of functional component design of the output controller that can implement the configuration illustrated in FIG. 7A. The Image processor 620 in this implementation is optional.

[00175] FIG. 7B shows another implementation in which output controller 230B is installed as one or more circuit boards or cards internally inside printer 220B. The output controller 230B may co-exist with printer controller 410 and other components of the printer 220B. One example of this implementation is to connect output controller 230B sequentially with the printer controller 310. FIG. 5A shows as an example of an implementation.

[00176] FIG. 7C shows another implementation in which the functionalities of output controller 230 and printer controller 410 are combined into a single controller (referred to as "combined controller") 230C. In this implementation, it is possible to reduce the cost of material when compared to implementing two separate controllers as shown in FIG. 7B. As an example, the combined controller 230C may share the same processors, memories, and storages to run the applications and functionalities of the two types of controllers and therefore, may have lower component costs when compared to providing two separate controllers. FIG. 6C illustrates an example of a combined controller functional component implementation.

[00177] Some printers do not include a raster image processor or printer controller 410, as illustrated in FIG. 4B. An example of this type of printer is a lower cost desktop inkjet printer. Input to an inkjet printer may consist of a compressed CMYK data (proprietary or published) with one or more bits per pixel input. To output to a printer that does not include a printer controller, a device specific software application or a printer driver is typically required in an information apparatus 200 to perform raster image processing operations. Accordingly, output controller 230 can be implemented into a variety of output devices 220 and/or output systems 250 including printers that do not have printer controllers for performing raster image processing operations.

[00178] FIG. 7D and FIG. 7E illustrate two implementations of output controller 230 in an output device 220 or system 250. The output device 230 or system 250 may include a display device, a projection device, an audio output device or a printing device. In the case when the output device 220D or 220E is a printer, it does not include a printer controller. FIG. 7D illustrates an implementation of an output controller 230D installed as an external component or "box" to output device 220D. For example, the output controller 230 may be implemented as an application in a print server or as a standalone box or

station. In this configuration, some or all of raster image processing operations may be implemented in the output controller 230D. Output controller 230D receives intermediate output data from an information apparatus 200 and generates output-engine output data that is acceptable to the output engine included in the output device 220D. The output controller 230D may send the output data to the output device 220D through a wired or wireless communication link or connection. FIG. 6A and 6B illustrates two example of functional component design of the output controller that can implement the configurations for both FIG. 7D and 7E.

[00179] FIG. 7E shows a fifth implementation of output controller 230E in which the output controller 230E is incorporated within output device 220E as one or more circuit boards or cards and may contain software and applications running on an embedded processor. As with output device 220D (FIG. 7D), output device 220E does not include a printer controller 410. Accordingly, the output controller 230E implements the functionalities and capabilities of present invention that may include part of or complete raster imaging processing operation.

[00180] FIG. 7F shows a sixth implementation, an external combined controller 230F that integrates the functionalities of a printer controller 310 and an output controller into a single external combined controller component or "box" 230F. The two controller functions may share a common processor as well as a common memory space to run applications of the two types of controllers. Under this configuration, either information apparatus 200 or the combined controller 230F could perform or share at least part of raster image processing functionality. FIG. 6C shows an example of functional components of a combined controller 230F.

[00181] Another implementation of the combined controller 230F shown in FIG. 7F is to use an external computing device (PC, workstation, or server) running one or more applications that include the functionality of output controller 230 and printer controller 410.

[00182] The above are examples of different implementations and configurations of output controller 230. Other implementations are also possible. For example, partial functionalities of output controller 230 may be implemented in an external box or station while the remaining functionalities may reside inside an output device 220 as a separate

board or integrated with a printer controller 410. As another example, the functionalities of output controller 230 may be implemented into a plurality of external boxes or stations connected to the same output device 220. As a further example, the same output controller 230 may be connected to service a plurality of output devices 220

[00183] FIGS. 8A and 8B are block diagrams illustrating two possible configurations of hardware/software components of wireless communication units. These wireless communication units can be implemented and included in information apparatus 200, in output controller 230 and in output device 220. Referring to FIG. 8A, a radio adapter 800 may be implemented to enable data/voice transmission among devices (e.g., information apparatus 200 and output device 220) through radio links. An RF transceiver 814 coupled with antenna 816 is used to receive and transmit radio frequency signals. The RF transceiver 814 also converts radio signals into and from electronic signals. The RF transceiver 814 is connected to an RF link controller 810 by an interface 812. The interface 812 may perform functions such as analog-to-digital conversion, digital-to-analog conversion, modulation, demodulation, compression, decompression, encoding, decoding, and other data or format conversion functions.

[00184] RF link controller 810 implements real-time lower layer (e.g., physical layer) protocol processing that enables the hosts (e.g., information apparatus 200, output controller 230, output device 220, etc.) to communicate over a radio link. Functions performed by the link controller 810 may include, without limitation, error detection/correction, power control, data packet processing, data encryption/decryption and other data processing functions.

[00185] A variety of radio links may be utilized. A group of competing technologies operating in the 2.4 GHz unlicensed frequency band is of particular interest. This group currently includes Bluetooth, Home radio frequency (Home RF) and implementations based on IEEE 802.11 standard. Each of these technologies has a different set of protocols and they all provide solutions for wireless local area networks (LANs). Interference among these technologies could limit deployment of these protocols simultaneously. It is anticipated that new local area wireless technologies may emerge or that the existing ones may converge. Nevertheless, all these existing and future wireless

technologies may be implemented in the present invention without limitation, and therefore, in no way depart from the scope of present invention.

[00186] Among the currently available wireless technologies, Bluetooth may be advantageous because it requires relatively lower power consumption and Bluetooth-enabled devices operate in piconets, in which several devices are connected in a point-to-multipoint system. Referring to FIG. 8B, one or more infrared (IR) adapters 820 may be implemented to enable data transmission among devices through infrared transmission. The IR adapters 820 may be conveniently implemented in accordance with the Infrared Data Association (IrDA) standards and specifications. In general, the IrDA standard is used to provide wireless connectivity technologies for devices that would normally use cables for connection. The IrDA standard is a point-to-point (vs. point-to-multipoint as in Bluetooth), narrow angle, ad-hoc data transmission standard.

[00187] Configuration of infrared adapters 820 may vary depending on the intended rate of data transfer. FIG. 8B illustrates one embodiment of infrared adapter 820. Transceiver 826 receives/emits IR signals and converts IR signals to/from electrical signals. A UART (universal asynchronous receiver/transmitter) 822 performs the function of serialization/deserialization, converting serial data stream to/from data bytes. The UART 822 is connected to the IR transceiver 826 by encoder/decoder (ENDEC) 824. This configuration is generally suitable for transferring data at relatively low rate. Other components (e.g., packet framer, phase-locked loop) may be needed for higher data transfer rates.

[00188] FIGS. 8A and 8B illustrate exemplary hardware configurations of wireless communication units. Such hardware components may be included in devices (e.g., information apparatus 200, output controller 230, output device 220, etc.) to support various wireless communications standards. Wired links, however, such as parallel interface, USB, Firewire interface, Ethernet and token ring networks may also be implemented in the present invention by using appropriate adapters and configurations.

[00189] FIG. 9 is a logic flow diagram of an exemplary raster imaging process (RIP) 902 that can implement the universal output method of present invention. Content (e.g. digital document) 900 may be obtained and/or generated by an application running in an information apparatus 200. For example, a document browsing application may allow a

user to download and or open digital document 900 stored locally or in a network node. As another example, a document creating or editing application may allow a user to create or edit digital documents in his/her information apparatus 200.

[00190] A client application 210 in the information apparatus may be in the form of a device driver, invoked by other applications residing in the information apparatus 200 to provide output service. Alternatively, the client application 210 of present invention may be an application that includes data output and management component, in addition of other functionalities such as content acquisitions, viewing, browsing, and or editing etc. For example, a client application 210 in an information apparatus 200 may itself include components and functions for a user to download, view and or edit digital document 900 in addition of the output management function described herein.

[00191] Raster image process method 902 allows an information apparatus 200 such as a mobile device to pervasively and conveniently output content (e.g. a digital document) to an output device 220 or system 250 that includes an output controller 230. A client application 210 in an information apparatus 200 may perform part of raster image processing operations (e.g. rasterization operation). Other operations of raster image processing such as halftoning can be completed by the output device 220 or by the output controller 230. In conventional data output methods, raster image processing is either implemented entirely in an information apparatus (e.g. a printer that does not include a printer controller with reference to FIG. 1A) or in an output device (e.g. a printer that includes a printer controller with reference to FIG. 1B). Present invention provides a more balanced approach where raster image process operations are shared between an information apparatus 200 and an output device 220 or system 250. For example, content 600 may be processed (e.g. raster image processed) by different components or parts of an overall output system from a client application 210 to an output controller 230 before being sent to an output engine or a printer engine for final output in step 960. Because the raster image processing operations are not completely implemented in the information apparatus 200, there is less processing demand on the information apparatus 200. Therefore, present RIP process may enable additional mobile devices with less memory and processing capability to have data output capability.

[00192] In step 910, rasterization operation, a content (e.g. digital document), which may include text, graphics, and image objects, is conformed or rasterized to image form according to one or more rasterization parameters such as output size, bit depth, color space, resolution, number of color channels etc. During the rasterization operation, text and vector graphics information in the content are rasterized or converted into image or bitmap information according to a given set of rasterization parameters. Image information in the content or digital document may be scaled and or interpolated to fit a particular output size, resolution and bit depth etc. The rasterization parameters are in general device dependent, and therefore may vary according to different requirements and attributes of an output device 220 and its output engine. There are many ways to obtain device dependent rasterization parameters, as described in more detail below with reference to FIG. 12A. Device dependent rasterization parameters, in one example, may be obtained from an output device profile stored in an information apparatus 200, an output device 220 or an output controller 230.

[00193] In an alternative implementation, rasterization parameters may be predetermined by a standard or specification. In this implementation, in step 910 the content 900 is rasterized to fit or match this predefined or standard rasterization parameters. Therefore, the rasterized output image becomes device independent. One advantage of being device independent is that the rasterized output image is acceptable with controllers, devices and/or output devices implemented or created with the knowledge of such standard or specification. A rasterized image with predefined or standardized attributes is usually more portable. For example, both the client application 210 and output device 220 or its output controller 230 may be preprogrammed to receive, interpret, and or output raster images based on a predefined standard and/or specification.

[00194] Occasionally, a predefined standard or specification for rasterization parameters may require change or update. One possible implementation for providing an easy update or upgrade is to store information and related rasterization parameters in a file or a profile instead of hard coding these parameters into programs, components or applications. Client application 210, output controller 230, and/or the output device 220 can read a file or a profile to obtain information related to rasterization parameters. To

upgrade or update the standard specification or defaults requires only replacing or editing the file or the profile instead of replacing a software application or component such as the client application 210.

[00195] In step 920 the rasterized content in image form is encoded into an intermediate output data. The intermediate output data, which describes the output content, may include image information, instructions, descriptions, and data (e.g. color profile). The rasterized output image may require further processing including one or more of compression, encoding, encryption, smoothing, image enhancement, segmentation, color correction among others before being stored into the intermediate output data. The output image in the intermediate output data may be encoded in any image format and with any compression technique such as JPEG, BMP, TIFF, JBIG etc. In one preferred embodiment, a mixed raster content (MRC) format and its related encoding and/or compression methods are used to generate the output image. The advantages of using MRC over other image formats and techniques may include, for example, better compression ratio, better data information retention, smaller file size, and or relatively better image quality among others.

[00196] In step 930, the intermediate output data is transmitted to the output device 220 or output system 250 for further processing and final output. The transmission of the intermediate output data may be accomplished through wireless or wired communication links between the information apparatus 200 and the output device 220 and can be accomplished through one or multiple sessions.

[00197] In step 940, the output device 220 or output system 250 receives the transmitted intermediate output data. The output device 220 or output system 250 may include an output controller 230 to assist communicating with the information apparatus 200 and/or processing the intermediate output data. Output controller 230 may have a variety of configurations and implementations with respect to output device 220 as shown in FIG. 7A-7F. Interpretation process 940 may include one or more of parsing, decoding, decompression, decryption, image space conversion among other operations if the received intermediate output data requires such processing. An output image is decoded or retrieved from the intermediate output data and may be temporarily stored in a buffer

or memory included in the output device/output system (220/250) or output controller 230 for further processing.

[00198] If the intermediate output data includes components with MRC format or encoding techniques, it may contain additional segmented information (e.g. foreground and background), which can be used to enhance image quality. For example, different techniques or algorithms in scaling, color correction, color matching, image enhancement, anti-aliasing and or digital halftoning among others may be applied to different segments or layers of the image information to improve output quality or maximize retention or recovery of image information. Multiple layers may later be combined or mapped into a single layer. These image processing and conversion components and/or operations can be included in the output controller 230 of present invention.

[00199] In step 950, the decoded or retrieved output image from the intermediate output data may require further processing or conversion. This may include one or more of scaling, segmentation, interpolation, color correction, GCR, black generation, color matching, color space transformation, anti-aliasing, image enhancement, image smoothing and or digital halftoning operations among others.

[00200] In an embodiment where the output device 220 does not include a printer controller, an output controller 230 or an output device 220 that includes output controller, after performing the remaining portion of RIP operations (e.g. color space conversion and halftoning) on the output image, may further convert the output data in step 950 into a form that is acceptable for input to a printer engine for rendering.

[00201] In an alternative embodiment where the output device 220 or the output system 250 includes a conventional printer controller, the output controller may simply decodes and or converts the intermediate output data (print data in this example) into format or language acceptable to the printer controller. For example, a printer controller may require as input a page description language (e.g. PostScript, PCL, PDF, etc.), a markup language (HTML, XML etc) or other graphics or document format. In these cases, the output controller 230 may interpret, decompress and convert the intermediate print data into an output image that has optimal output resolution, bit depth, color space, and output size related to the printer controller input requirements. The output image is then encoded or embedded into a printer-controller print data (e.g. a page description language) and

sent to the printer controller. A printer-controller print data is a print data that is acceptable or compatible for input to the printer controller. After the printer controller receives the printer-controller print data, the printer controller may further perform operations such as parsing, rasterization, scaling, color correction, image enhancement, halftoning etc on the output image and generate an appropriate printer-engine print data suitable for input to the printer engine.

[00202] In step 960, the output-engine output data or printer-engine print data generated by the output controller 230 or the printer controller in step 950 is sent to the output engine or printer engine of the output device for final output.

[00203] FIG. 10 illustrates a flow diagram of a universal data output process of the present invention that includes the raster image processing illustrated with reference to FIG. 9. A universal data output process allows an information apparatus 200 to pervasively output content or digital document to an output device. The data output process may include or utilize:

[00204] A user interface component and operation where a user initiates an output process and provides an indication of the selected output content (e.g. digital document) for output.

[00205] A client application component or operation that processes the content indicated for output, and generates an intermediate output data. The intermediate output data may include at least partly a raster output image description related to the content.

[00206] An information apparatus component or operation that transmits the intermediate output data to one or more selected output device 220.

[00207] An output device component (e.g. output controller) or operation that interprets the intermediate output data and may further process or convert the output data into a form more acceptable to an output engine for rendering of the content.

[00208] With reference to FIG. 10, a user in step 1000 may initiate the universal output method or process 1002. Typically, a user initiates the output process by invoking a client application 210 in his/her information apparatus 200. The client application 210 may be launched as an independent application or it may be launched from other applications

205 (such as from a document browsing, creating or editing application) or as part of or component of or a feature of another application 205 residing in the same information apparatus 200. When launched from another application 205, such as the case when the client application is a device driver or helper application, the client application 210 may obtain information, such as the content (e.g. digital document) from that other application 205. This can be accomplished, for example, by one or combinations of messages or facilitated through an operating system or a particular object or component model etc.

[00209] During output process 1002, a user may need to select one or more output devices 220 for output service. An optional discovery process step 1020 may be implemented to help the user select an output device 220. During the discovery process step 1020, a user's information apparatus 200 may (1) search for available output devices 220; (2) provide the user with a list of available output devices 220; and (3) provide means for the user to choose one or more output devices 220 to take the output job. An example of a discovery process 1020 is described below in greater detail with reference to FIG. 11.

[00210] The optional discovery process 1020 may sometimes be unnecessary. For example, a user may skip the discovery process 1020 if he or she already knows the output device (e.g., printer) 220 to which the output is to be directed. In this case, the user may simply connect the information apparatus 200 to that output device 220 by wired connections or directly point to that output device 220 in a close proximity such as in the case of infrared connectivity. As another example, a user may pre-select or set the output device or devices 220 that are used frequently as preferred defaults. As a result, the discovery process 1020 may be partially or completely skipped if the default output device 220 or printer is found to be available.

[00211] In stage 1030, the client application may interact with output device 220, the user, and/or other applications 205 residing in the same information apparatus 200 to (1) obtain necessary output device profile and/or user preferences, (2) perform functions or part of raster image processing operations such as rasterization, scaling and color correction, and/or (3) convert or encode at least partially the rasterized content (e.g. digital document) into an intermediate output data. The processing and generation of the intermediate output data may reflect in part a relationship to an output device profile

and/or user preferences obtained, if any. The intermediate output data generated by the client application 210 is then transmitted through wired or wireless local communication link(s) 240 to the output controller 230 included or associated with the selected output device 220 or output system 250. An exemplary client application process is described in greater detail with reference to FIG. 12.

[00212] In step 1040, the output controller 230 of present invention receives the intermediate output data. In the case where the selected output device 230 does not include a printer controller, the output controller 230 of present invention may further perform processing functions such as parsing, interpreting, decompressing, decoding, color correction, image enhancement, GCR, black generation and halftoning among others. In addition, the output controller 230 may further convert or conform the intermediate output data into a form or format suitable for the output engine (e.g. printer engine in the case of a printer). The generated output-engine output data from the output controller is therefore, in general, device dependent and acceptable for final output with the output engine (or the printer engine in case of a printer) included in the selected output device 220 or output system 250.

[00213] In the case where the selected output device 220 is a printer, and when the printer includes or is connected to a printer controller, the output controller 230 may generate the proper language or input format required to interface with the printer controller (referred to as printer-controller print data). The printer controller may for example require a specific input such as a page description language (PDL), markup language, or a special image or graphics format. In these cases, the output controller 230 in step 1040 may interpret and decode the intermediate output data, and then convert the intermediate output data into the required printer-controller print data (e.g. PDL such as PostScript or PCL). The printer-controller print data generated by the output controller is then sent to the printer controller for further processing. The printer controller may perform interpretation and raster image processing operations among other operations. After processing, the printer controller generates a printer-engine print data suitable for rendering at the printer engine.

[00214] In either case, the output controller 230 or printer controller generates an output-engine output data that is suitable for sending to or interfacing with the output

engine or the printer engine included in the output device for rendering. The output data may be temporarily buffered in components of the output device 220. An implementation of the output device process 1040 is described in greater detail with reference to FIG. 13.

[00215] The steps included in the universal pervasive output process 1002 may proceed automatically when a user requests output service. Alternatively, a user may be provided with options to proceed, cancel, or input information at each and every step. For example, a user may cancel the output service at any time by, for example, indicating a cancellation signal or command or by terminating the client application 210 or by shutting down the information apparatus 200 etc

[00216] FIG. 11 is a flow diagram of an example of a discovery process 720, which may be an optional step to help a user locate one or more output devices 220 for an output job. The discovery process 1020 may, however, be skipped partially or entirely. Implementation of discovery process 1020 may require compatible hardware and software components residing in both the information apparatus 200 and the output device 220. The information apparatus 200 may utilize the client application 210 or other application 205 in this process. The discovery process 1020 may include:

[00217] An information apparatus 200 communicating with available output devices 220 to obtain information and attributes relating to the output device 220 and or its services such as output device capability, feature sets, service availability, quality of service, condition.

[00218] An Information apparatus 200 provides the user information on each available and or compatible output devices 220.

[00219] A user selects or the client application 210 (automatically or not) selects one or more output devices 220 for the output service from the available or compatible output devices 220.

[00220] Various protocols and or standards may be used during discovery process 1020. Wireless communication protocols are preferred. Wired communication, on the other hand, may also be implemented. Examples of applicable protocols or standards may include, without limitation, Bluetooth, HAVi, Jini, Salutation, Service Location Protocol, and Universal Plug-and-play among others. Both standard and proprietary protocols or combination may be implemented in the discovery process 1020. However,

these different protocols, standards, or combination shall not depart from the spirit and scope of present invention.

[00221] In one implementation an application (referred here for simplicity of discussion as a "communication manager," not shown) residing in the information apparatus 200 helps communicate with output device 220 and manages service requests and the discovery process 1020. The communication manager may be a part of or a feature of the client application 210. Alternatively or in combination, the communication manager may also be a separate application. When the communication manager is a separate application, the client application 210 may have the ability to communicate, manage or access functionalities of the communication manager.

[00222] The discovery process 1020 may be initiated manually by a user or automatically by a communication manager when the user requests an output service with information apparatus 200.

[00223] In the optional step 1100, a user may specify searching or matching criteria. For example, a user may indicate to search for color printers and or printers that provide free service. The user may manually specify such criteria each time for the discovery process 1020. Alternatively or in combination, a user may set default preferences that can be applied to a plurality of discovery processes 1020. Sometimes, however, no searching criteria are required: the information apparatus 200 may simply search for all available output devices 220 that can provide output service.

[00224] In step 1101, information apparatus 200 searches for available output devices 220. The searching process may be implemented by, for example, an information apparatus 200 (e.g. with the assistance of a communication manager) multi-casting or broadcasting or advertising its service requests and waiting for available output devices 220 to respond. Alternatively or in combination, an information apparatus 200 may "listen to" service broadcasts from one or more output devices 220 and then identify the one or more output devices 220 that are needed or acceptable. It is also possible that multiple output devices 220 of the same network (e.g., LAN) register their services with a control point (not shown). A control point is a computing system (e.g., a server) that maintains records on all service devices within the same network. An information apparatus 200 may contact the control point and search or query for the needed service

[00225] In step 1102, if no available output device 220 is found, the communication manager or the client application 210 may provide the user with alternatives 1104. Such alternatives may include, for example, aborting the discovery process 1020, trying discovery process 1020 again, temporarily halting the discovery process 1020, or being notified when an available output device 220 is found. As an example, the discovery process 1020 may not detect any available output device 220 in the current wired/wireless network. The specified searching criteria (if any) are then saved or registered in the communication manager. When the user enters a new network having available output devices 220, or when new compatible output devices 220 are added to the current network, or when an output device 220 becomes available for any reason, the communication manager may notify the user of such availability.

[00226] In step 1106, if available output devices 220 are discovered, the communication manager may obtain some basic information, or part of or the entire output device profile, from each discovered output device 220. Examples of such information may include, but not limited to, device identity, service charge, subscription, service feature, device capability, operating instructions, etc. Such information is preferably provided to the user through the user interface (e.g., display screen, speaker, etc.) of information apparatus 200.

[00227] In step 1108, the user may select one or more output devices 220 based on information provided, if any, to take the output job. If the user is not satisfied with any of the available output device 220, the user may decline the service. In this case, the user may be provided with alternatives such as to try again in step 1110 with some changes made to the searching criteria. The user may choose to terminate the service request at any time. In step 1112, with one or more output devices 220 selected or determined, the communication link between information apparatus 200 and the selected output device or devices 220 may be "locked". Other output devices 220 that are not selected may be dropped. The output process 1020 may then proceed to the client application process of step 1030 of FIG. 10.

[00228] FIG. 12A is a flow diagram of an exemplary client application process with reference to step 1030 of FIG. 10. A client application process 1202 for universal output may include or utilize:

[00229] A client application 210 that obtains content (e.g. digital document) intended for output.

[00230] A client application 210 that obtains output device parameters (e.g. rasterization parameters, output job parameters). One example of implementation is to obtain the output device parameters from an output device profile (e.g. printer profile), which includes device dependent parameters. Such profile may be stored in an output controller 230, output device 220 or information apparatus 200.

[00231] A client application 210 that may optionally obtain user preferences through (1) user's input (automatic or manual) or selections or (2) based on preset preference or pre-defined defaults or (3) combination of the above.

[00232] A client application 210 that rasterizes at least part of the content intended for output (e.g. a digital document) according to one or more rasterization parameters obtained from previous steps such as through output device profile, user selection, predefined user preferences, predefined default or standard etc.

[00233] A client application 210 that generates an intermediate output data containing at least part of the rasterized image related at least partly to the content intended for output.

[00234] A client application that transmits the intermediate output data to an output device 220 or output controller 230 for further processing and or final output.

[00235] A client application 210 may obtain content (e.g. digital document) 900 or a pointer or reference to the content in many ways. In a preferred embodiment, the client application 210 is in the form of a device driver or an independent application, and the content or its reference can be obtained by the client application 210 from other applications 205 in the same information apparatus 200. To illustrate an example, a user may first view or download or create a digital document by using a document browsing, viewing and or editing application 205 in his/her information apparatus 200, and then request output service by launching the client application 210 as a device driver or helper application. The client application 210 communicates with the document browsing or editing application to obtain the digital document or reference to the digital document. As another example, the client application 210 is an independent application and it launches

another application to help locate and obtain the digital document for output. In this case, a user may first launch the client application 210, and then invoke another application 205(e.g. document editing and or browsing application) residing in the same information apparatus 200 to view or download a digital document. The client application 210 then communicates with the document browsing or editing application to obtain the digital document for output.

[00236] In another embodiment, the client application 210 itself provides multiple functionalities or feature sets including the ability for a user to select the content (e.g. digital document) for output. For example, the client application 210 of present invention may provide a GUI where a user can directly input or select the reference or path of a digital document that the user wants to output.

[00237] In order to perform rasterization operation on content (e.g. digital document) 900, the client application 210 in step 1210 needs to obtain device dependent parameters of an output device 220 such as the rasterization parameters. Device dependent parameters may be included in an output device profile. A client application 210 may obtain an output device profile or rasterization parameters in various ways. As an example, an output device profile or rasterization parameters can be obtained with one or combination of the following:

[00238] The client application communicates with an output device 220 to upload output device profile or information related to one or more rasterization parameters.

[00239] The client application 210 obtains the output device profile from a network node (e.g. server).

[00240] A user selects an output device profile stored in the user's information apparatus 200.

[00241] The client application 210 automatically retrieves or uses a default profile, predefined standard values or default values among others.

[00242] The client application 210 obtains output device parameters by calculating, which may include approximation, based at least partly on the information it has obtained from one or combination of an output device 220, a user, default values, and a network node.

[00243] It is important to note that step 1210 is an optional step. In some instance, part of or the entire output device profile or related device dependent information may have been already obtained by the client application 210 during the prior optional discovery process (step 1020 in FIG. 10). In this case, step 1210 may be partially or entirely skipped.

[00244] In one implementation, the client application 210 communicates with one or more output devices 220 to upload output device profiles stored in the memory or storage components of those one or more output devices 220 or their associated one or more output controllers 230. In some instance, the uploaded output device profile may contain partially or entirely references or pointers to device parameters instead of the device parameters themselves. The actual output device parameters may be stored in a network node or in the information apparatus 200, where they can be retrieved by the client application 210 or by other applications 205 using the references or pointers. It should be noted that a plurality of information apparatuses 200 may request to obtain output device profile or profiles from the same output device 220 at the same time or at least during overlapping periods. The output device 220 or its associated output controller 230 may have components or systems to manage multiple communication links and provide the output device profile or profiles concurrently or in an alternating manner to multiple information apparatuses 200. Alternatively, an output device 220 may provide components or systems to queue the requests from different information apparatuses 200 and serve them in a sequential fashion according to a scheme such as first come first served, quality of service, etc. Multi-user communication and service management capability with or without queuing or spooling functions may be implemented by, for example, the output controller 230 as optional feature sets.

[00245] In another implementation, one or more output device profiles may be stored locally in the information apparatus 200. The client application 210 may provide a GUI where a user can select a profile from a list of pre-stored profiles. As an example, the GUI may provide the user with a list of output device names (e.g. makes and models), each corresponding to an output device profile stored locally. When the user selects an output device 220, the client application 210 can then retrieve the output device profile corresponding to the name selected by the user.

[00246] In certain cases, during a discovery or communication process described earlier, the client application 210 may have already obtained the output device ID, name, or reference or other information in a variety of ways described previously. In this case, the client application 210 may automatically activate or retrieve an output device profile stored in the information apparatus 200 based on the output device ID, name, or reference obtained without user intervention.

[00247] In yet another implementation, the client application 210 may use a set of pre-defined default values stored locally in a user's information apparatus 200. Such defaults can be stored in one or more files or tables. The client application 210 may access a file or table to obtain these default values. The client application 210 may also create or calculate certain default values based on the information it has obtained during previous steps (e.g. in optional discovery process, based on partial or incomplete printer profile information obtained, etc). A user may or may not have an opportunity to change or overwrite some or all defaults.

[00248] Finally, if, for any reason, no device dependent information is available, the client application 210 may use standard output and rasterization parameters or pre-defined default parameters. The above illustrates many examples and variations of implementation, these and other possible variations in implementation do not depart from the scope of the present invention.

[00249] In step 1220, the client application 210 may optionally obtain user preferences. In one exemplary implementation, the client application 210 may obtain user preferences with a GUI (graphical user interface). For simplicity, a standard GUI form can be presented to the user independent of the make and model of the output device 220 involved in the output process. Through such an interface, the user may specify some device independent output parameters such as page range, number of cards per page, number of copies, etc. Alternatively or in combination, the client application 210 may also incorporate output device-dependent features and preferences into the GUI presented to the user. The device-dependent portion of the GUI may be supported partly or entirely by information contained in the output device profile obtained through components and processes described in previous steps. To illustrate, device dependent features and

capabilities may include print quality, color or grayscale, duplex or single sided, output page size among others.

[00250] It is preferred that some or all components, attributes or fields of user preferences have default values. Part or all default values may be hard-coded in software program in client application 210 or in hardware components. Alternatively, the client application 210 may also access a file to obtain default values, or it may calculate certain default values based on the information it has obtained during previous steps or components (e.g. from an output device profile). A user may or may not have the ability to pre-configure, or change or overwrite some or all defaults. The client application 210 may obtain and use some or all defaults with or without user intervention or knowledge.

[00251] In step 1230, the client application 210 of present invention performs rasterization operation to conform a content (e.g. a digital document), which may includes objects and information in vector graphics, text, and images, into one or more output images in accordance with the rasterization parameters obtained in previous steps. During rasterization process, text and vector graphics object or information in the content is rasterized or converted into image or bitmap form according to the given set of rasterization parameters. Image information in the content may require scaling and interpolation operations to conform the rasterization parameters. Rasterization process may further include operations such as scaling, interpolation, segmentation, image transformation, image encoding, color space transformation etc. to fit or conform the one or more output images to the given set of rasterization parameters such as target output size, resolution, bit depth, color space and image format etc.

[00252] In step 1240, the client application 210 generates an intermediate output data that includes the rasterized one or more output images. The intermediate output data of the present invention may contain image information, instructions, descriptions, and data such as color profile among others. Creating and generating intermediate output data may further include operations such as compression, encoding, encryption, smoothing, segmentation, scaling and or color correction, among others. The image or images contained in an intermediate output data may be variously encoded and/or implemented with different image formats and/or compression methods (e.g. JPEG, BMP, TIFF, JBIG etc or combination). One preferred implementation is to generate or encode the output

image in the intermediate output data with mixed raster content (MRC) description. The use of MRC in the data output process of present invention provides opportunities to improve the compression ratio by applying different compression techniques to segmented elements in the content. In addition, MRC provides opportunities to maintain more original content information during the encoding process of the output image and, therefore, potentially improve output quality.

[00253] In step 1250, the client application 210 transmits intermediate output data to an output device 220 through local communication link 240. The communication link may be implemented with wired or wireless technologies and the transmission may include one or multiple sessions.

[00254] It should be recognized that FIG. 12A illustrates one example of a client application process 1030 in the data output method 1002 of present invention. Other implementations with more or less steps are possible, and several additional optional processes not shown in FIG. 12 may also be included in the client application process 1030. Use of these different variations, however, does not result in a departure from the scope of the present invention. As an example, an optional authentication step may be included when the selected output device 220 provides service to a restricted group of users. Various authentication procedures may be added in step 1210 when client application 210 obtains output device profile by communicating with an output device or an output controller. As another example, authentication procedures may also be implemented in step 1250 when the client application transmits intermediate output data to one or more output devices 220 or output controllers 230. A simple authentication may be implemented by, for example, comparing the identity of an information apparatus 200 with an approved control list of identities stored in the output device 220 or output controller 230. Other more complex authentication and encryption schemes may also be used. Information such as user name, password, ID number, signatures, security keys (physical or digital), biometrics, fingerprints, voice among others, may be used separately or in combination as authentication means. Such identification and or authentication information may be manually provided by user or automatically detected by the selected output device or devices 220 or output controller 230. With successful authentication, a user may gain access to all or part of the services provided by the output device 220. The

output device profile that the client application 210 obtains may vary according to the type or quality of service requested or determined. If authentication fails, it is possible that a user may be denied partially or completely access to the service. In this case, the user may be provided with alternatives such as selecting another output device 220 or alternative services.

[00255] Another optional process is that a user may be asked to provide payment or deposit or escrow before, during or after output service such as step 1210 or 1250 with reference to FIG. 12. Examples of payment or deposit may include cash, credit card, bankcard, charge card, smart card, electronic cash, among others. The output controller 220 may provide payment calculation or transaction processing as optional feature sets of present invention.

[00256] FIG. 12B illustrates another exemplary client application output process 1030 with which an information apparatus 200 can pervasively and universally output content to one or more output devices 220 associated with or equipped with an output controller 230 of present invention.

[00257] The process illustrated in FIG. 12B is similar to the process described in FIG. 12A except that step 1210, obtaining output device profile, is skipped. In this embodiment, the client application 210 utilizes a set of hard-coded, standard or predefined output device parameters including rasterization parameters with which the client application 210 can perform rasterization operation and other required image processing functions. Users may be provided with the option of changing these parameters or inputting alternative parameters. Rasterization parameters include output size, output resolution, bit depth, color space, color channels, scale factors etc. These pre-defined parameters typically comply with a specification or a standard. The same specification and standard may also defined or describe at least partly the intermediate output data. Predefined standard parameters can be stored in a file or profile in an information apparatus 200, an output controller 230, and/or in an output device 220 for easy update or upgrade.

[00258] In client output process 1204, since the rasterization parameters are predefined, the client application 210 may not need to upload printer profiles from the selected output device 230. Consequently, no two-way communication between the information apparatus 200 and the output device or devices 220 is necessary in this

process 1204 when compared with process 1202 illustrated in FIG. 12A. The client application 210 performs rasterization operation 1225 based on standard and/or predefined parameters and generates a rasterized output image with predefined or standard properties of those rasterization parameters. The resulting intermediate output data, which includes at least one rasterized output image, is transmitted from the information apparatus 200 to an output device 220 in step 1250 or to its associated output controller 230 for rendering or output. The intermediate output data generated in process 1202 in general is less device dependent compared to the intermediate output data generated in the process 1202 shown in FIG. 12A. The output controller 230 included or associated with the output device 220 may be preprogrammed to interpret the raster output image, which includes properties or attributes that correspond to those standard or predefined parameters.

[00259] The standard or predefined rasterization parameters may be hard coded or programmed into the client application 210 and/or the output controller 230. However, instead of hard coding those parameters, one technique to facilitate updates or changes is to store those standard parameters in a default file or profile. The standard or predefined parameters contained in the file or profile can be retrieved and utilized by applications in an information apparatus 200 (e.g. client application 210) and/or by applications or components in an output device 220 or the output controller 230. In this way, any necessary updates, upgrades or required changes to those predefined or standard parameters can be easily accomplished by replacing or modifying the file or profile instead of modifying or updating the program, application or components in the information apparatus 200, output device 220 and/or output controller 230.

[00260] A client application process 1204 providing universal output capability to information apparatus 200 may include or utilize:

[00261] A client application 210 that obtains content (e.g. digital document) intended for output.

[00262] A client application 210 that optionally obtains user preferences (in step 1220) through (1) user's input (automatic or manual) or selections or (2) based on preset preference or predefined defaults or (3) combination of the above.

[00263] A client application 210 that rasterizes content (in step 1230 or 1225) according to pre-defined or standard rasterization parameters.

[00264] A client application 210 that generates intermediate output data (in step 1240) for rendering or output at an output device 220; the intermediate output data containing at least partially a rasterized image related to the content intended for output.

[00265] A client application 210 that transmits the intermediate output data to an output device 220 (in step 1250) for further processing and final output.

[00266] One advantage of the client output process 1204 of FIG. 12B compared to the process 1202 illustrated in FIG. 12A is that the generated intermediate output data is in general less device dependent. The device independent attribute allows the intermediate output data to be more portable and acceptable to more output devices equipped or associated with output controllers. Both data output processes (1202 and 1204) enable universal output; allowing a user to install a single client application 210 or components in an information apparatus 200 to provide output capability to more than one output device 220.

[00267] FIG. 13A illustrates one example of an output device process 1302 and its associated raster imaging method of present invention. In this output device process 1302, an output device 220 is capable of receiving an intermediate output data from an information apparatus 200. The output device process 1302 and its operations may include or utilize:

[00268] An output device/system or output controller that receives intermediate output data (in step 1300). The intermediate output data includes at least partially a raster output image describing at least part of the content for rendering at the output device 220 or system 250.

[00269] An output device/system or output controller that interprets (in step 1310) the intermediate output data; in one preferred embodiment, the intermediate output data includes an output image utilizing one or more MRC formats or components.

[00270] An output device/system or output controller that performs image processing operation (in step 1320) on the raster image. The image processing

operation may include but not limited to image decompression, scaling, halftoning, color matching, among others.

[00271] An output device/system or output controller that converts and or generates (in step 1330) output-engine output data that is in a format or description suitable for input to an output engine (e.g. printer engine in case of a printer) included in an output device 220.

[00272] An output engine in an output device 220 that renders or generates a final output (e.g. the output-engine output data) in step 1370.

[00273] The output device 220 or output system 250 may include an output controller 230 internally or externally to assist the management and operation of the output process 1302. As shown in FIG. 7, there are many possible configurations and implementations of an output controller 230 associated to an output device 220. Herein and after, output controller 230 is regarded as an integral part of the output device to which it is attached. Hence, the following described output device operations may be partially or completely performed by the output controller associated with it.

[00274] In step 1300, output device process 1302 is initiated by client application 210 transmitting an intermediate output data to output device 220 or output system 250. In step 1310, the output device 220 reads and interprets the intermediate output data, containing at least one raster output image relating to the content intended for output. During the reading and interpretation process 1310, the output device 220 may include components that parse the intermediate output data and perform operations such as decompression, decoding, and decryption among others. The output image may be variously encoded and may include one or more compression methods.

[00275] In the event that the method of image encoding includes MRC format, then, in one example implementation, during decoding and mapping of the output image in step 1310, the lower resolution layer and information in an image that includes MRC may be mapped, scaled or interpolated to a higher-resolution output image to produce a better image quality. Therefore, step 1310, in the event that the intermediate output data includes MRC component, each layer in an MRC image can be decompressed, processed, mapped and combined into a single combined output image layer. Step 1310 may also include scaling, color space transformation, and/or interpolation among others.

In addition to the possibility of mapping methods using different scaling and interpolation ratio with different layers, another advantage of using MRC is that segmentation information contained in MRC can be utilized to apply different image processing and enhancement techniques to data in different layers of an MRC image in step 1320.

[00276] In step 1320, the output device 220 may further perform image processing operations on the decoded output image. These image processing operations may include, for example, color correction, color matching, image segmentation, image enhancement, anti-aliasing, image smoothing, digital watermarking, scaling, interpolation, and halftoning among others. The image processing operations 1320 may be combined or operated concurrently with step 1310. For example, while each row, pixel, or portion of the image is being decoded and or decompressed, image processing operations 1320 is applied. In another implementation, the image processing 1320 may occur after the entire output image or a large portion of the image has been decoded or decompressed.

[00277] If the intermediate output data includes MRC component, then in step 1320, there are additional opportunities to improve image quality. An image encoded in MRC contains segmented information that a traditional single layer image format does not usually have. As an example, foreground can be in one layer, and background in another. As another example, chrominance information may be in one layer and luminance may be in another. This segmented information in MRC may be used to apply different or selective image processing methods and algorithms to different layers or segments to enhance image quality or retain or recover image information. Different image processing techniques or algorithms may include color matching, color correction, black generation, halftoning, scaling, interpolation, anti-aliasing, smoothing, digital watermarking etc. For example, one can apply calorimetric color matching to foreground information and perceptual color matching to background information or vice versa. As another example, error diffusion halftoning can be applied to foreground and stochastic halftoning can be applied to background or vice versa. As yet another example, bi-cubic interpolation can be applied to a layer and bi-linear or minimum distance interpolation can be applied to a different layer.

[00278] In step 1330, the output device 220 or the output controller 230 may convert the processed image (e.g. halftoned) into a form acceptable to the output engine of output device 220. This conversion step is optional, depending on the type, format and input requirement of a particular output device engine (e.g. printer engine in case of a printer). Different output engines may have different input raster image input requirements. As an example different output engines may require different input image formats, number of bits or bytes per pixel, compression or uncompressed form, or different color spaces (e.g. such as RGB, CMY, CMYK, or any combination of Hi-Fi color such as green, orange, purple, red etc). Incoming raster image data can be encoded in a row, in a column, in multiple rows, in multiple columns, in a chunk, in a segment, or a combination at a time for sending the raster data to the output engine. In some cases, step 1330 may be skipped if the result of step 1320 is already in a form acceptable to the output device engine. In other cases, however, further conversion and or processing may be required to satisfy the specific input requirement of a particular output device engine.

[00279] It is important to note that the above described processing from step 1310 to step 1330 may require one or more memory buffers to temporarily store processed results. The memory buffer can store or hold a row, a column, a portion, or a chunk, of the output image in any of the steps described above. Storing and retrieving information into and from the memory buffer may be done sequentially, in an alternating fashion, or in an interlaced or interleaved fashion among other possible combinations. Step 1310 to step 1330 operations can be partially or completely implemented with the output controller 230.

[00280] In step 1370, the output device engine included in the output device 220 or output system 250 receives the output-engine output data generated in step 1330 or step 1320. The output-engine output data is in a form that satisfies the input requirements and attributes of the output engine, such as color space, color channel, bit depth, output size, resolution, etc. The output engine then takes this output-engine output data and outputs or renders the data content through its marking engine or display engine.

[00281] One advantage of data output method 1002 that includes output device process 1302 is that it has less processing requirements on an information apparatus 200 compared to conventional process with reference to FIG. 1A, and therefore, enables more

information apparatus 200 with relatively lower processing power and memory space to have output capability.

[00282] For example, some image processing functions, such as halftoning (e.g. error diffusion) may require substantial processing and computing power. In data output process 1002 that includes output device process 1302, halftoning is performed in step 1320 by an output device component (e.g. the output controller 230) included in the output device 220 or the output system 250, not in the information apparatus 200; therefore reducing the computational requirements for the information apparatus 200. Another advantage of data output 1302 is that the intermediate output data is less device dependent than the output data generated by conventional output method 102 with reference to FIG. 1A. The device independence provides opportunity to allow a single driver or application in an information apparatus 200 to output intermediate output data to a plurality of output devices 220 that include output controllers 230.

[00283] Some output devices 220 may contain a printer controller 410. An example of this type of output device or printer is a PostScript printer or PCL printer among others. FIG. 13B illustrates an example of an output device process 1304 with a printer that includes a printer controller 410. As discussed in FIG. 1, a printer with a printer controller requires input such as page description language (e.g. PostScript, PCL etc.), markup language (HTML, XML etc), special image format, special graphics format, or a combination, depending on the type of the printer controller.

[00284] There are many printing system configurations for providing the data output capability and process to a printer or a printing system that includes a printer controller. In one example, the existing printer controller in the output device 220 may incorporate the feature sets provided by the output controller to form a "combined controller" as described previously with reference to FIGS. 7C and 7F. In another example, the output controller 230 of present invention may be connected sequentially or cascaded to an existing printer controller; the output controller 230 can be internally installed (with reference to FIG. 7B) or externally connected (with reference to FIG. 7A) to the output device 220. For output device 220 that includes a printer controller, the output controller 230 may simply decode the intermediate output data in step 1310 and then convert it into a form acceptable for input to the printer controller in step 1350.

[00285] An output device process 1304 and operations for an output device 220 or system 250 that includes a printer controller 410 may include or utilize:

[00286] An output controller 230 or components in an output device 220 or system 250 that receives an intermediate print data or output data (with reference to step 1300), the intermediate print data includes at least a raster image related at least in part to the content for rendering at the output device 220.

[00287] An output controller 230 or components in an output device 220 or system 250 that interprets the intermediate output data (with reference to step 1310); in one preferred embodiment, the intermediate output data includes an output image utilizing one or more MRC format or components.

[00288] An output controller 230 or components in an output device 220 or system 250 that converts the intermediate output data into a printer-controller print data (with reference to step 1350); the printer-controller print data includes a format or language (e.g. PDL, PDF, HTML, XML etc.) that is acceptable or compatible to the input requirement of a printer controller.

[00289] A printer controller or components in an output device 220 or system 250 that receives a printer controller print data; the printer controller may parse, interpret and further process (e.g. rasterization, scaling, image enhancement, color correction, color matching, halftoning etc.) and convert the printer-controller print data into a printer-engine print data (with reference to step 1360); the printer-engine print data comprising of a format or description acceptable for input to a printer engine in the output device 220 or the output system 250.

[00290] A printer engine or components in an output device 220 or system 250 that renders or generates a final output (with reference to step 1370) with the input printer engine print data.

[00291] In output device process 1304, step 1300 (receiving intermediate output data) and step 1310 (interpret intermediate output data) are identical to step 1300 and step 1310 in output device process 1302, which have been described in previous sections with reference to FIG. 13A.

[00292] In step 1350, the output controller 230 converts the intermediate print data into a printer-controller print data that is in a form compatible or acceptable for input to a printer

controller. For example, a printer controller may require as input a specific page description language (PDL) such as PostScript. The output controller 230 then creates a PostScript file and embeds the output image generated or retrieved in step 1310 into the PostScript file. The output controller 230 can also create and embed the output image from step 1310 into other printer controller print data formats, instructions or languages.

[00293] In step 1360, the printer controller receives printer-controller print data generated in step 1350 that includes an acceptable input language or format to the printer controller. The printer controller may parse, interpret, and decode the input printer-controller print data. The printer controller may further perform raster image processing operations such as rasterization, color correction, black generation, GCR, anti-aliasing, scaling, image enhancement, and halftoning among others on the output image. The printer controller may then generate a printer-engine print data that is suitable for input to the printer engine. The type and or format of printer-engine print data may vary according to the requirement of a particular printer engine.

[00294] It is important to note that the above described process from step 1310 to step 1360 may require one or more memory buffer to temporarily store processed results. The memory buffer can store or hold a row, a column, a portion, or a chunk, of the output image in any of the steps described above. Storing and retrieving information into and from the memory buffer may be done sequentially, alternated, or in an interlaced or interleaved fashion among other possible combinations. Process and operations of step 1310 to step 1360 can be implemented with output controller 230.

[00295] In step 1370, the printer engine included in the output device 220 or output system 250 generates or renders the final output based on the printer-engine print data generated in step 1360. For example, the printer-engine print data may be in CMY, CMYK, and RGB etc, and this may be in one or more bits per pixel format, satisfying the size and resolution requirement of the printer engine. The printer engine included the output device 220 may take this print data and generate or render an output page through its marking engine.

[00296] Having described and illustrated the principles of our invention with reference to an illustrated embodiment, it will be recognized that the illustrated embodiment can be modified in arrangement and detail without departing from such principles. In view of the

many possible embodiments to which the principles of our invention may be applied, it should be recognized that the detailed embodiments are illustrative only and should not be taken as limiting the scope of our invention. Rather, I claim as my invention all such embodiments as may come within the scope of the following claims and equivalents thereto.

[00297] Unless the context indicates otherwise, a reference in a claim to the number of instances of an element, be it a reference to one instance or more than one instance, requires at least the stated number of instances of the element but is not intended to exclude from the scope of the claim a structure or method having more instances of that element than stated. Specifically, but without limitation, a reference in a claim to an or one output device or system, to an or one image, or to a or one rasterization parameter is not intended to exclude from the scope of the claim a structure or method having, including, employing or supplying two or more output devices or system, images or rasterization parameters.

WHAT IS CLAIMED IS:

1. A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to set up an output system device for accessing a service, operated, at least partly, over a network, at least part of the software is either pre-installed at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network, the output system device includes wireless communication circuitry for wireless communication and at least an output device for output of digital content, and the output system device is a distinct device from the mobile information apparatus, the mobile information apparatus includes:

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors,

one or more wireless communication units for wireless communication; and

wherein, when the one or more processors included in the mobile information apparatus executes at least part of the software at the mobile information apparatus, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system device, the wireless device discovery of the output system device is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, an user interface item or icon related to the output system device wirelessly discovered in (1) for user selection;

(3) receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon displayed on the touch sensitive screen interface in (2);

(4) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), the wireless

communication link being a direct short range wireless communication or a wireless local area network communication, and the establishing of the wireless communication link is based on having received the indication of a selection of the user interface item or icon in (3); and

(5) wirelessly transmits, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4), security information or authentication information to the output system device, the security information or the authentication information is to facilitate, at least in part, the output system device to access the service operated, at least partly, over the network.

2. The medium according to claim 1, wherein the one or more wireless communication units of the mobile information apparatus supports at least part of a protocol within Bluetooth specifications, and the wireless communication link between the mobile information apparatus and the output system device established in (4), using the one or more wireless communication units, is compatible with at least part of a protocol within Bluetooth specifications.

3. The medium according to claim 2, wherein the one or more wireless communication units of the mobile information apparatus further support at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

4. The medium according to claim 3, wherein the security information or authentication information wirelessly transmitted to the output system device in (5) is to facilitate, at least in part, the output system device to establish a wireless local area network connection between the mobile information apparatus and the output system device.

5. The medium according to claim 3, wherein the mobile information apparatus is embodied as a smart phone or an information pad, and the output system device includes at least one speaker for outputting audio digital content, and wherein the service

operated, at least partly, over a network, provides audio digital content to the output system device.

6. The medium according to claim 1, wherein the output system device is at least one of a sound output system, a television system, an output controller connectable to a television, a projection system device, a printing system device, a speaker system device, or an information apparatus that is an Internet appliance, individually or in any combination.

7. The medium according to claim 2, wherein the mobile information apparatus is a smart phone, and wherein, subsequent to establishing the wireless communication link between the mobile information apparatus and the output system device in (4), the mobile information apparatus further wirelessly manages or wirelessly drives the output system device using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4).

8. A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile device for wireless managing an output system to establish an output service using the output system, at least part of the software is either pre-installed at the mobile device or downloadable, at least partly, to the mobile device from one or more servers accessible by the mobile device over a network, the output system includes wireless communication circuitry for wireless communication and at least an output device for outputting digital content, the mobile device is a distinct device from the output system, the mobile device includes:

- a touch sensitive screen interface for interacting with a user,

- memory for storing at least part of the software,

- one or more processors,

- one or more wireless communication units for wireless communication; and

wherein, when the one or more processors included in the mobile device executes at least part of the software at the mobile device, the mobile device executes a method, comprising:

(1) wirelessly discovering, using the one or more wireless communication units of the mobile device, one or more wireless devices that include the output system, the wireless discovering of the output system based, at least in part, on short range wireless communication or local wireless communication;

(2) wirelessly receiving, using the one or more wireless communication units of the mobile device, device information from the output system that has been wireless device discovered by the mobile device in (1), the device information is related, at least in part, to the output system discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile device, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);

(4) receiving, via the touch sensitive screen interface of the mobile device, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3), the user interface item is related, at least in part, to the output system discovered in (1);

(5) establishing, using the one or more wireless communication units of the mobile device, a wireless communication link between the mobile device and the output system that is wireless device discovered in (1), the wireless communication link is a short range wireless communication or a wireless local area network communication, and the establishing of the wireless communication link is subsequent to having received the indication of a selection of the user interface item in (4); and

(6) wirelessly transmitting to the output system, using the one or more wireless communication units and via the wireless communication link established in (5), security information or authentication information, the wireless transmitting of the security information or authentication information is to facilitate, at least in part, the output system to establish an output service.

9. The medium according to claim 8, wherein the wireless device discovering of the output system in (1) is based, at least in part, on physical proximity between the mobile device and the output system.

10. The medium according to claim 9, wherein the one or more wireless communication unit of the mobile device support at least part of a protocol within IEEE 802.11 standards or within Bluetooth specifications, and the wireless communication link in (5) is compatible, with at least part of a protocol within IEEE 802.11 standards or within Bluetooth specifications.

11. The medium according to claim 10, wherein, subsequent to wirelessly transmitting the security information or authentication information to the output system in (6), the method further comprises establishing, using the one or more wireless communication units of the mobile device, a wireless local area network connection between the mobile device and output system.

12. The medium according to claim 11, wherein the establishing of the output service includes accessing a server operated, at least partly, over the Internet, the accessing of the server being subsequent to having established the wireless local area network connection, and wherein the security information or authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, a biometric, a fingerprint, or a voice, individually or in any combination.

13. The medium according to claim 10, wherein the mobile device is at least a smart phone, and wherein the output system is at least one of a sound output system, a television system, a controller system connectable to a television, a projector system, a speaker system, a printing system, or an Internet appliance, individually or in any combination.

14. A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to wirelessly manage or wirelessly drive an output device, the software is either pre-installed, at least partly, at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information

apparatus over a network, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, and the output device is a distinct device from the mobile information apparatus, the mobile information apparatus includes:

a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software,
one or more processors,
one or more wireless communication units for wireless communication; and
wherein, when the one or more processors executes at least part of the software,
the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless device discovery of the output device based, at least in part, on physical proximity between the mobile information apparatus and the output device;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item related, at least in part, to the output device wirelessly discovered in (1);

(3) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output device wirelessly discovered in (1), the wireless communication link is a short range direct wireless communication or a wireless local area network communication; and

(4) wirelessly manages or wirelessly drives, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), the output device,

wherein the wireless managing or the wireless driving of the output device in (4) further comprises:

(5) wirelessly sending, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), first information or a query to the output device; and

(6) wirelessly receiving, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), second information or a response from the output device, the second information or the response wirelessly received from the output device is in response to having wirelessly sent the first information or the query to the output device in (5).

15. The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards, and the wireless communication link in (3) is compatible, with at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

16. The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link in (3) is compatible, with at least part of a protocol within Bluetooth specifications.

17. The medium according to claim 16, wherein subsequent to the wireless discovery of the output device in (1), the mobile information apparatus further wirelessly receives, using the one or more wireless communication units of the mobile information apparatus, device information from the output device, the device information includes an attribute related, at least in part, to the output device, and wherein the user interface item displayed on the touch sensitive screen in (2) is related to the device information received from the output device.

18. The medium according to claim 14, wherein the method further comprises receiving, via the touch sensitive screen interface, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (2); and subsequent to receiving the indication of a selection via the touch sensitive screen, the mobile information apparatus establishes the wireless communication link in (3).

19. The medium according to claim 15, wherein the mobile information apparatus is at least a smart phone, and wherein the output device is at least one of a sound output device, a speaker device, a television device, a controller device connectable to a television, a projector device, or an Internet appliance, individually or in any combination.

20. The medium according to claim 14, wherein the method further comprises wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), security information or authentication information to the output device, the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, or a security key, a biometric, a fingerprint, or a voice, individually or in any combination.

Abstract of the Disclosure

Software and software applications for mobile devices to wirelessly manage or wirelessly setup an output system or output device are herein disclosed and enabled. Examples of mobile devices include smart phones and information pads having a touch sensitive screen. To set up an output system, the software running at the mobile information apparatus: wirelessly discovers the output system that is within physical proximity to the mobile information apparatus; receives selection of an item related to the wirelessly discovered output system via the touch sensitive screen; establishes a wireless communication link between the mobile information apparatus and the output system; and wirelessly transmits, via the established wireless communication link, security information or authentication information to the output system for setting up the output system for service over a network. The software may further facilitate management of settings of the output system and may further wirelessly drive or control the output system.

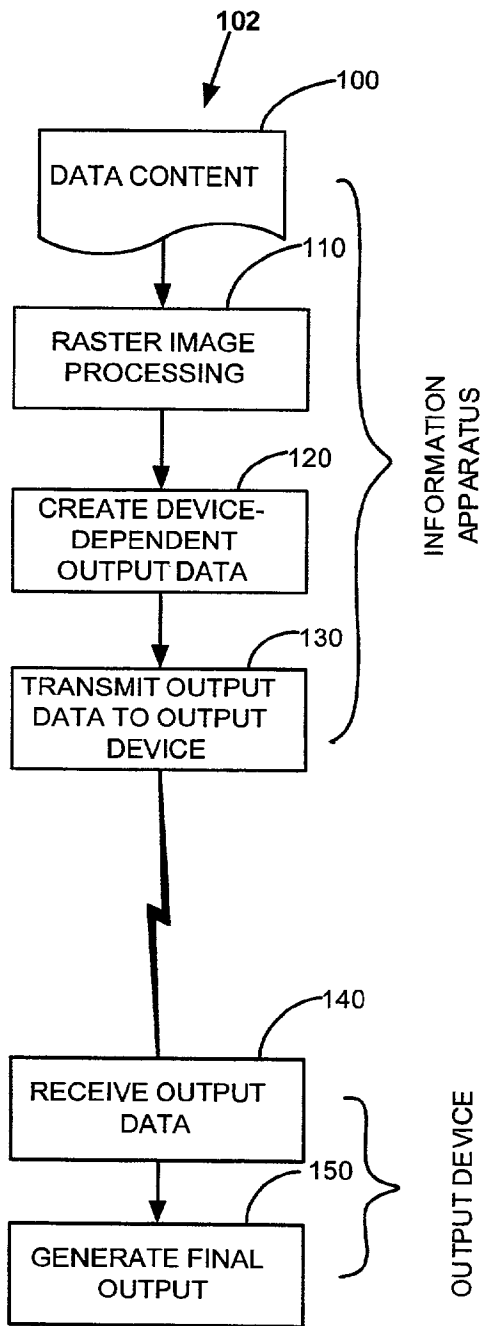


FIG 1 A

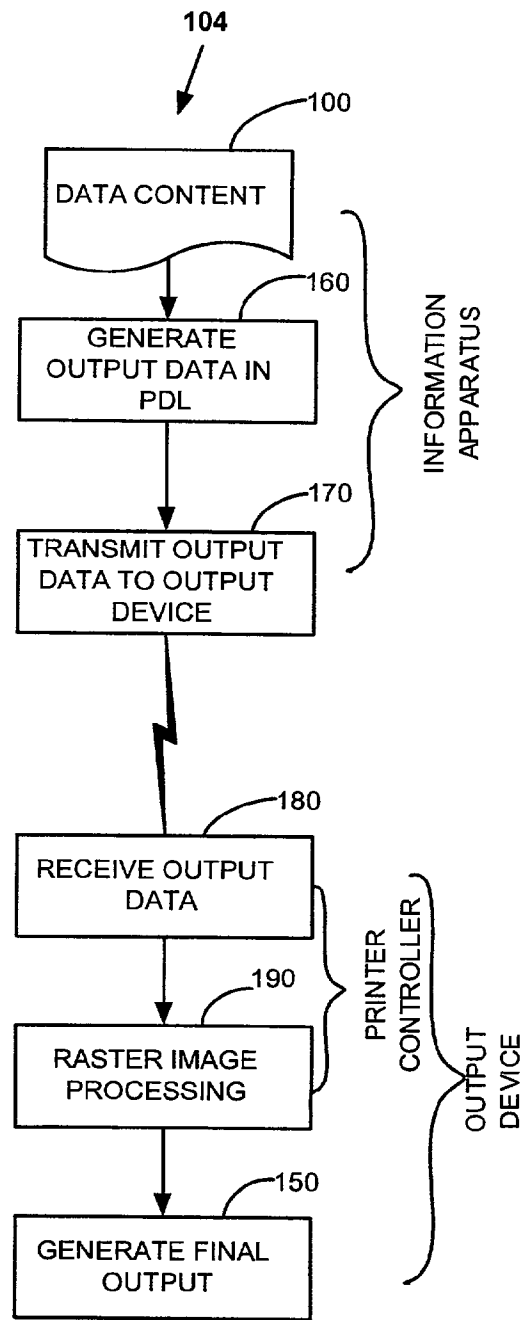
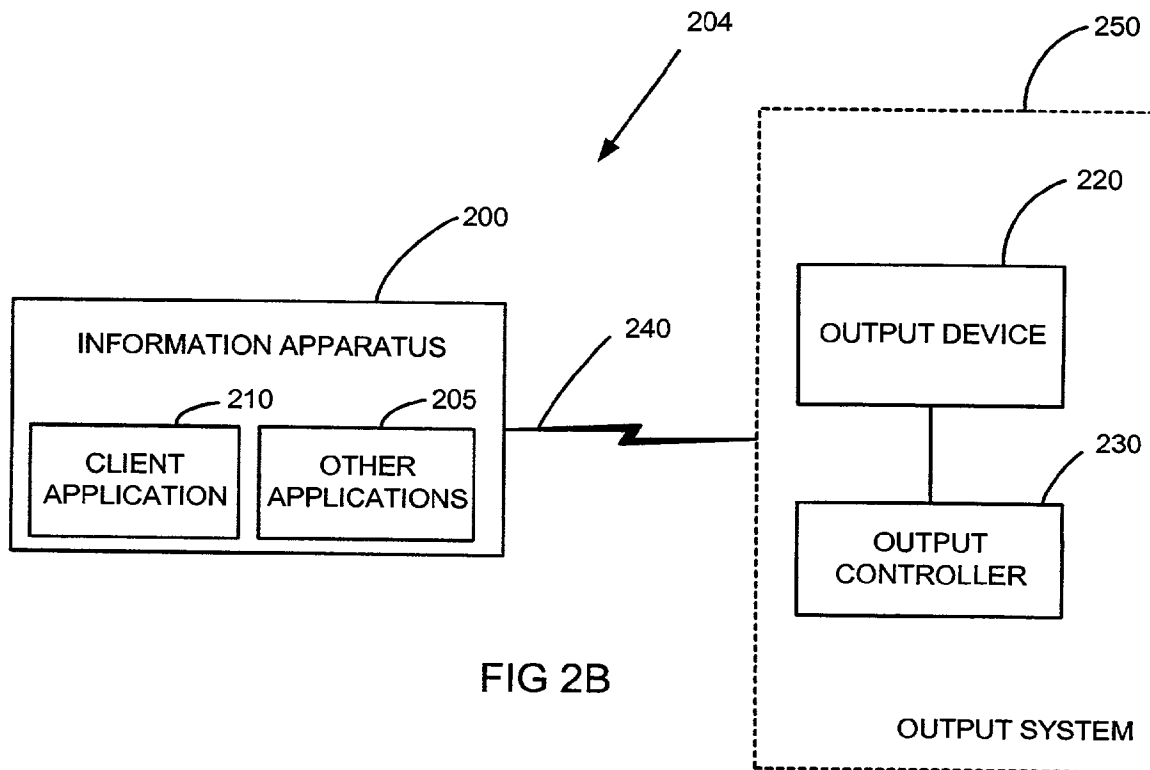
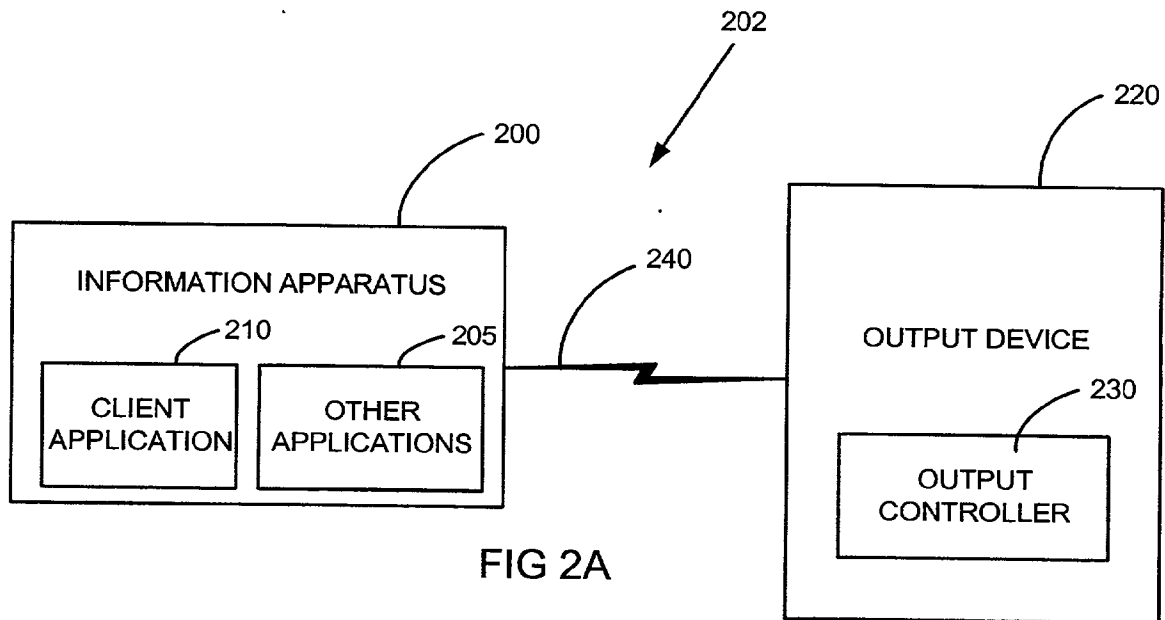


FIG 1 B



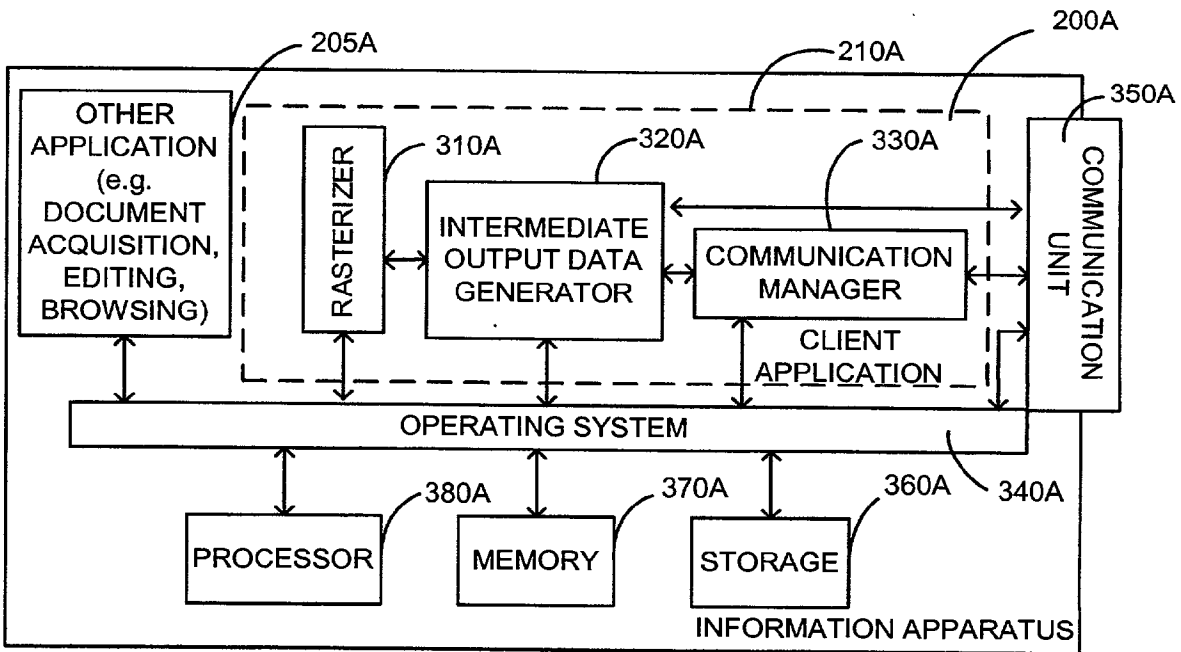


FIG 3A

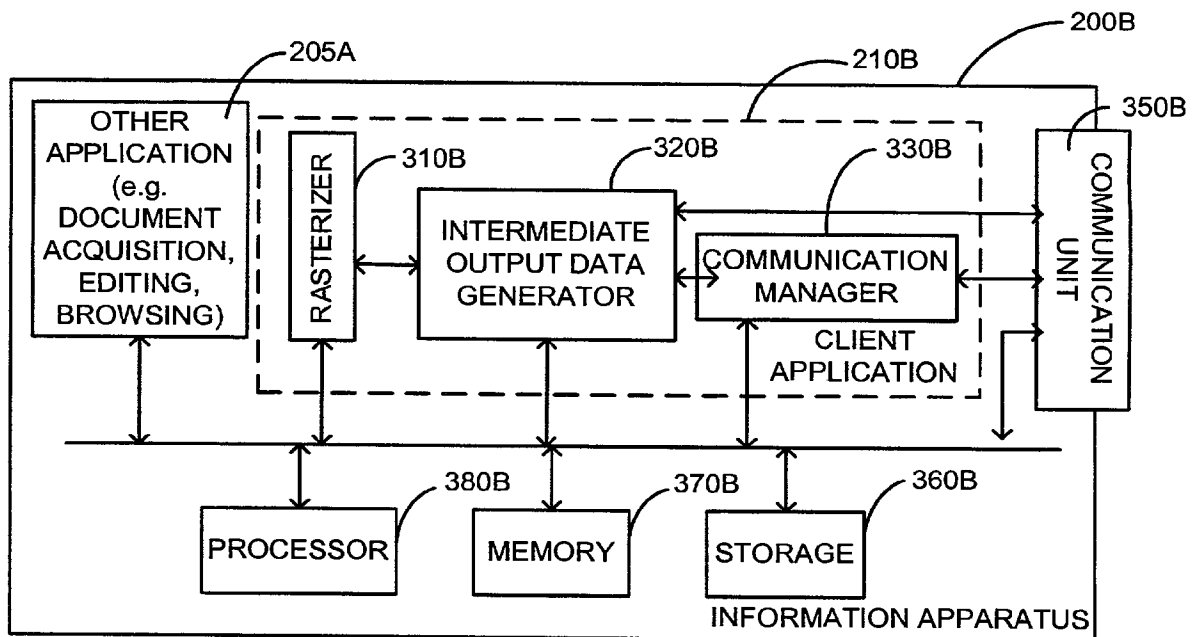


FIG 3B

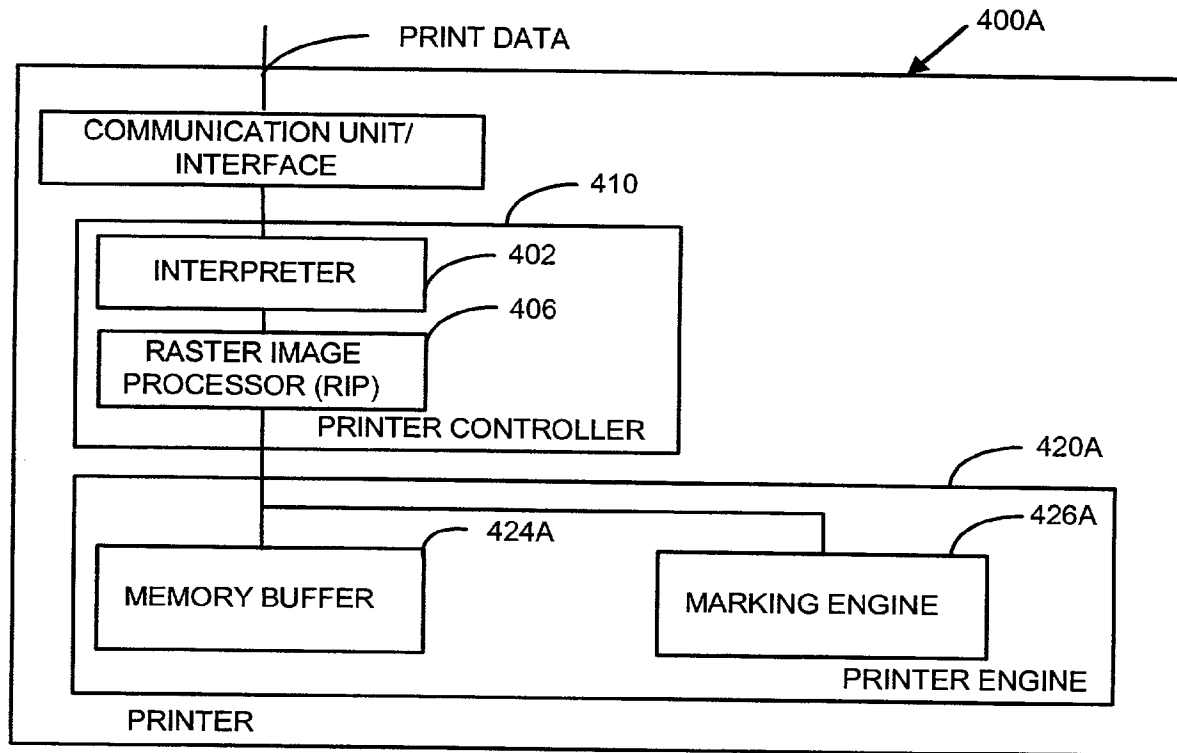


Fig. 4 A

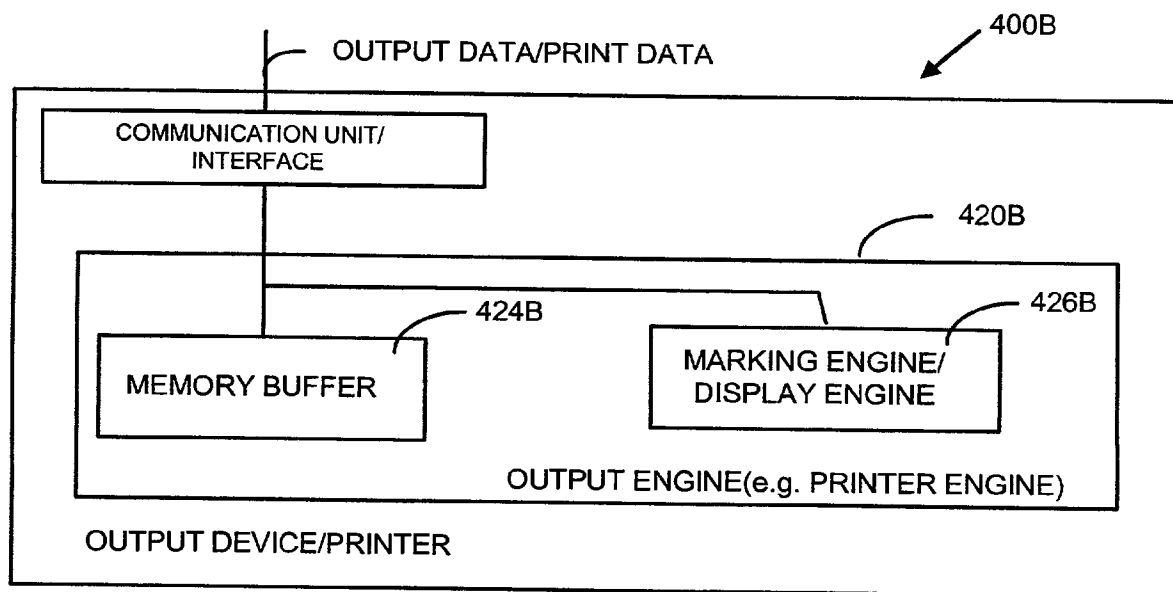


Fig. 4 B

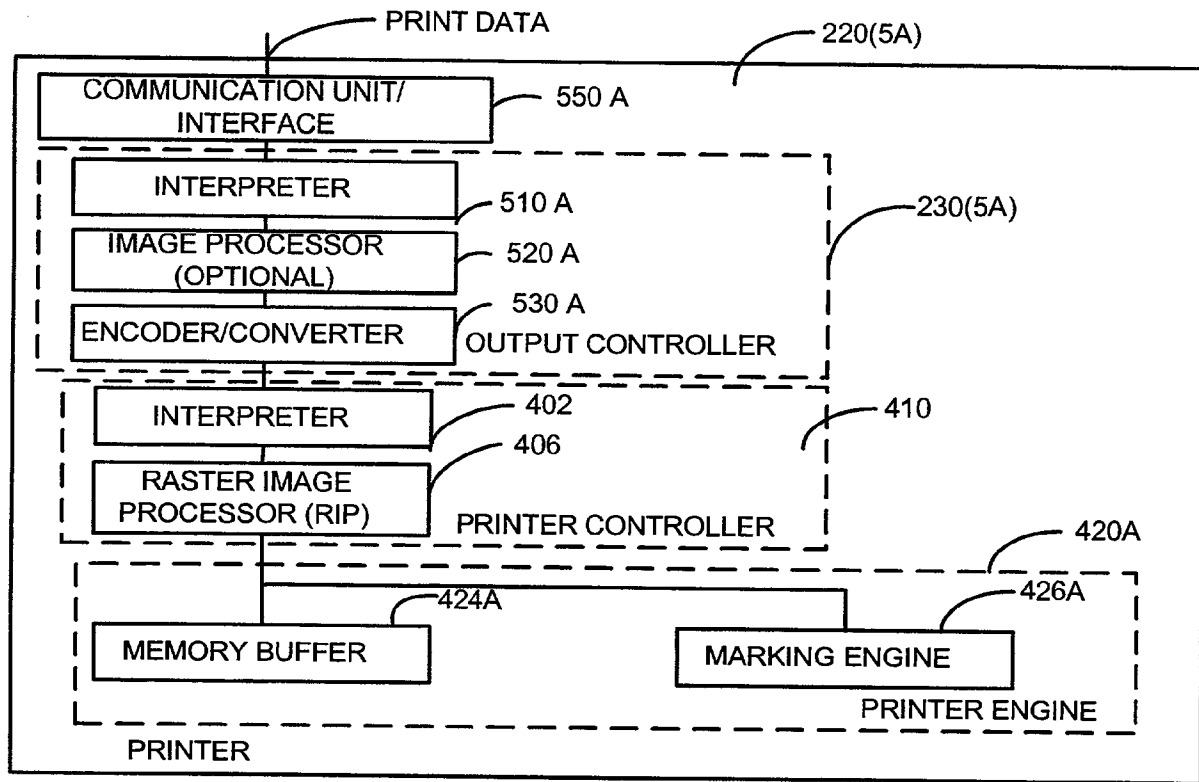


Fig. 5 A

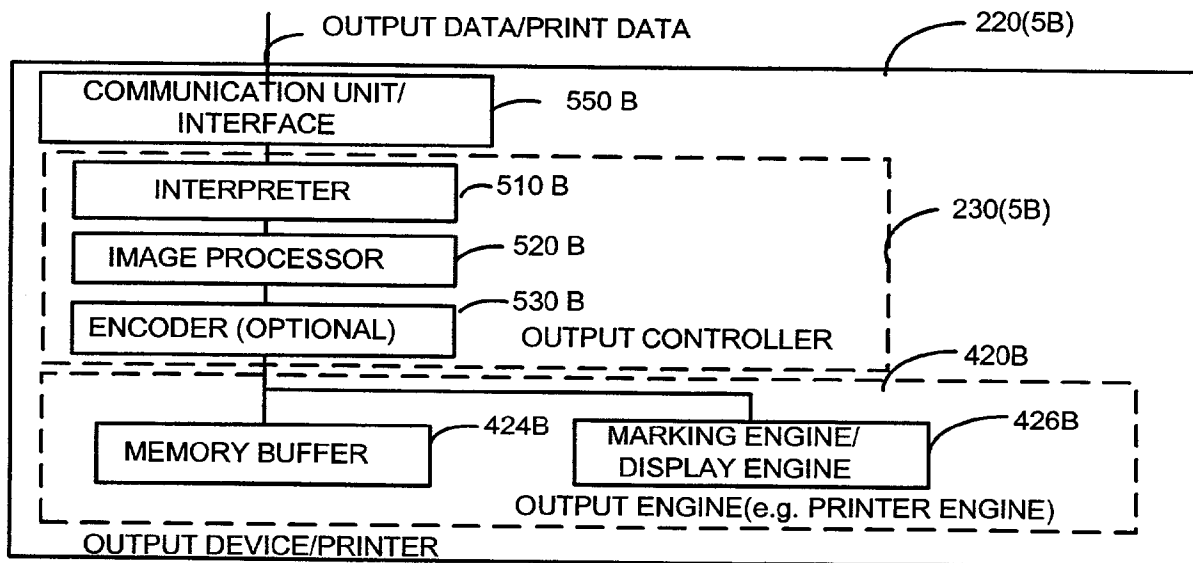


Fig. 5 B

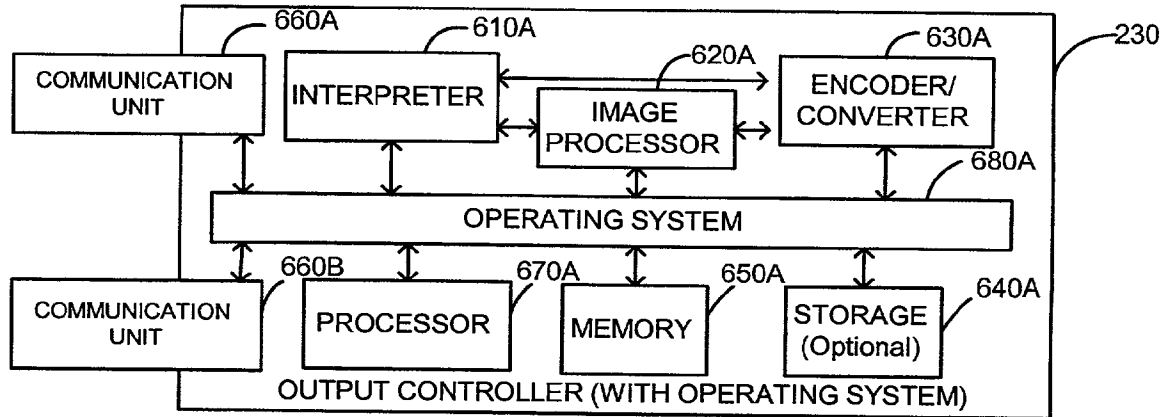


Fig 6 A

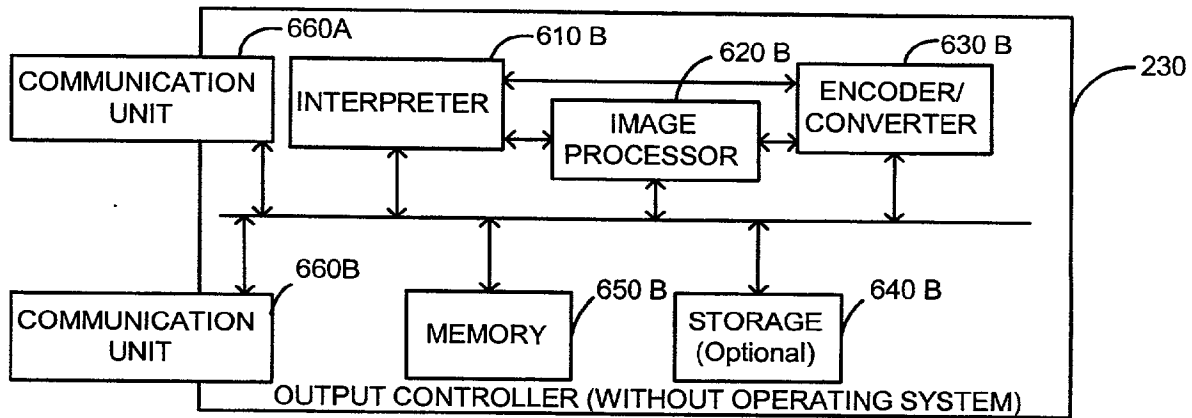


FIG 6 B

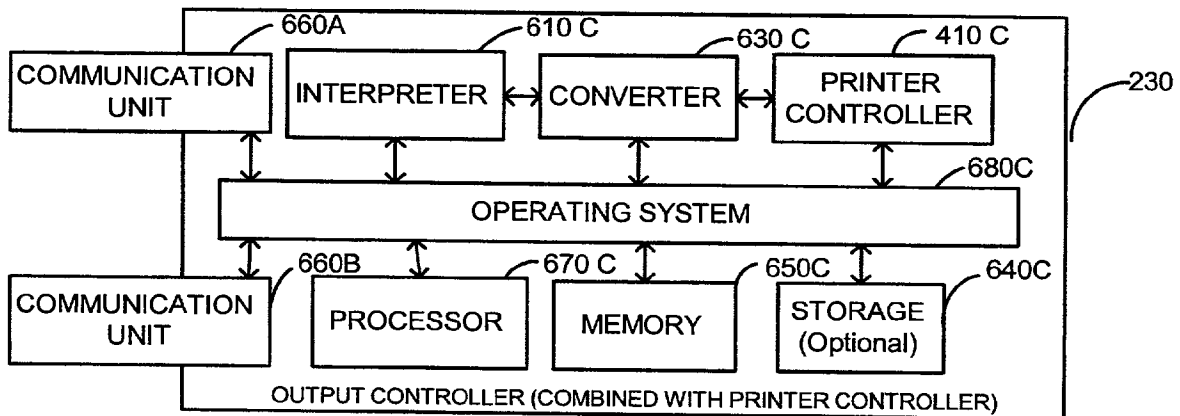


FIG 6 C

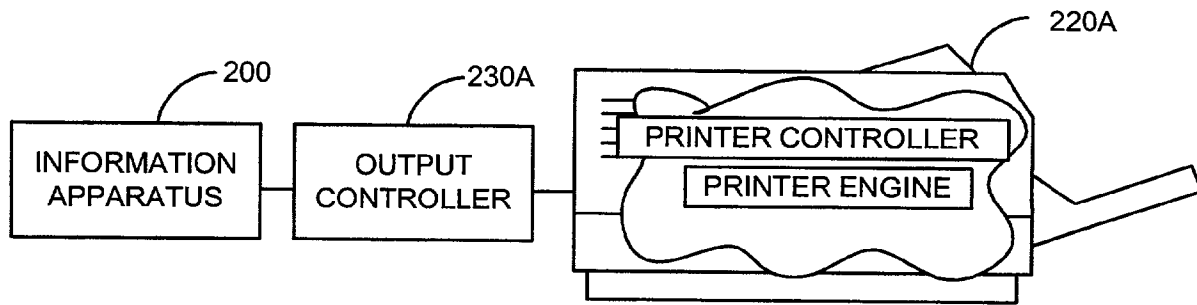


Fig. 7A

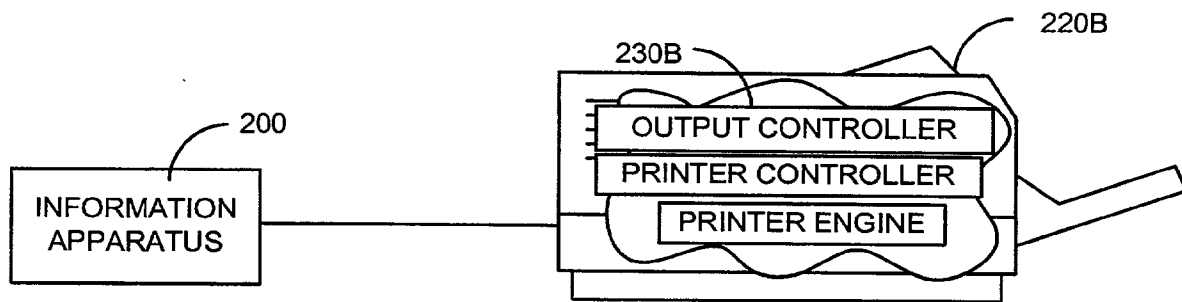


Fig. 7B

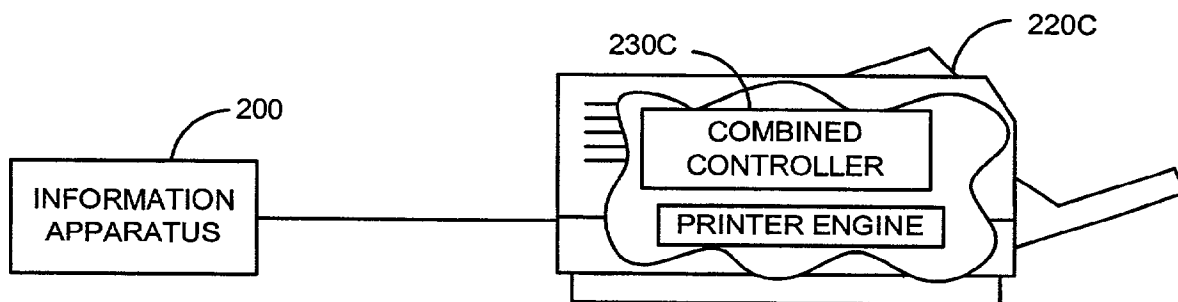


Fig. 7C

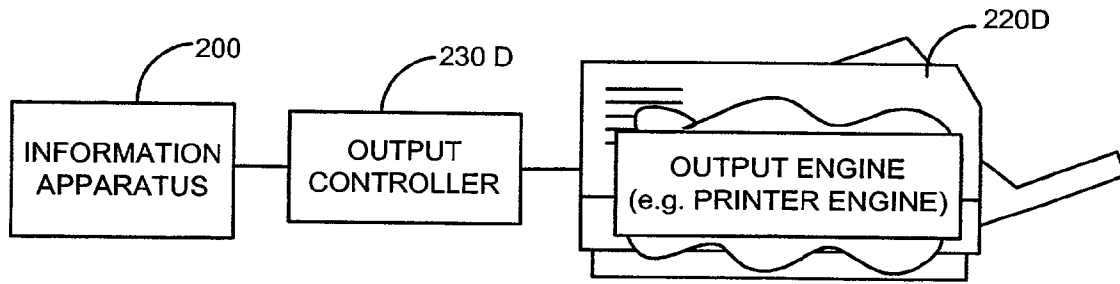


FIG 7D

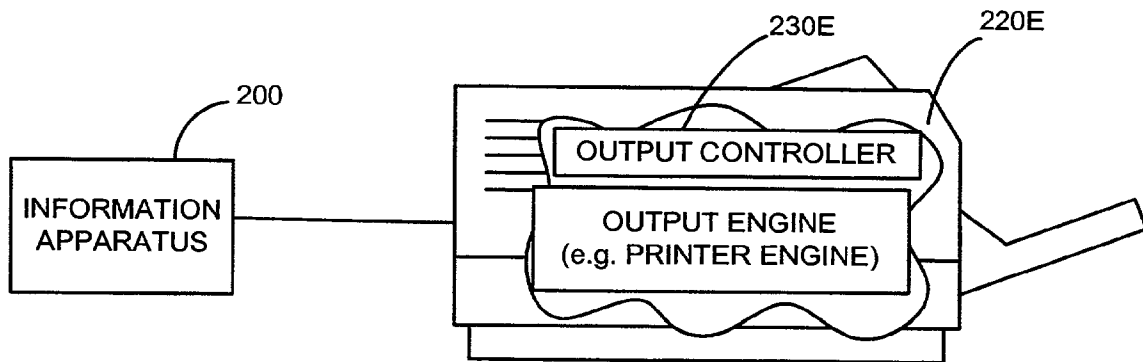


FIG 7E

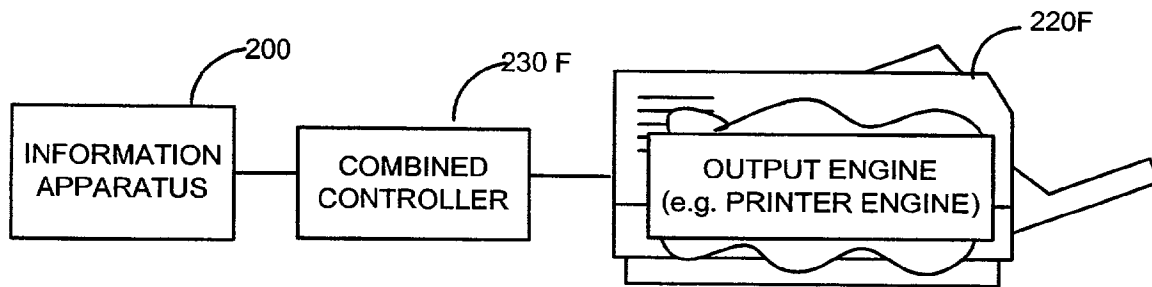


FIG 7F

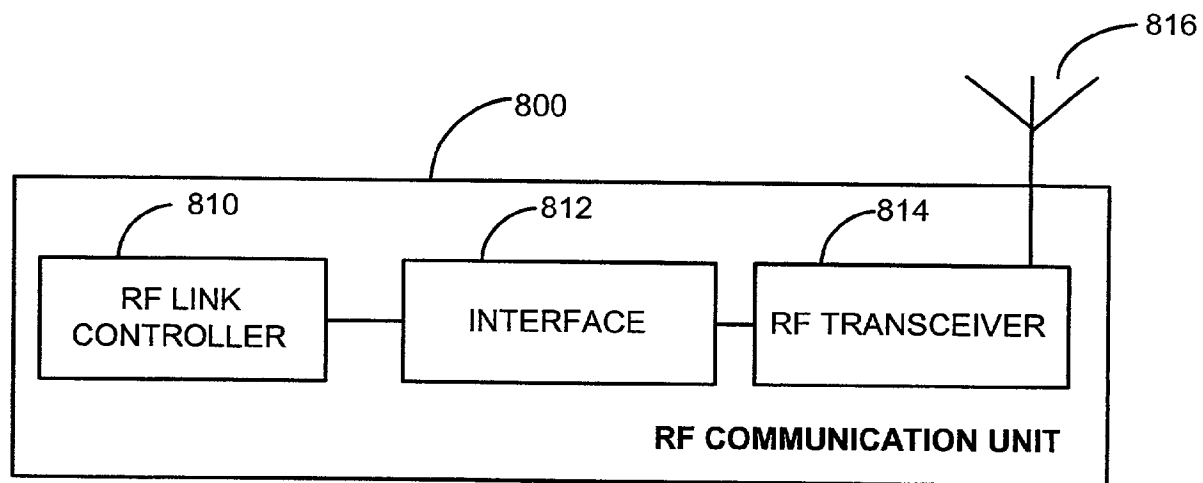


FIG 8A

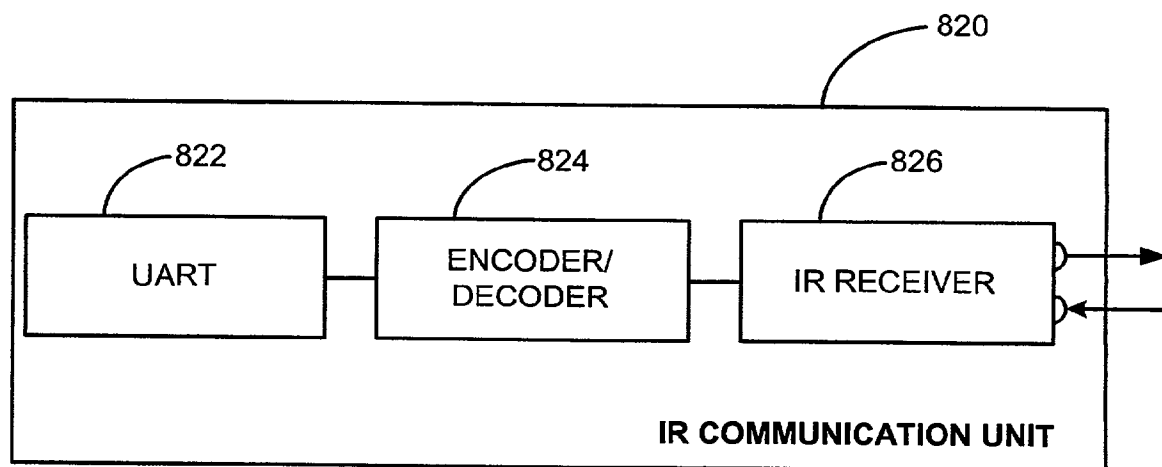


FIG 8B

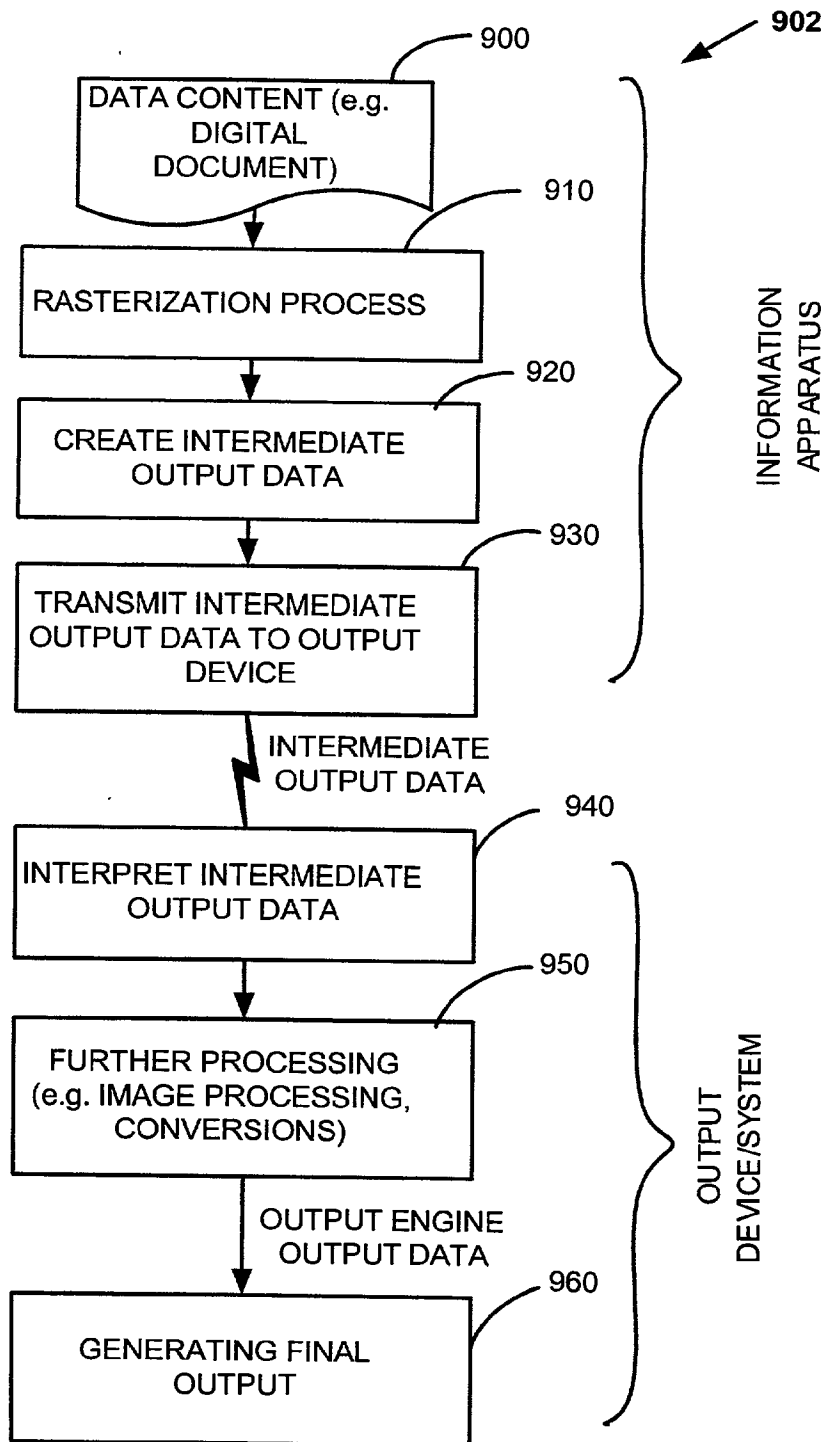


FIG 9

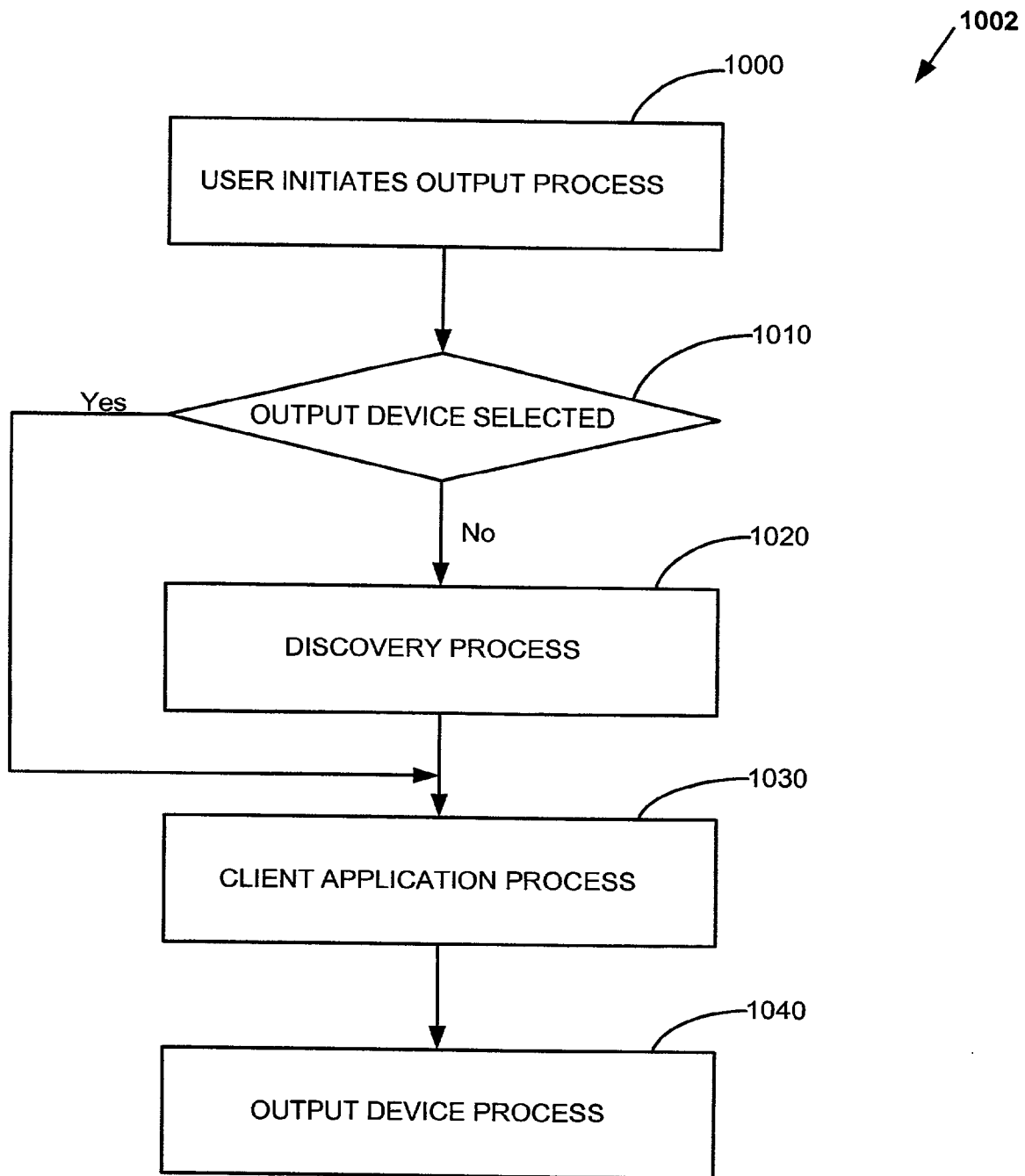


FIG 10

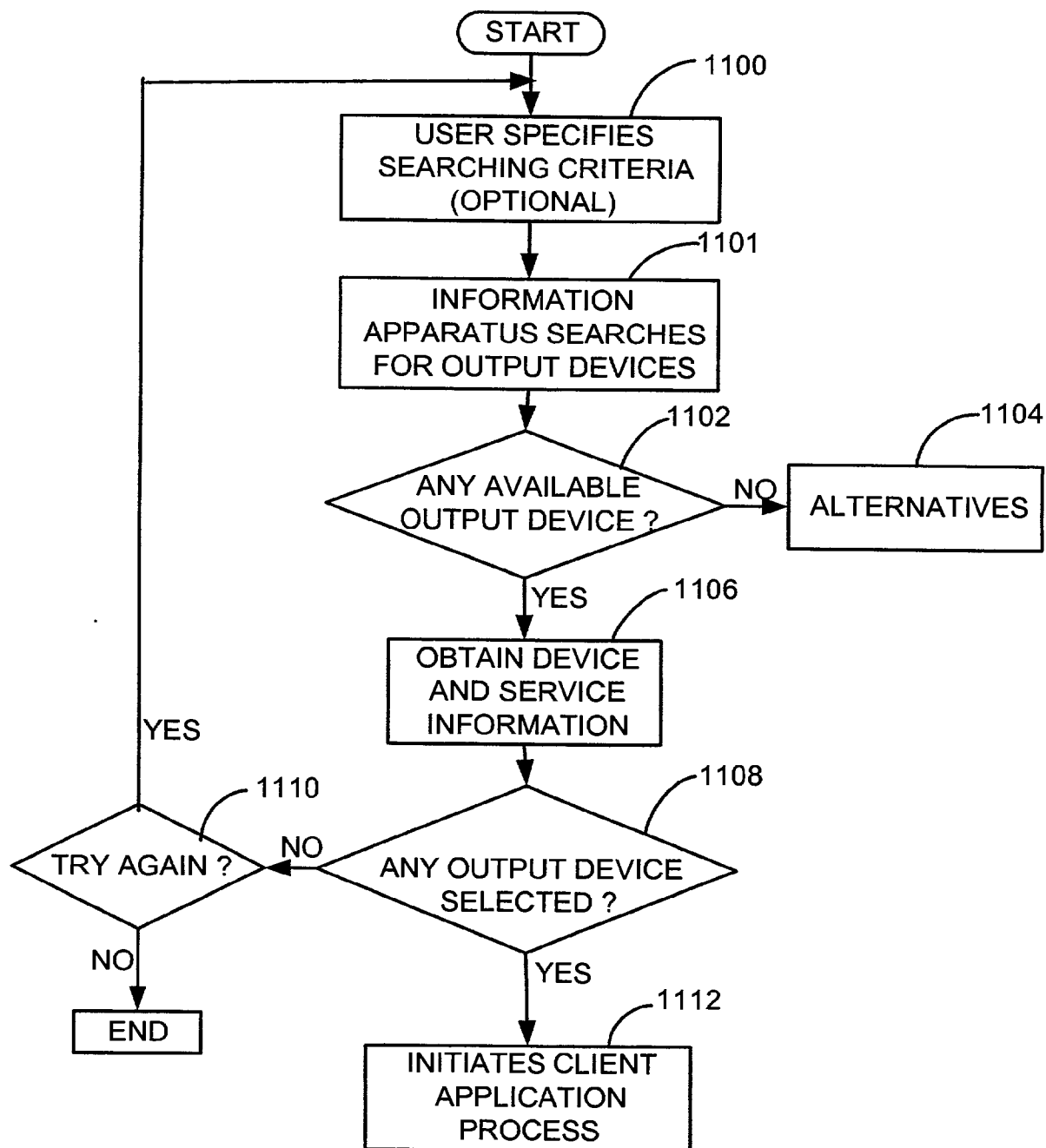


FIG 11

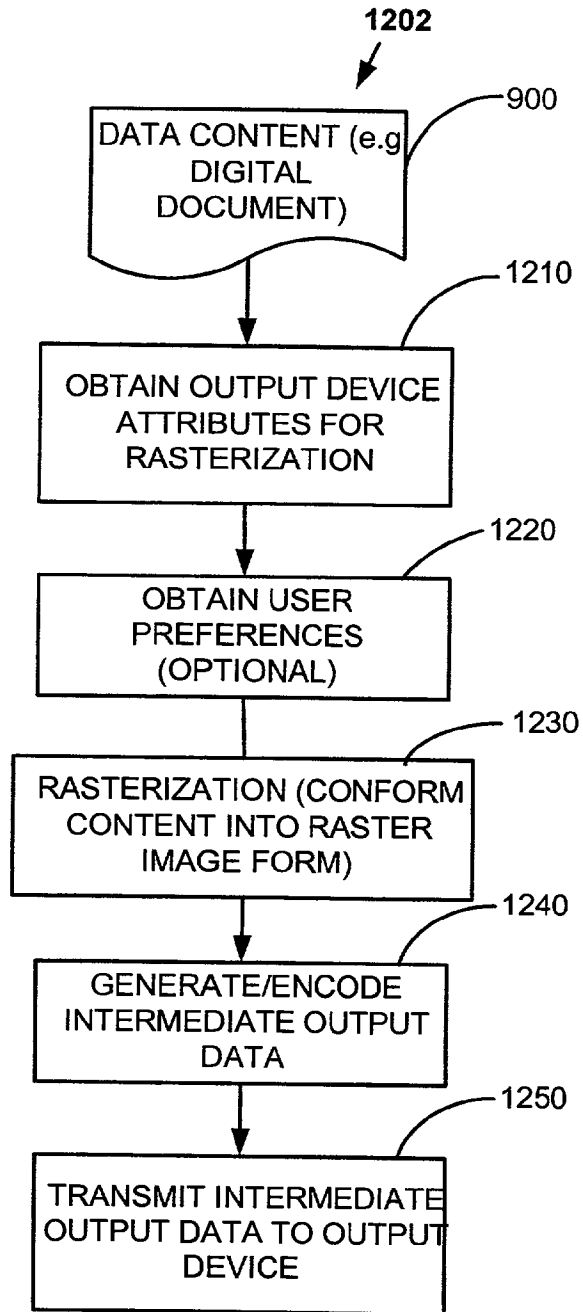


FIG 12 A

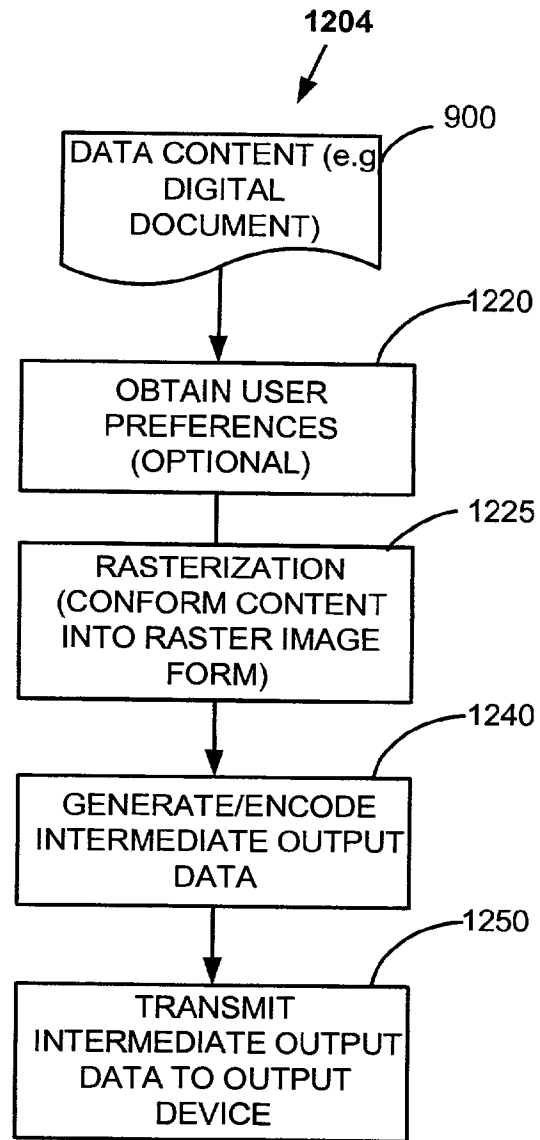


FIG 12 B

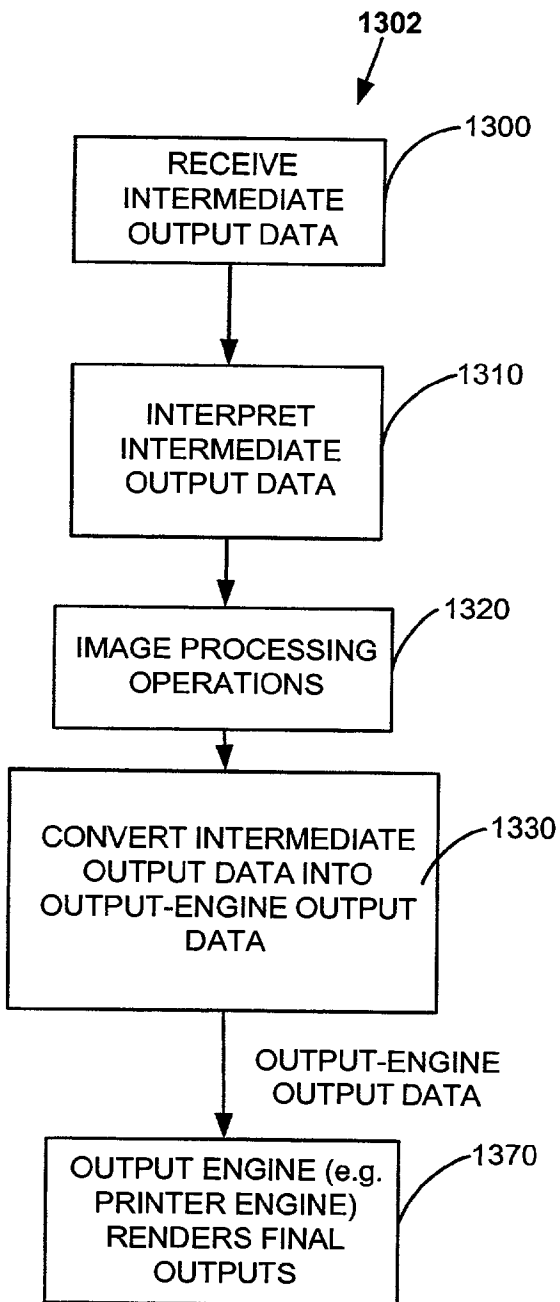


FIG 13 A

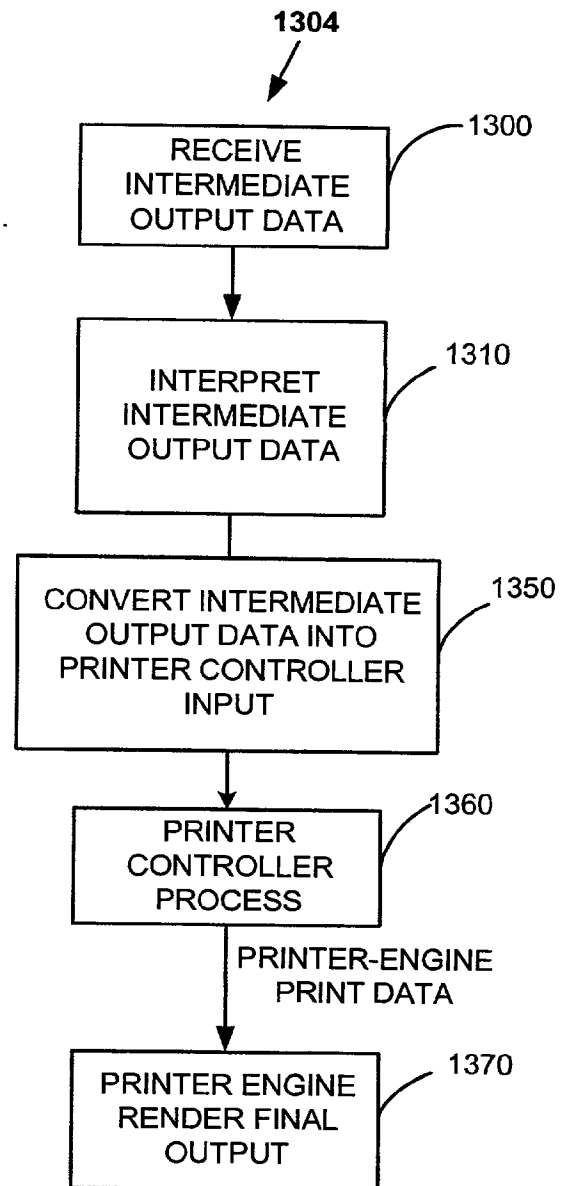


FIG 13 B

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**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

Title of Invention	ENABLING INTELLIGENT WIRELESS DISPLAY, WIRELESS MIRROR, OR WIRELESS PLAY OVER AIR OF DIGITAL CONTENT FROM MOBILE INFORMATION APPARATUS, SUCH AS SMART PHONES, TO WIRELESS OUTPUT DEVICES, SUCH AS SMART TELEVISIONS
-------------------------------	--

As the below named inventor, I hereby declare that:

This declaration
is directed to:☐

The attached application, or

☒United States application or PCT international application number 10/053765
filed on 01/18/2002

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001
by fine or imprisonment of not more than five (5) years, or both.**WARNING:**

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTORInventor: William Ho Chang

Date (Optional):

May 30, 2013Signature: William Ho Chang

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This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

Title of
Invention

ENABLING INTELLIGENT WIRELESS DISPLAY, WIRELESS MIRROR, OR WIRELESS PLAY OVER
AIR OF DIGITAL CONTENT FROM MOBILE INFORMATION APPARATUS, SUCH AS SMART
PHONES, TO WIRELESS OUTPUT DEVICES, SUCH AS SMART TELEVISIONS

As the below named inventor, I hereby declare that:

This declaration
is directed to:

☐

The attached application, or

☒

United States application or PCT international application number 10/053765
filed on 01/18/2002

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001
by fine or imprisonment of not more than five (5) years, or both.

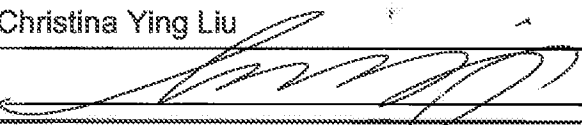
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LEGAL NAME OF INVENTOR

Inventor: Christina Ying Liu

Date (Optional): _____

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/594,440	05/12/2017	William Ho Chang	FXT315CON8

CONFIRMATION NO. 7903

PUBLICATION NOTICE



OC000000093801571

23581
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200 PACIFIC BUILDING
520 SW YAMHILL STREET
PORTLAND, OR 97204

Title:SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE

Publication No.US-2017-0249116-A1

Publication Date:08/31/2017

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903
152 7590 04/10/2019 CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP 111 SW Columbia Street Suite 725 PORTLAND, OR 97201			EXAMINER DRAGOESCU, CLAUDIA B	
			ART UNIT	PAPER NUMBER
			2141	
			MAIL DATE	DELIVERY MODE
			04/10/2019	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions. This action is in response to the Application filed on 5/12/17. Claims 1-20 are presented for examination.

Priority

2. The present invention is a continuation of applications 10/016223, 10/053765 and 12/903048, and a continuation-in-part of applications 09/992413 and 13/710299. The subject matter described in the present invention, such as figures 9-13, is not present in parent applications 10/016223, 12/903048, 09/992413 and 13/710299, but is present in figures 9-13 of parent application 10/053765. Therefore the priority date of the present invention is the filing date of application 10/053765, 1/18/02.

Information Disclosure Statement

3. Cited in MPEP 2004 Aids or Compliance With Duty of Disclosure: It is desirable to avoid the submission of long lists of documents if it can be avoided. Eliminate clearly irrelevant and marginally pertinent cumulative information. If a long list is submitted, highlight those documents which have been specifically brought to applicant's attention and/or are known to be of most significance. See *Penn Van Boats, Inc. v. Sea Lark Boats, Inc.*, 359 F. Supp. 948, 175 USPQ 260 (S.D. Fla. 1972), aff 'd, 479 F.2d 1338,

178 USPQ 577 (5th Cir. 1973), cert. denied, 414 U.S. 874 (1974). But cf. *Molins PLC v. Textron Inc.*, 48 F.3d 1172, 33 USPQ2d 1823 (Fed. Cir. 1995).

An applicant's duty of disclosure of material and information is not satisfied by presenting a patent examiner with "a mountain of largely irrelevant [material] from which he is presumed to have been able, with his expertise and with adequate time, to have found the critical [material]. It ignores the real world conditions under which examiners work." *Rohm & Haas Co. v. Crystal Chemical Co.*, 722 F.2d 1556, 1573 [220 USPQ 289] (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). (Emphasis in original). Patent applicant has a duty not just to disclose pertinent prior art references but to make a disclosure in such way as not to "bury" it within other disclosures of less relevant prior art; See *Golden Valley Microwave Foods Inc. v. Weaver Popcorn Co. Inc.*, 24 USPQ2d 1801 (N.D. Ind. 1992); *Molins PLC v. Textron Inc.*, 26 USPQ2d 1889, at 1899 (D.Del 1992); *Penn Van Boats, Inc. v. Sea Lark Boats, Inc. et al.*, 175 USPQ 260, at 272 (S.D. Fl. 1972).

It is impractical for the examiner to review the references thoroughly with the number of references cited in the case (ninety pages of Information Disclosure Statements, and more than five hundred references). By initialing each of the cited references on the accompanying 1449 forms, the examiner is merely acknowledging the submission of the cited references and merely indicating that only a cursory review is made of the cited references.

Claim Rejections - 35 U.S.C. 103

4. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-12, 14-18 and 20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Atkinson et al (U.S. Patent Application 20020012329) in view of Eldridge et al (U.S. Patent 6,430,601) and in view of Lamming et al (U.S. Patent 5,862,321).

Re claims 1, 8 and 14, Atkinson et al teaches a non-transitory computer readable storage medium having recorded therein software that is executable at

a mobile information apparatus (*i.e. mobile device (par. 17)*) to set up an output system device for accessing a service, operated, at least partly, over a network, at least part of the software is either pre-installed at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network, the output system device includes wireless communication circuitry for wireless communication and at least an output device for output of digital content (*i.e. wireless communication devices (par. 4)*), and the output system device is a distinct device from the mobile information apparatus (*i.e. a first Bluetooth device accesses a second Bluetooth device, for example, a printer, to print documents stored on the first Bluetooth enabled device (FIG. 10 and par. 101)*), the mobile information apparatus includes:

memory for storing at least part of the software (*i.e. memory (par. 25)*),

one or more processors (*i.e. processor (par. 32)*),

one or more wireless communication units for wireless communication (*i.e.* ***Bluetooth communications take place among devices grouped in piconets (par. 7). Implementing wireless connectivity: a wireless communication protocol may be implemented to enable wireless devices to communicate with each other. The protocol is compatible with Bluetooth.TM. protocol specification (FIG. 4 and par. 52))***; and

wherein, when the one or more processors included in the mobile information apparatus executes at least part of the software at the mobile information apparatus, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system device, the wireless device discovery of the output system device is based, at least in part, on physical proximity between the mobile information apparatus and the output system (*i.e. method for discovery of remote devices (title). Phone discovers print service in range (FIG. 10 step 172 and par. 102). Communicate with the remote device to request an inquiry (i.e., a process of discovering other active devices in accessible range), to setup connections, for authentication, and remote device information (par. 68))*;

(4) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication or a wireless local area network communication (*i.e. the link manager searches for other*

Bluetooth devices within its communication range, establishes links (par. 14).

Commands to setup connections (par. 68). Upon establishing a connection, an application that owns this connection is the only one that sees data for this connection (FIG. 7 and par. 79)); and

(5) wirelessly transmits, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4), security information or authentication information to the output system device, the security information or the authentication information is to facilitate, at least in part, the output system device to access the service operated, at least partly, over the network ***(i.e. the link manager handles authentication (par. 14). The Bluetooth specification defines a set of authentication procedures like Link Key Request and PIN code request. The functionality could be provided with an application, for example, application written for conducting a financial transaction with another device (par. 60). A first Bluetooth device accesses a second Bluetooth device, for example, a printer, to print documents stored on the first Bluetooth enabled device (FIG. 10 and par. 101)).***

Atkinson et al doesn't expressly teach

(2) displays an user interface item or icon;

(3) receives a selection of the user interface item or icon; and

(4) the establishing of the wireless communication link is based on having received the indication of a selection of the user interface item or icon in (3).

Eldridge et al teaches

(2) displays, on the screen interface of the mobile information apparatus, an user interface item or icon related to the output system device wirelessly discovered in (1) for user selection ***(i.e. once a list of available services is received at the mobile computing device 118, the "Services Directory" screen 804 shown in FIG. 8 is presented at user interface 500 (FIG. 8 and col. 10 lines 54-56))***;

(3) receives, via the screen interface, at least an indication of a selection of the user interface item or icon displayed on the screen interface in (2) ***(i.e. a user invokes the print command button 802 while selecting print service 801. The user selected the print service 801 that is coupled to the IR port to which the mobile computing device is communicating with (FIG. 4B, 8 and col. 10 lines 56-62))***; and

(4) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication or a wireless local area network communication, and the establishing of the wireless communication link is based on having received the indication of a selection of the user interface item or icon in (3) ***(i.e. the mobile computing device transmits the request specified by the user in display screen 804 (FIG. 4B, 8 and col. 11 lines 1-3))***; and

(5) wirelessly transmits, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4), security information or authentication information to the output system device, the security information or the authentication information is to facilitate, at least in part, the output system device to access the service operated, at least partly, over the network

(i.e. the IR gateway authenticates the request using the certificate server (col. 6 lines 13-15)).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to add the teachings of Eldridge et al to display a list of discovered near proximity devices, and allow the user to select a device to communicate with, because doing so would allow a user to select a device to communicate with, which would increase the flexibility of operating the mobile device.

Atkinson et al and Eldridge et al imply a touch screen display, because both teach a mobile device, and it is well known that mobile devices have touch screen displays. However, Atkinson et al and Eldridge et al don't expressly teach a touch sensitive screen interface for interacting with a user.

Lamming et al teaches a touch sensitive screen interface for interacting with a user ***(i.e. mobile device has touch screen (FIG. 2 and col. 5 lines 62-64))***;

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to add the teachings of Lamming et al to use a mobile device with a touch screen for selecting a printer, because doing so would allow the user to use a well-known input/output method common in many mobile devices.

In addition, re claim 8, Atkinson et al teaches (2) wirelessly receiving, using the one or more wireless communication units of the mobile device, device information from the output system that has been wireless device discovered by the mobile device in (1), the device information is related, at least in part, to the output system discovered in (1) ***(i.e.***

printer sends profile and driver over Bluetooth connection (FIG. 10 steps 175, 180 and par. 102)).

In addition, re claim 14, Atkinson et al teaches (4) wirelessly manages or wirelessly drives, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), the output device, wherein the wireless managing or the wireless driving of the output device in (4) further comprises:

(5) wirelessly sending, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), first information or a query to the output device; and

(6) wirelessly receiving, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), second information or a response from the output device, the second information or the response wirelessly received from the output device is in response to having wirelessly sent the first information or the query to the output device in (5) (*i.e.*

gathering required print service information (block 173), if the first device does not have a print profile installed (block 174), the printer sends the appropriate profile to the first device (block 175). In order to print color pages (block 176), another attribute of the printer could communicate to the first device that a special printer driver would be required to format the data correctly. Again, the printer could deliver the required driver to the first device via the Bluetooth

connection (block 180). After the profile and driver are downloaded, the user could print pages (FIG. 10 steps 173-178 and par. 102)).

Re claims 2, 10 and 16, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 1. Atkinson et al further teaches wherein the one or more wireless communication units of the mobile information apparatus supports at least part of a protocol within Bluetooth specifications, and the wireless communication link between the mobile information apparatus and the output system device established in (4), using the one or more wireless communication units, is compatible with at least part of a protocol within Bluetooth specifications **(i.e. Bluetooth architecture (FIG. 1 and par. 12). The device is a wireless device with a Bluetooth.TM. compatible protocol stack (par. 25, 29)).**

Re claims 3, 10 and 15, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 2. Atkinson et al further teaches wherein the one or more wireless communication units of the mobile information apparatus further support at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication **(i.e. a wireless device with a IEEE 802.11 communication protocol (par. 29)).**

Art Unit: 2141

Re claims 4 and 11, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 3. Atkinson et al further teaches wherein the security information or authentication information wirelessly transmitted to the output system device in (5) is to facilitate, at least in part, the output system device to establish a wireless local area network connection between the mobile information apparatus and the output system device ***(i.e. enable personal networking between wireless devices (par. 19). The first device could acquire the profile classes using wireless capabilities, for example, wireless LAN network (block 179) (FIG. 10 step 179 and par. 102)).***

Re claims 6, 13 and 19, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 1. Atkinson et al further teaches wherein the output system device is at least one of a sound output system, a television system, an output controller connectable to a television, a projection system device, a printing system device, a speaker system device, or an information apparatus that is an Internet appliance, individually or in any combination ***(i.e. remote printing: a first Bluetooth device accesses a second Bluetooth device, for example, a printer, to print documents stored on the first Bluetooth enabled device (FIG. 10 and par. 101)).***

Re claim 7, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 2. Atkinson et al further teaches wherein the mobile information

apparatus is a smart phone, and wherein, subsequent to establishing the wireless communication link between the mobile information apparatus and the output system device in (4), the mobile information apparatus further wirelessly manages or wirelessly drives the output system device using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4) ***(i.e. gathering required print service information (block 173), if the first device does not have a print profile installed (block 174), the printer send the appropriate profile to the first device (block 175). In order to print color pages (block 176), another attribute of the printer could communicate to the first device that a special printer driver would be required to format the data correctly. Again, the printer could deliver the required driver to the first device via the Bluetooth connection (block 180). After the profile and driver are downloaded, the user could print pages (FIG. 10 steps 173-178 and par. 102)).***

Re claim 9, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 8. Atkinson et al further teaches wherein the wireless device discovering of the output system in (1) is based, at least in part, on physical proximity between the mobile device and the output system ***(i.e. phone discovers print service in range (FIG. 10 step 172 and par. 102). Communicate with the remote device to request an inquiry (i.e., a process of discovering other active devices in accessible range), to setup connections, for authentication, and remote device information (par. 68)).***

Re claims 12 and 20, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 11. Atkinson et al further teaches wherein the establishing of the output service includes accessing a server operated, at least partly, over the Internet, the accessing of the server being subsequent to having established the wireless local area network connection, and wherein the security information or authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, a biometric, a fingerprint, or a voice, individually or in any combination ***(i.e. the Security Implementation Module may handle the exchange of Keys or PIN Codes (par. 60)).***

Re claim 17, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 16. Atkinson et al further teaches wherein the mobile information apparatus further wirelessly receives, using the one or more wireless communication units of the mobile information apparatus, device information from the output device, the device information includes an attribute related, at least in part, to the output device ***(i.e. gathering required print service information (block 173), if the first device does not have a print profile installed (block 174), the printer sends the appropriate profile to the first device (block 175). In order to print color pages (block 176), another attribute of the printer could communicate to the first device that a special printer driver would be required to format the data correctly. Again, the***

printer could deliver the required driver to the first device via the Bluetooth connection (block 180). After the profile and driver are downloaded, the user could print pages (FIG. 10 steps 173-178 and par. 102)).

Atkinson et al and Eldridge et al don't expressly teach wherein the user interface item displayed on the touch sensitive screen in (2) is related to the device information received from the output device.

Lamming et al teaches wherein the user interface item displayed on the touch sensitive screen in (2) is related to the device information received from the output device ***(i.e. as the user moves from room to room, the user's mobile device displays the available printers in each room by name (FIG. 4-5 col. 8 lines 19-24). Examiner note: the device attributes are the printer name and device type, i.e. printer or fax machine).***

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to add the teachings of Lamming et al to display information about the discovered devices, because doing so would allow the user to make better and more informed decisions regarding which device to select.

Re claim 18, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 14. Atkinson et al further teaches wherein the mobile information apparatus establishes the wireless communication link ***(i.e. the link manager searches for other Bluetooth devices within its communication range, establishes links (par. 14). Commands to setup connections (par. 68). Upon establishing a***

connection, an application that owns this connection is the only one that sees data for this connection (FIG. 7 and par. 79)).

Atkinson et al doesn't expressly teach receiving, via the touch sensitive screen interface, at least an indication of a selection of the user interface item displayed on the touch.

Eldridge et al teaches receiving, via the touch sensitive screen interface, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (2) **(i.e. once a list of available services is received at the mobile computing device 118, the "Services Directory" screen 804 shown in FIG. 8 is presented at user interface 500 (FIG. 8 and col. 10 lines 54-56). A user invokes the print command button 802 while selecting print service 801. The user selected the print service 801 that is coupled to the IR port to which the mobile computing device is communicating with (FIG. 4B, 8 and col. 10 lines 56-62)); and**

subsequent to receiving the indication of a selection via the touch sensitive screen, the mobile information apparatus establishes the wireless communication link in (3) **(i.e. the mobile computing device transmits the request specified by the user in display screen 804 (FIG. 4B, 8 and col. 11 lines 1-3)).**

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to add the teachings of Eldridge et al to display a list of discovered near proximity devices, and allow the user to select a device to communicate with, because doing so would allow a user to select a device to communicate with, which would increase the flexibility of operating the mobile device.

Claims 5, 13 and 19 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Atkinson et al in view of Eldridge et al and in view of Lamming et al, and further in view of White et al (U.S. Patent 7,187,947).

Re claims 5, 13 and 19, Atkinson et al and Eldridge et al and Lamming et al teach the medium according to claim 3. Atkinson et al further teaches wherein the mobile information apparatus is embodied as a smart phone or an information pad for outputting audio digital content *(i.e. the first device may be a cellular phone, or a wireless audio device (par. 25))*.

Atkinson et al and Lamming et al and Lamming et al don't expressly teach wherein the output system device includes at least one speaker for outputting audio digital content, and wherein the service operated, at least partly, over a network, provides audio digital content to the output system device.

White et al teaches teach wherein the output system device includes at least one speaker for outputting audio digital content, and wherein the service operated, at least partly, over a network, provides audio digital content to the output system device *(i.e. the device receive selective information via wireless communication and communicate the information to a second electronic device such as an automobile sound system, home stereo, etc. The device provides the automobile sound system with audio files received via wireless communication (col. 9 lines 34-46). The device communicates the received audio information to an audio system via a localized communications signaling network. One such network may include utilizing `Bluetooth` communication standard used to provide*

communication between electronic devices in a proximal setting (col. 9 lines 47-52)).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to add the teachings of White et al to use a smart phone to play audio on wireless speakers, because doing so would allow a listener to create a personal playlist and to listen to this playlist in a wireless atmosphere while enjoying CD quality sound (***col. 2 lines 7-10***).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAUDIA B DRAGOESCU whose telephone number is (571)270-7966. The examiner can normally be reached on Monday-Friday 9-5 M-F EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Ng can be reached on 571-270-1698. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business

Art Unit: 2141

Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Customer Service Representative or access to the automated information system, call

800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CLAUDIA DRAGOESCU/

Primary Examiner, Art Unit 2141

April 9, 2019

<i>Notice of References Cited</i>	Application/Control No. 15/594,440		Applicant(s)/Patent Under Reexamination Chang et al.	
	Examiner CLAUDIA B DRAGOESCU		Art Unit 2141	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20020012329-A1	01-2002	Atkinson, Timothy	G06F9/4411	370/330
*	B	US-6430601-B1	08-2002	Eldridge; Margery A.	G06Q10/10	707/E17.005
*	C	US-5862321-A	01-1999	Lamming; Michael	G06F15/0225	358/403
*	D	US-7187947-B1	03-2007	White; Russell W.	G06Q30/0267	455/556.1
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141

CPC - Searched*		
Symbol	Date	Examiner
G06F 3/017, 048\$	03/27/2019	CD
H04L 12/\$ 63/\$ 67/\$ 2012/\$	03/27/2019	CD
H04W 4/\$ 8/005 12/\$ 76/\$ 84/18	03/27/2019	CD

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Performed inventor name and assignee search	03/25/2019	CD
Performed EAST CPC class search	03/27/2019	CD
Performed EAST keyword and CPC class search	3/23-27/19	CD

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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Bibliographic Data

Application No: 15/594,440

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /CLAUDIA DRAGOESCU/

Examiner's Signature

Initials

Title:

SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
05/12/2017	715	2141	FLEX.0022-008
RULE			

APPLICANTS

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CONTINUING DATA

This application is a CIP of 13710299 12/10/2012 PAT 9798516

13710299 is a CON of 12903048 10/12/2010 PAT 8332521

This application is a CON of 10053765 01/18/2002 PAT 9836257

This application is a CIP of 09992413 11/18/2001 PAT 9965233

12903048 is a CON of 10016223 11/01/2001 PAT 7941541

10053765 has PRO of 60262764 01/19/2001

09992413 has PRO of 60252682 11/20/2000

10016223 has PRO of 60245101 11/01/2000

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

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UNITED STATES

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\$1,600

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: July 10, 2019

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
Filed : May 12, 2017
For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE
Examiner : Claudia B. Dragoescu
Art Unit : 2141
Confirmation No.: 7903

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

RESPONSE TO OFFICE ACTION

In response to the Office action dated April 10, 2019, please consider the following amendments and remarks:

Amendments to the Specification	None
Amendments to the Claims	Begin on page 2
Amendments to the Drawings	None
Remarks	Begin on page 11

REMARKS

This Response to Office Action is being filed in response to the non-final Office Action dated April 10, 2019. Claims 1-20 are pending in the application.

1. Priority

Page 2 of the Office action states:

The present invention is a continuation of applications 10/016223, 10/053765 and 12/903048, and a continuation-in-part of applications 09/992413 and 13/710299. The subject matter described in the present invention, such as figures 9-13, is not present in parent applications 10/016223, 12/903048, 09/992413 and 13/710299, but is present in figures 9-13 of parent application 10/053765. Therefore, the priority date of the present invention is the filing date of application 10/053765, 1/18/02.

Applicant disagrees with the above assertion. Paragraph 0001 of the present application recites the following:

This application is a continuation of U.S. Patent Application Serial No. 10/053,765 filed January 18, 2002, which claims priority to U.S. Provisional Patent Application Serial No. 60/262,764, filed January 19, 2001. Additionally, this application is a continuation-in-part of U.S. Patent Application Serial No. 09/992,413 filed November 18, 2001, which claims benefit of U.S. Provisional Patent Application Serial No. 60/252,682 filed November 20, 2000. Moreover, this application is a continuation-in-part of U.S. Patent Application Serial No. 13/710,299 filed December 10, 2012, which is a continuation of U.S. Patent Application Serial 12/903,048 filed October 12, 2010 and now issued as U.S. Patent No. 8,332,521, which is a continuation of U.S. Patent Application Serial No. 10/016,223 filed November 1, 2001 and now issued as U.S. Patent No. 7,941,541, and which claims benefit of U.S. Provisional Patent Application Serial No. 60/245,101, filed November 1, 2000. The complete disclosures of the above patent applications are hereby incorporated by reference for all purposes [emphasis added].

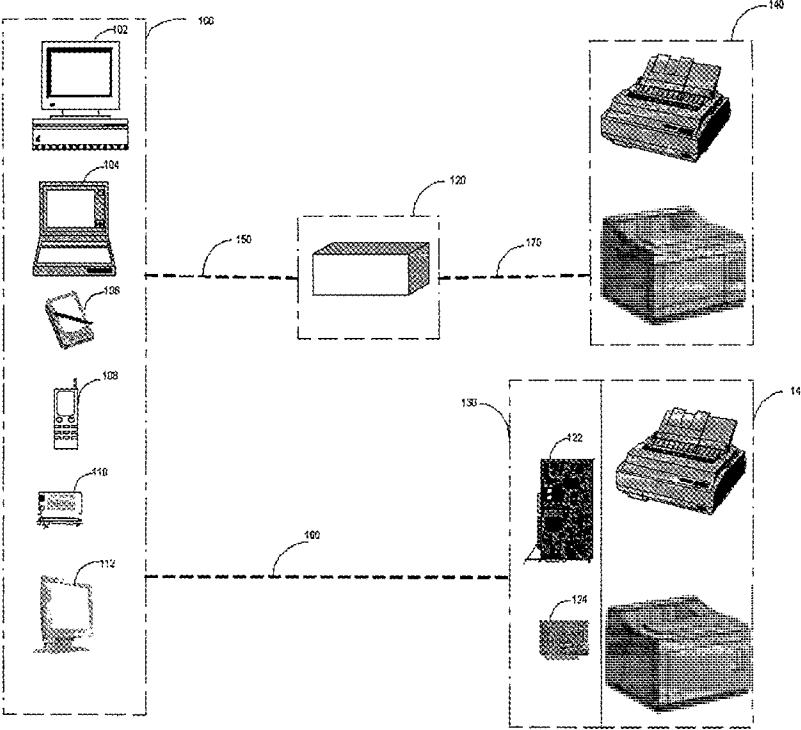
As shown above, the present application claims the benefit of U.S. Provisional Patent Application Serial No. 60/245,101, which was filed on **November 1, 2000**.

Additionally, the claim elements of the present application are adequately supported by U.S. Provisional Patent Application Serial No. 60/245,101 ("Provisional Application '101") filed on **November 1, 2000**, as further described below. Therefore,

the priority date of the present invention is **November 1, 2000**, which is the filing date of U.S. Provisional Patent Application Serial No. 60/245,101.

1.1 Support from U.S. Provisional Application Serial No. 60/245,101

Applicant asserts that each claim element in the currently pending claims is supported by U.S. Provisional Application Serial No. 60/245,101, which was filed on November 1, 2000, as shown in the table below.

Independent Claim 1	Examples of Support in U.S. Provisional Application Serial No. 60/245,101
1. A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to set up an output system device for accessing a service, operated, at least partly, over a network, the output system device includes wireless communication circuitry for wireless communication and at least an output device for output of digital content, and the output system device is a distinct device	<u>Figure 1</u> (sheet 1 of 10)  <u>An information apparatus is a computing device</u> with processing capability. Examples of information apparatus may include but not limited to desktop PC, laptop, palmtop, PDA, <u>smart phone</u>, <u>screen phone</u>, set-top boxes, e-book, Internet pad ... (page 8, lines 31-33) [emphasis added]. Furthermore, the application software in the <u>host computer can download and install application software</u>, software components

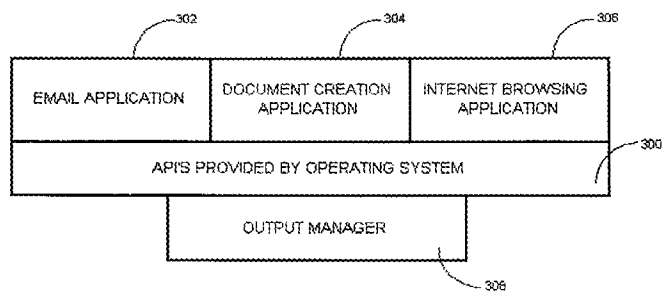
from the mobile information apparatus

and or data to the output controller for the purpose of upgrading, updating, and or modifying the features and capabilities of the output controller (page 17, lines 3-6) [emphasis added].

Once the necessary software components or data is uploaded and/or installed in the information apparatus, the information apparatus can drive or output to the output device (page 15, line 32 to page 16, line 1) [emphasis added].

An information apparatus may be a dedicated single task device (e.g. email terminal, web terminal, e-book, etc.) ... Multiple functions and features may be implemented by a plurality of software applications installed in the information apparatus with or without an operating system (page 14, lines 26-31) [emphasis added].

Figure 3A (sheet 3 of 10)



The information apparatus may be equipped with central processing unit, input/output control unit, storage unit, memory unit, and wired or wireless communication unit or adapters (page 6, lines 30-32) [emphasis added].

Output controller typically also contains a communication or adapter unit, which allows it to communicate with other devices including information apparatus through wired or wireless connections (page 16, lines 24-26) [emphasis added].

Output device is an electronic system capable of outputting digital content regardless of whether the output medium is substrate ... (page 17, lines 9-10) [emphasis added].

Figures 2A, 2B (sheet 2 of 10)

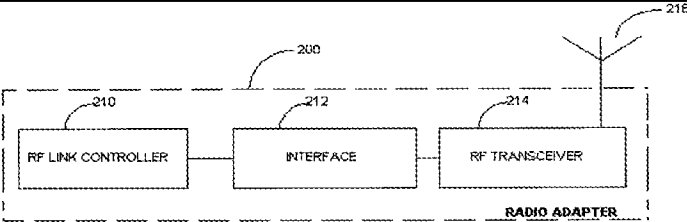
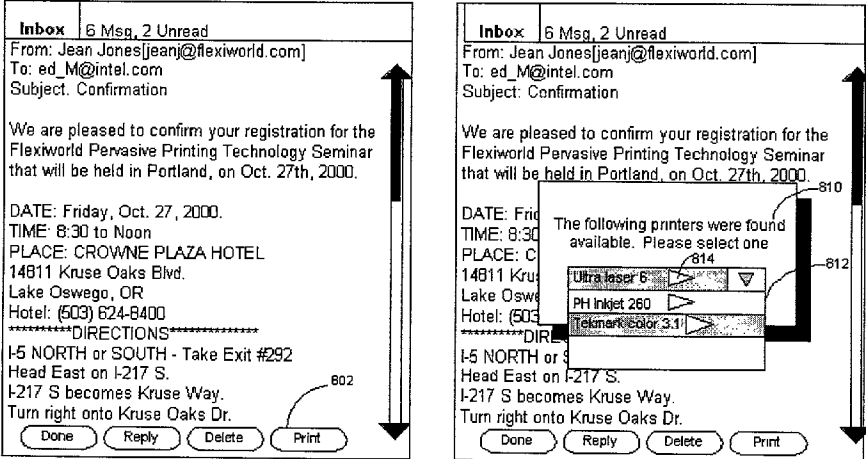
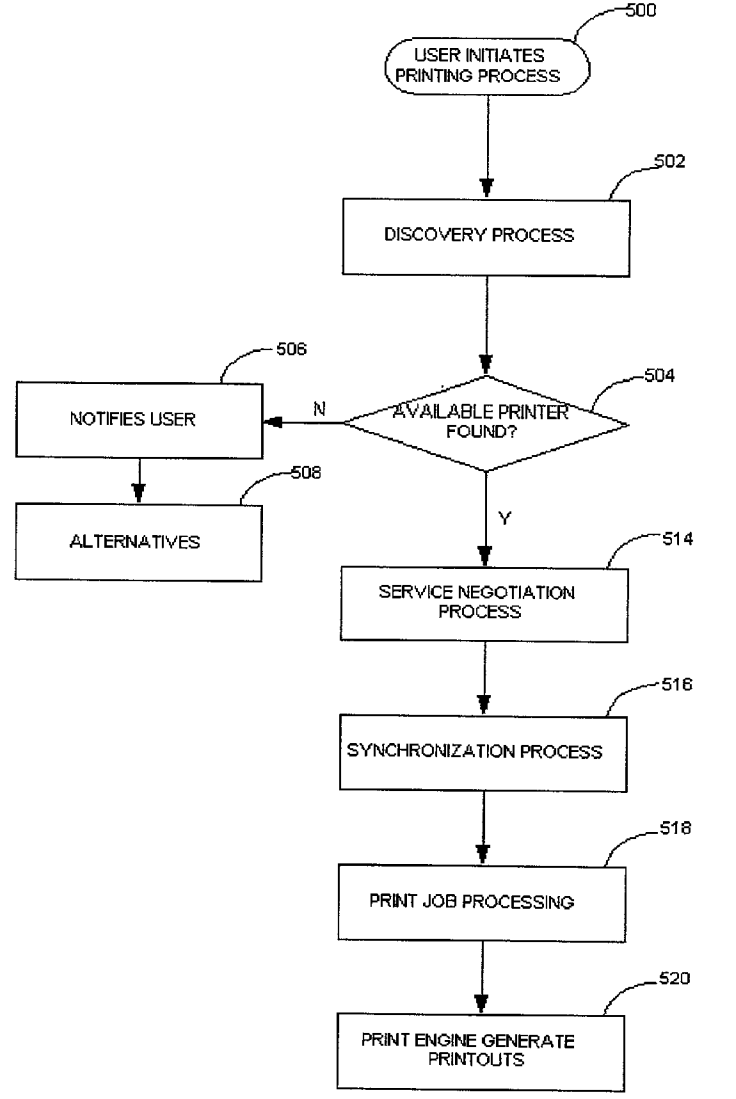
	 FIG 2A
the mobile information apparatus includes: a touch sensitive screen interface for interacting with a user, memory for storing at least part of the software, one or more processors, and one or more wireless communication units that include one or more radio frequency link controller for wireless communication; and wherein, when the one or more processors included in the mobile information apparatus execute at least part of the software at the mobile information apparatus	<u>Information apparatus may contain components such as processing unit, memory unit, storage unit, input/output control unit, and adapter unit among others. Information apparatus may also contain an interface, which interacts with users ... Examples of such interface may include, without limitation, mouse, keyboard, touch-sensitive or non-touch-sensitive screen, push button, soft key, stylus etc. (page 9, lines 3-8) [emphasis added].</u> <u>Figure 9 (sheet 9 of 10)</u>  8A 8B <u>Memory or storage unit may also store a plurality of data and software components that may be available to be uploaded or synchronized to the information apparatus during the process of communication with output manager (page 14, lines 26-28) [emphasis added].</u> <u>The information apparatus may be equipped with central processing unit, input/output control unit, storage unit, memory unit, and wired or wireless communication unit or adapters (page 6, lines 30-32) [emphasis added].</u> <u>Figures 2A, 2B (sheet 2 of 10)</u>

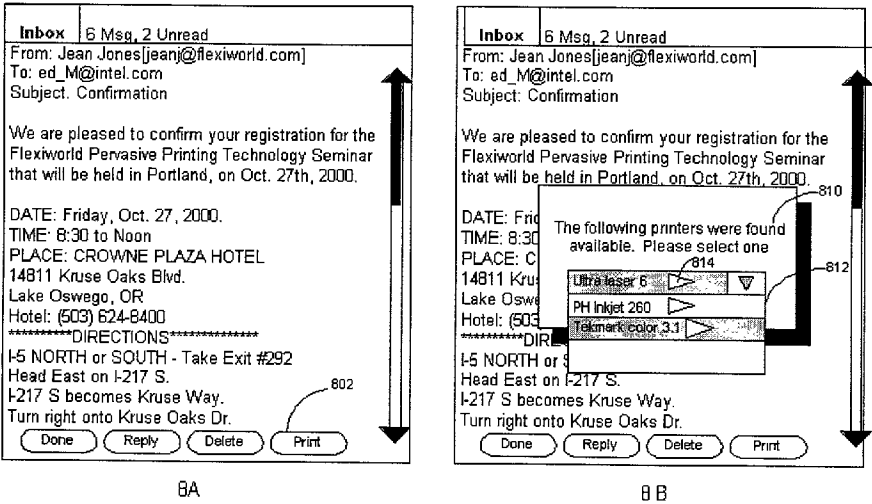
	FIG 2A FIG 2. Illustrates two exemplary configurations and implementations of <u>wireless communication adapters that may be contained within an information apparatus</u>, output controller and/or output device. Referring to FIG 2A, <u>radio adapter 200</u> may be implemented to enable data/voice transmission among devices through radio links ... The RF transceiver is connected to <u>RF link controller 210</u> by an interface 212 (page 8, lines 8-14) [emphasis added]. <u>An information apparatus may be a dedicated single task device</u> (e.g. email terminal, web terminal, e-book, etc) or a computing device with multiple features and functions. <u>Multiple functions and features may be implemented by a plurality of software applications installed in the information apparatus with or without an operating system</u> (page 9, lines 10-13) [emphasis added].
the mobile information apparatus: (1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system device, the wireless discovery of the output system device is based, at least in part, on physical	<u>The information apparatus may be equipped with central processing unit, input/output control unit, storage unit, memory unit, and wired or wireless communication unit or adapters</u> (page 6, lines 30-32) [emphasis added]. <u>Figure 3A</u> (sheet 3 of 10) FIG 3A Discovery process 502 In this process, <u>information apparatus searches for available output devices</u> (page 27, lines 15-16) [emphasis added].

proximity between the mobile information apparatus and the output system device	In the discovery process, information apparatus may or may not find available output devices to take its print job. Exemplary <u>factors that may impact availability of output devices may include</u>, without limitation, the following: <u>Physical distance – Some wireless communication links may impose limitations on physical distance between communicating devices</u> (page 28, lines 24-26) [emphasis added]. <u>Figure 5</u> (sheet 6 of 10)  <pre> graph TD 500([USER INITIATES PRINTING PROCESS]) --> 502[DISCOVERY PROCESS] 502 --> 504{AVAILABLE PRINTER FOUND?} 504 -- N --> 506[NOTIFIES USER] 506 --> 508[ALTERNATIVES] 504 -- Y --> 514[SERVICE NEGOTIATION PROCESS] 514 --> 516[SYNCHRONIZATION PROCESS] 516 --> 518[PRINT JOB PROCESSING] 518 --> 520[PRINT ENGINE GENERATE PRINTOUTS] </pre> FIG 5
(2) displays, on the touch sensitive screen	In this particular example, as illustrated in FIG 8C, the communication between the information apparatus and the output controller has <u>identified that a printer driver needs to be uploaded</u>

interface of the mobile information apparatus, a user interface item or icon related to the output system discovered in (1) for user selection

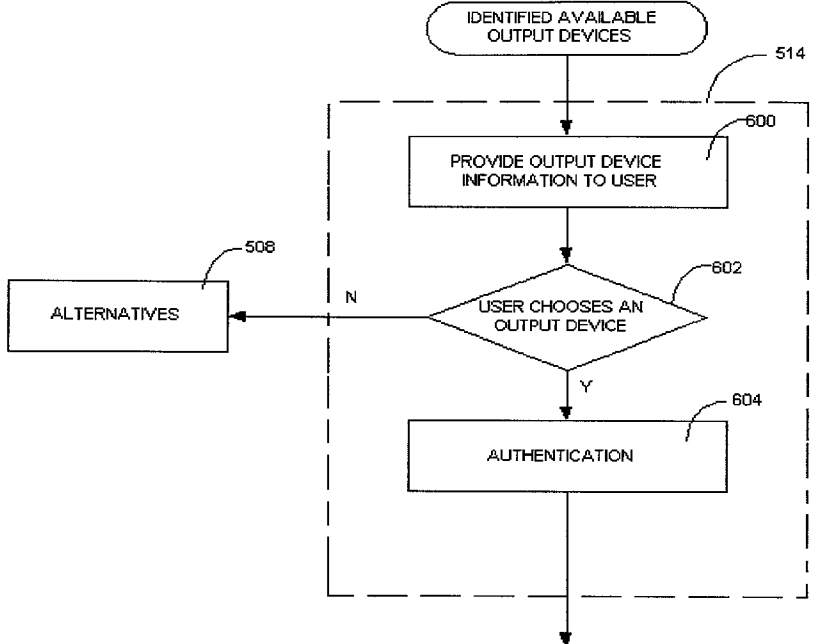
as displayed on screen 820 (page 39, lines 19-21) [emphasis added].

Figure 9 (sheet 9 of 10)



Functions available to the user are displayed at the bottom of the screen. Printing is one of the functions displayed by icon 802. The user may invoke such functions by selecting the icons displayed. The user can make the selection by using, for example, keyboard, keypad, mouse, stylus, soft keys, push buttons, software command, touch sensitive screen etc. The user may also make such selection by, for example, pull down menu and voice-activated command etc (page 38, lines 14-19) [emphasis added].

Figure 5 (sheet 7 of 10)

	 <pre> graph TD 514([IDENTIFIED AVAILABLE OUTPUT DEVICES]) --> 600[PROVIDE OUTPUT DEVICE INFORMATION TO USER] 600 --> 602{USER CHOOSES AN OUTPUT DEVICE} 602 -- Y --> 604[AUTHENTICATION] 602 -- N --> 508[ALTERNATIVES] 508 --> 600 subgraph 600 [] 600 602 604 end 604 --> Exit(()) </pre> <u>If one or more available printers are discovered in the discovery process</u>, the service negotiation step may proceed (page 30, lines 12-13) [emphasis added].
(3) receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon, related to the output system device wirelessly discovered in (1), displayed on the touch sensitive screen interface in (2)	When the user enters a new network comprising of available printers, or when new compatible printers are added to the current network or <u>when a printer becomes available</u> for any reason, <u>he/she would be notified of such availability by his/her information apparatus</u>. And with, for example, a click of a button, the user may output his/her print job to the newly detected or now available printer. <u>This detection and notification function may be implemented by a software program or as a feature of the output manager of present invention. This feature may also be implemented in hardware or combination of hardware and software residing in the information apparatus</u> (page 30, lines 1-9) [emphasis added]. <u>Figure 9</u> (sheet 9 of 10)

	8A 8B Functions available to the user are displayed at the bottom of the screen. Printing is one of the functions displayed by icon 802. The user may invoke such functions by selecting the icons displayed. The user can make the selection by using, for example, keyboard, keypad, mouse, stylus, soft keys, push buttons, software command, touch sensitive screen etc. The user may also make such selection by, for example, pull down menu and voice-activated command etc. (page 38, lines 14-19) [emphasis added].
(4) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless	<u>Output manager may manage and maintain wired or wireless communications with output controller.</u> The output manager may interact with functionalities implemented by hardware components of its host information apparatus (page 11, lines 5-7 of Provisional Application '101) [emphasis added]. FIG 2. Illustrates two exemplary configurations and implementations of <u>wireless communication adapters</u> that may be contained within an information apparatus, output controller and/or output device. Referring to FIG 2A, <u>radio adapter 200</u> may be implemented to <u>enable data/voice transmission</u> among devices <u>through radio links</u> (page 20, lines 8-11) [emphasis added]. <u>Figure 2A, 2B</u> (sheet 2 of 10)

communication or a wireless local area network communication, and the establishing of the wireless communication link is based, at least in part, on having received the indication of a selection of the user interface item or icon in (3)

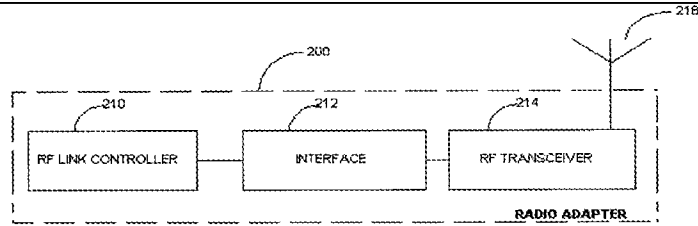


FIG 2A

Figures 4A, 4B, 4C (sheet 4 of 10)

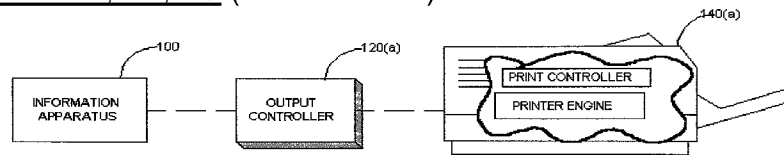


FIG 4A

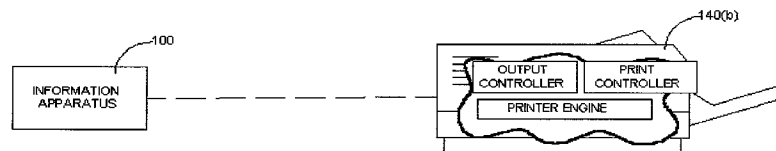


FIG 4B

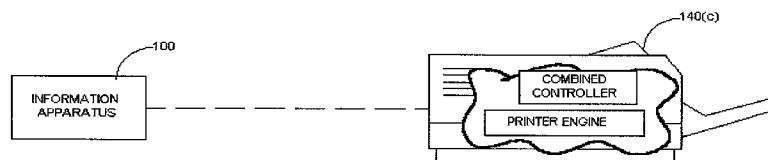


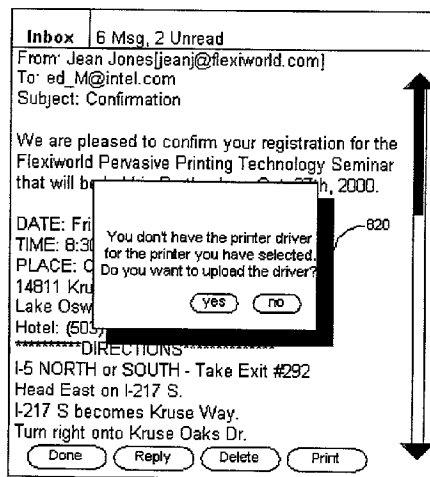
FIG 4C

Communication links 150 and 160 between information apparatus 110 with an output controller 120/130, whether externally connected and or internally integrated, may be variously implemented. Preferably, information apparatus communicates with output controller through wireless connections such as infrared or radio links. Examples of wireless connections technology includes IrDA, home RF, Bluetooth, IEEE 802.11, HiperLan2 among others (page 19, lines 26-31) [emphasis added].

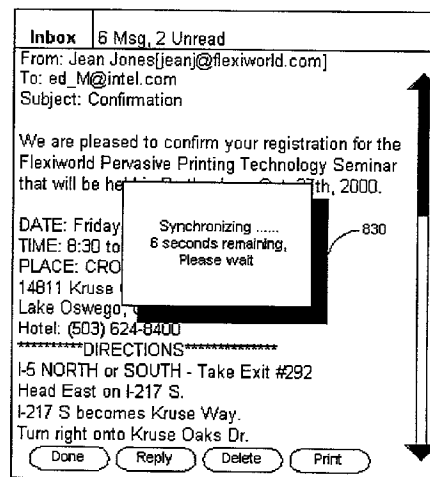
Functions available to the user are displayed at the bottom of the screen. Printing is one of the functions displayed by icon 802. The user may invoke such functions by selecting the icons displayed ... The user may also make such selection by, for example, pull down menu and voice-activated command etc. (page 38, lines 14-19) [emphasis added].

(5) wirelessly provides, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link established in (4), security information or authentication information to the output system device wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output system device

Figure 9A- 9D (sheet 9 of 10)



8 C

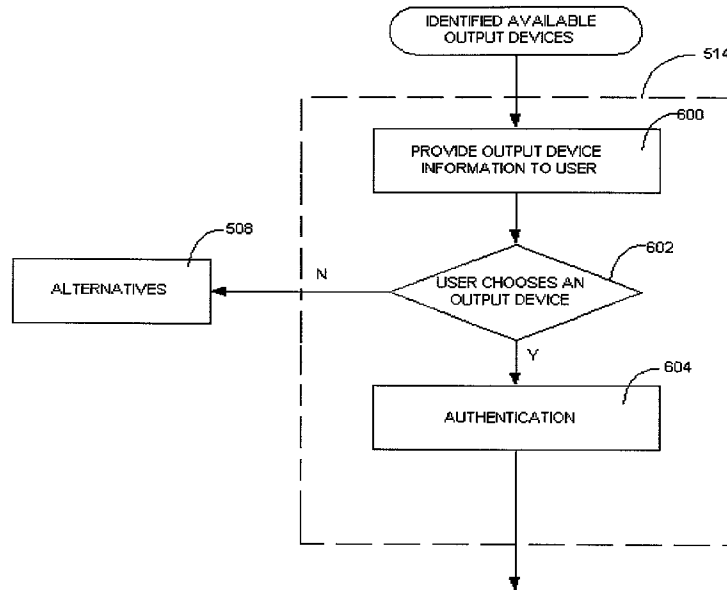


8 D

Security authentication – Security authentication may be implemented in various steps of communication including the discovery step. Security authentication may be required for example when output service is restricted to a certain group of users or information apparatus. When a user requests service, output device or output controller may process authentication step by automatically detecting the identification or other information provided by the user, output manager or information apparatus (page 29, lines 4-10) [emphasis added].

Step 604, authentication, is optional. Authentication may be necessary if the use of an output device is restricted to a group of users. In this case, the user may have to provide authentication information to identify him/herself as part of the authorized group to use the service. Examples of authentication method may include user's name, password, PIN, ID number, signatures, security keys (physical or digital), biometric, fingerprint, voice among others. ID number or IP address of the information apparatus may also be used as authentication means. Such authentication information may be provided by the user manually or detected automatically by the output controller or output device (page 35, lines 6-14) [emphasis added].

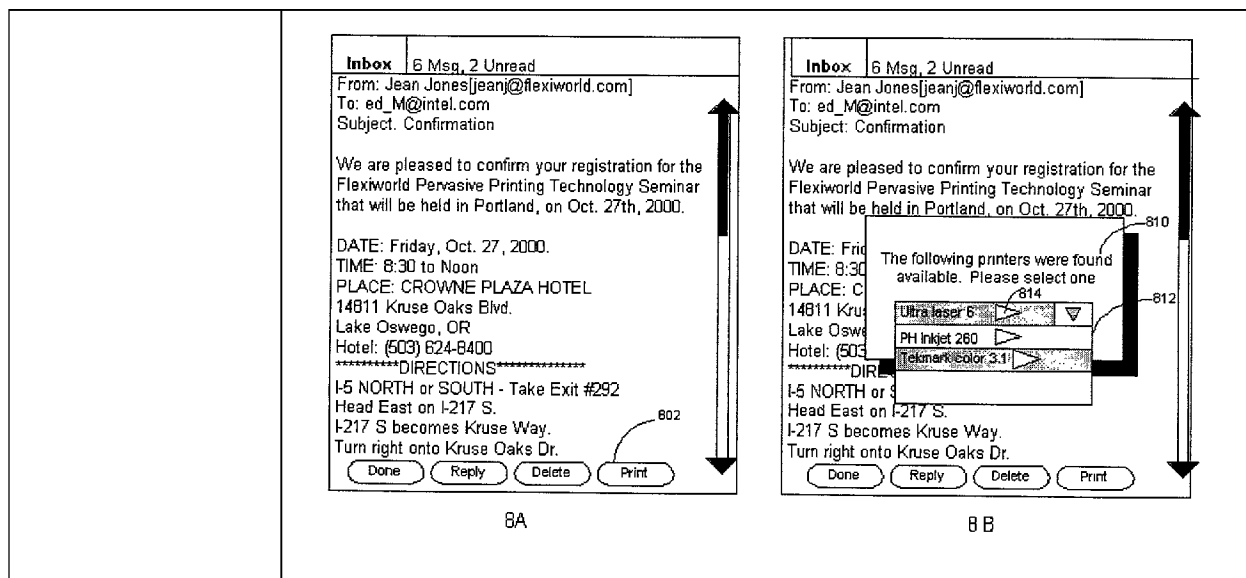
Figure 5 (sheet 7 of 10)

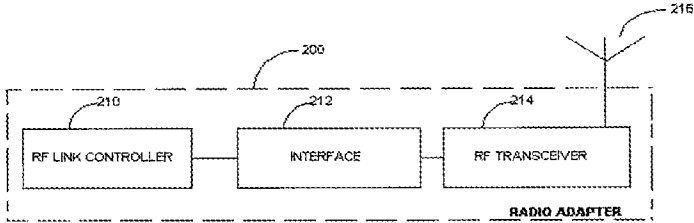


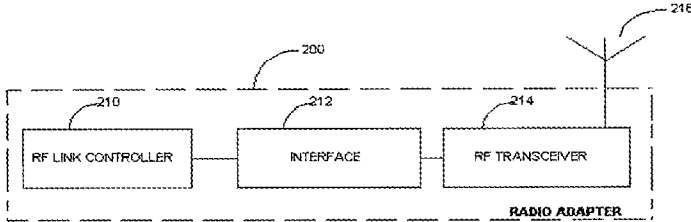
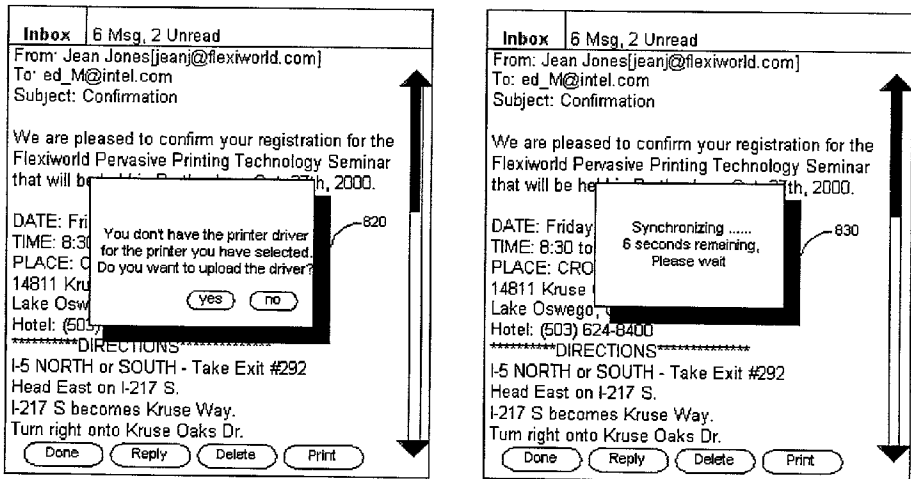
In step 700, output manager may process the input digital document and convert it to print data that can be transmitted to output controller, combined controller or directly to printer engine ... Encryption techniques may be used to assure the security of communication between information apparatus and output devices (page 35, line 29 to page 36, line 2) [emphasis added].

FIG 2. illustrates two exemplary configurations and implementations of wireless communication adapters that may be contained within an information apparatus, output controller and/or output device. Referring to FIG 2A, radio adapter 200 may be implemented to enable data/voice transmission among devices through radio links (page 20, lines 8-11) [emphasis added].

Figure 9 (sheet 9 of 10)



Dependent Claims Recited Subject Matter	Examples of Support in U.S. Provisional Application Serial No. 60/245,101
2. The medium according to claim 1, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link between the mobile information apparatus and the output system device established in (4), using the one or more wireless communication units, is compatible with at least part of the protocol within	<u>The information apparatus may be equipped with central processing unit, input/output control unit, storage unit, memory unit, and wired or wireless communication unit or adapters</u> (page 6, lines 30-32) [emphasis added]. Figures 2A, 2B (sheet 2 of 10)  Referring to FIG 2A, radio adapter 200 may be implemented to enable data/voice transmission among devices <u>through radio links</u>. A RF transceiver 214 coupled with antenna 216 is used to <u>receive and transmit</u> radio frequency signals (page 20, lines 10-13) [emphasis added]. <u>A variety of radio links</u> may be utilized in present invention. <u>A group of competing technologies operating in the 2.4 GHz unlicensed frequency band</u> is of particular interest. This group

Bluetooth specifications.	currently includes Bluetooth, Home radio frequency (Home RF) and implementations based on IEEE 802.11 standard (page 20, lines 25-28) [emphasis added].
3. The medium according to claim 2, wherein the one or more wireless communication units of the mobile information apparatus further support at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.	Preferably, <u>information apparatus communicates with output controller through wireless connections such as infrared or radio links</u>. Examples of wireless connections technology includes IrDA, home RF, Bluetooth, <u>IEEE 802.11</u>, <u>HiperLan2</u> among others (page 19, lines 28-31) [emphasis added]. Figures 2A, 2B (sheet 2 of 10)  FIG 2A
4. The medium according to claim 1, wherein the mobile information apparatus further synchronizes or exchanges information with the output system device, discovered in (1)	The information being exchanged may be entered manually by the user or may be automatically detected and or <u>synchronized between the information apparatus and the output controller</u> or it may be partially assisted by the user and partially automated (page 31, lines 5-37) [emphasis added]. Figures 9A-9D (sheet 9 of 10)  8 C 8 D

5. The medium according to claim 3, wherein the mobile information apparatus is embodied as a smart phone or an information pad, and the output system device includes at least one speaker for outputting audio digital content, and wherein the service operated, at least partly, over the network, provides the audio digital content to the output system device.	FIG 3B and 3C illustrate exemplary configurations of output manager when information apparatus contains no operating system or less capable operating system that does not provide API's or object models for software application to interact with the output manager of present invention. Examples of such information apparatus may include, <u>without limitation, PDA, smart phone, pager, Internet pad, email terminal, digital and video cameras, ebook and other dedicated devices</u> (page 20, lines 25-31) [emphasis added]. <u>An output device can also be a device capable of outputting voice.</u> Any device capable of playing or reading <u>digital content in audio format</u> (e.g. music), or data format (e.g. text or document) is also possible output device for the present invention (page 17, lines 16-19) [emphasis added].
6. The medium according to claim 1, wherein the output system device is at least one of a sound output system, a television system, an output controller connectable to a television, a projection system device, a printing system device, a speaker system device, or an information apparatus that is an Internet appliance, individually or in any combination.	<u>Output device is an electronic system capable of outputting digital content regardless of whether the output medium is substrate (e.g. paper), display screens, projection or voice</u> (page 17, lines 9-11) [emphasis added]. <u>Examples of display device include for example TVs, monitors, and projectors. An output device can also be a device capable of outputting voice</u> (page 17, lines 15-17) [emphasis added]. <u>An information apparatus is a computing device with processing capability. Examples of information apparatus may include ... Internet appliances, pager etc.</u> (page 8, line 31 to page 9, line 1) [emphasis added].
7. The medium	<u>Examples of such information apparatus may include, without</u>

according to claim 2, wherein the mobile information apparatus is a smart phone, and wherein, subsequent to establishing the wireless communication link between the mobile information apparatus and the output system device in (4), the mobile information apparatus further wirelessly manages or wirelessly drives the output system device using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4).

limitation, PDA, smart phone, pager, Internet pad, email terminal, digital and video cameras, ebook and other dedicated devices (page 23, lines 11-13) [emphasis added].

Once the necessary software components or data is uploaded and/or installed in the information apparatus, the information apparatus can drive or output to the output device (page 15, lines 32-33) [emphasis added].

The information apparatus may be equipped with central processing unit, input/output control unit, storage unit, memory unit, and wired or wireless communication unit or adapters (page 6, lines 30-32) [emphasis added].

Output manager may manage and maintain wired or wireless communications with output controller (page 11, lines 5-6) [emphasis added].

Figures 2A, 2B (sheet 2 of 10)

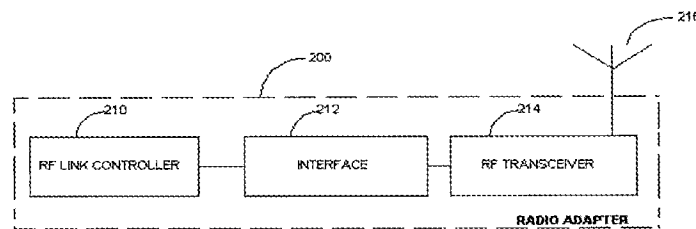
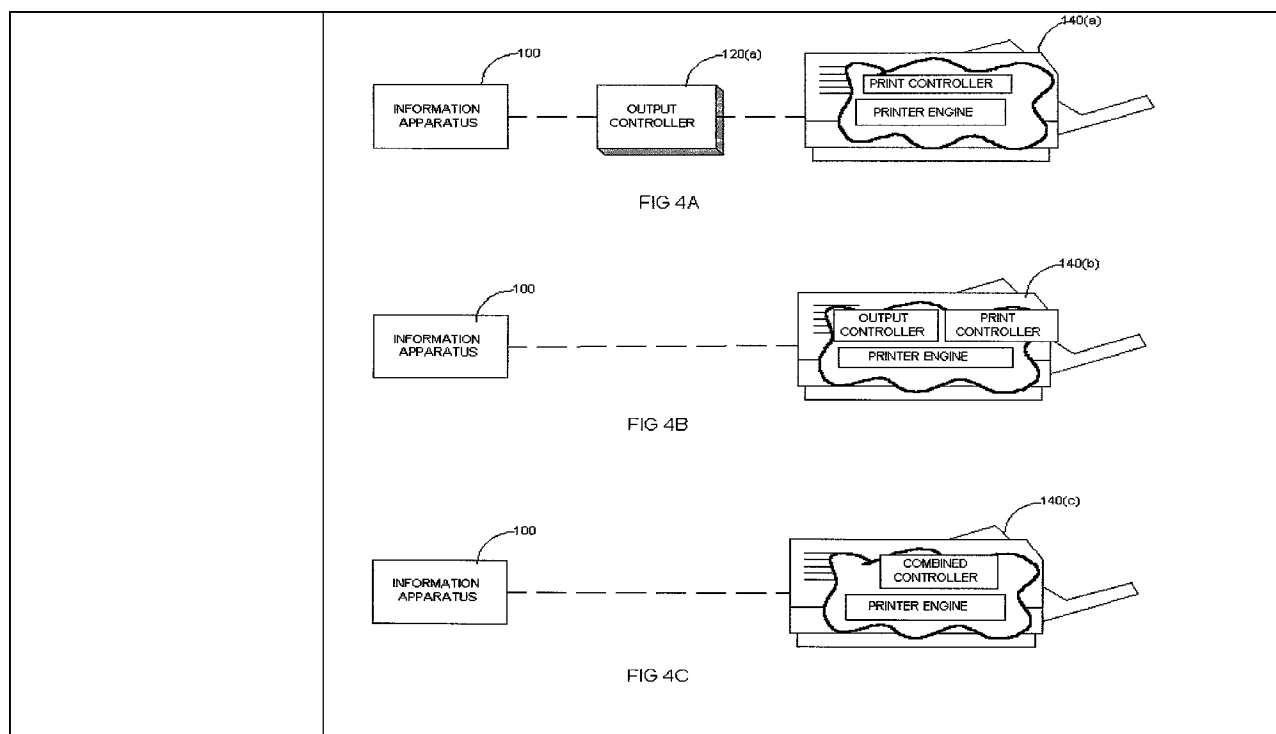


FIG 2A

Figures 4A, 4B, 4C (sheet 4 of 10)



Independent claim 8 and 14 recites features similar to the above-discussed features of claim 1 (and their dependent claims). Accordingly, independent claims 8 and 14 (and their dependent claims) also are supported by U.S. Provisional Patent Application Serial No. 60/245,101 (filed on **November 1, 2000**) for at least the reasons provided in the above table with regard to claims 1-7.

1.2 Atkinson is NOT Prior Art to this Application

As a preliminary matter, Atkinson is not prior art to the claims of the present application, as further discussed below. As discussed in Section 1.1, the present application receives the benefit of U.S. Provisional Application Serial No. 60/245,101 ('101), which was filed on **November 1, 2000**.

In contrast, the Atkinson was filed on May 4, 2001, which is after November 1, 2000 (filing date of U.S. Provisional Patent Application Serial No. 60/245,101). Atkinson does claim priority to ten provisional patent applications, as follows:

This Application is related to and claims priority from the following commonly assigned Applications: Provisional Application Ser. No. 60/224,701, filed Aug. 11, 2000; Provisional Application 60/227,878, filed

Aug. 25, 2000; Provisional Application 60/243,654, Oct. 26, 2000; Provisional Application 60/250,928, filed Dec. 1, 2000; Provisional Application 60/254,595, filed Dec. 11, 2000; Provisional Application Ser. No. 60/208,967, filed Jun. 2, 2000; Provisional Application Ser. No. 60/220,047, filed Jul. 21, 2000; Provisional Application 60/239,320, filed Oct. 10, 2000; Provisional Application Ser. No. 60/267,555, filed Feb. 9, 2001; and Provisional Application 60/271,607, filed Feb. 26, 2001.

However, only six of the above ten provisional applications have a filing date before the filing date of U.S. Provisional Application Serial No. 60/245,101 (hereafter "Applicable Atkinson Provisionals"). The six provisional applications are summarized below.

Provisional Application Serial No. 60/224,701, filed August 11, 2000;
Provisional Application Serial No. 60/227,878, filed August 25, 2000;
Provisional Application Serial No. 60/243,654, filed October 26, 2000;
Provisional Application Serial No. 60/208,967, filed June 2, 2000;
Provisional Application Serial No. 60/220,047, filed July 21, 2000; and
Provisional Application Serial No. 60/239,320, filed October 10, 2000.

The Office action relies on paragraph 0102 and Fig. 10 in Atkinson. However, none of the Applicable Atkinson Provisionals discloses the subject matter contained in paragraph 0102 and Fig. 10 in Atkinson. Instead, a drawing similar to Fig. 10 in Atkinson was first introduced in U.S. Provisional Application Serial No. 60/254,595, which was filed on December 11, 2000. Additionally, the subject matter of paragraph 0102 was first introduced in U.S. Provisional Application Serial No. 60/271,607, which was filed February 26, 2001. Both provisional applications above were filed after the effective filing date of the present application of November 1, 2000. In other words, the subject matter relied on in the Office action, namely paragraph 0102 and Fig 10 in Atkinson dated May 4, 2001 is NOT prior art to the present application.

Therefore, Applicant respectfully requests withdrawal of the rejections based on Atkinson.

2. Information Disclosure Statement

The Office action asserts that it is impractical to review the references thoroughly with the number of references cited in the case and thus only a cursory review was made of the cited references.

However, Applicant has submitted the Information Disclosure Statements listing the references because it was required under one or more sections of the MPEP as outlined in more detail below. By submitting the references, Applicant is only ensuring that it is complying with the MPEP requirements. Therefore, Applicant respectfully requests that the references cited in the previous Information Disclosure Statements be entered and considered.

2.1 Examiner is required to consider references cited in the parent application

MPEP § 609.02(A)(2) states:

The examiner **will consider information which has been considered by the Office in a parent application** when examining: (A) a continuation application filed under 37 CFR 1.53(b), (B) a divisional application filed under 37 CFR 1.53(b), or (C) a continuation-in-part application filed under 37 CFR 1.53(b). A listing of the information need not be resubmitted in the continuing application **unless the applicant desires the information to be printed on the patent** [emphasis added].

The present application is a continuation application filed under 37 CFR 1.53(b) of U.S. Patent Application Serial No. 10/053,765 ("the first parent application"), which was filed on January 18, 2002 and is now U.S. Patent No. 9,836,257. Additionally, the present application is a continuation-in-part filed under 37 CFR 1.53(b) of U.S. Patent Application Serial No. 09/992,413 ("the second parent application"), which was filed on November 18, 2001 and is now U.S. Patent No. 9,965,233. Moreover, the present application is a continuation-in-part filed under 37 CFR 1.53(b) of U.S. Patent Application Serial No. 13/710,299 ("the third parent application"), which was filed on December 10, 2012 and is now U.S. Patent No. 9,798,516. Applicant notes that a significant number of the references submitted in the IDSs of the present application were references that were cited in the first, second, and/or third parent applications.

Thus, according to MPEP § 609.02(A)(2), all the references that were cited in the first, second, and third parent applications must be considered by the Examiner regardless of whether the Applicant has resubmitted them or not in the present application. Additionally, Applicant “desires the information to be printed on the patent” that issues from the present application, as provided for in MPEP § 609.02(A)(2). Therefore, Applicant respectfully requests that the references cited in the previous Information Disclosure Statements be entered and considered.

2.2 Applicant Is Required To Cite References From Copending Applications

MPEP § 2001.06(b) states:

Accordingly, the individuals covered by 37 CFR 1.56 cannot assume that the examiner of a particular application is necessarily aware of other applications which are “material to patentability” of the application in question, but must instead bring such other applications to the attention of the examiner (emphasis added).

The present application is related to about 58 other U.S. patent applications (whether still pending or not) that names one or more of the same inventors of this application (e.g., Chang, William Ho). Each of those applications includes several Office actions with several cited references. Therefore, Applicant has filed the Information Disclosure Statements listing Office actions and references cited in those related applications to bring such other applications and cited references in those applications to the attention of the Examiner in accordance with the requirements of MPEP § 2001.06(b). Additionally, Applicant also has included, in the Information Disclosure Statements, several U.S. patents and U.S. patent applications the names the one or more of the same inventors of the present application to facilitate the Examiner’s review for potential double patenting.

2.3 Applicant May Cite References Not Considered Material By Examiner

MPEP § 2001.05 states:

If information is not material, there is no duty to disclose the information to the Office ... The Office believes that most applicants will wish to submit the information, however, even though they may not be required to do so.

to strengthen the patent and avoid the risks of an incorrect judgment on their part on materiality or that it may be held that there was an intent to deceive the Office (emphasis added).

The MPEP section above allows the Applicant to submit references that may be considered not material to the Examiner “to strengthen the patent and avoid the risks of an incorrect judgment on their part on materiality or that it may be held that there was an intent to deceive the Office.” Thus, even the Examiner may consider there was a large amount of references submitted for review, Applicant is merely exercising its option to disclose all references to ensure full compliance with all MPEP sections, such as MPEP § 2001.06(b).

2.4 IDSs Were Timely Filed Requiring Review And Consideration

37 C.F.R. § 1.97(b) states:

An information disclosure statement shall be considered by the Office if filed by the applicant within any one of the following periods ...

(3) Before the mailing of a first Office action on the merits ...

Here, Applicant filed the Information Disclosure Statements before the mailing of the first Office action on the merits. Thus, Applicant respectfully requests that all the references cited in the IDSs submitted for the present application be entered and considered as required by 37 C.F.R. § 1.97(b)(3).

Accordingly, for at least the reasons stated above, Applicant respectfully requests that the references cited in the previous Information Disclosure Statements be entered and considered.

3. Claims Rejections – 35 U.S.C. § 103

Claims 1-4, 6-12, 14-18, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Atkinson et al. (US 2002/0012329) in view of Eldridge et al. (US6430601) and Lamming et al. (US5862321). Additionally, claims 5, 13, and 19 are

rejected under 35 U.S.C. § 103(a) as being unpatentable over Atkinson et al. in view of Eldridge et al., Lamming et al., and White et al. (US7187947).

As discussed above in Section 1.2, Atkinson is not prior art to the present application.

Applicant respectfully submits that it would NOT have been obvious at the time of the invention was made to a person of ordinary skill in the art to combine Atkinson (namely, at least paragraph 0102 and Figure 10) with ANYTHING (including Eldridge and/or Lamming) because at least those cited portions of Atkinson were not available to a person of ordinary skill in the art at the time of the filing of the inventions on November 1, 2000, the effective priority date of present application. To the contrary, at the time when Atkinson filed his application on May 4, 2001 namely, 2002/0012329 that includes paragraph 0102 and Figure 10 (and relied by the Office action), those passages were obvious at the time for Atkinson to incorporate in Atkinson's application on March 4, 2001 the teachings of present Applicant (e.g. namely inventors Chang et al. as disclosed in provisional application 60/245,101 on November 1, 2000) to support at least paragraph 0102 and Figure 10.

Nevertheless, even assuming without admitting that Atkinson is prior art to the present application, Atkinson, Eldridge and Lamming do not teach the amended claims of the present application, whether alone or in combination, for at least the reasons provided below.

3.1 Wirelessly discovers the output system device based, at least in part, on physical proximity between the mobile information apparatus and the output system device

The step (1) of amended claim 1 recites: "wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system device, the wireless discovery of the output system device is based, at least in part, on physical proximity between the mobile information apparatus and the output system device."

Page 5 of the Office action states that Atkinson in Fig. 10 and paragraph 0102 teaches the above step (1). Applicant disagrees. However, as already discussed above, Atkinson (Fig. 10 and paragraph 0102) is not prior art to the present application. Eldridge and Lamming do not make-up for the shortcomings of Atkinson.

Additionally, the Office action implicitly admitted that Eldridge does not teach the subject matter of “wirelessly discovers the output system device based, at least in part, on physical proximity between the mobile information apparatus and the output system device”. Therefore, Eldridge cannot further teach steps (2)-(4) because those steps depend on wireless discovery step (1).

Additionally, Eldridge does not teach an analogous subject matter for combination with Atkinson. Specifically, Eldridge does not teach anything related to “wireless discovery” much less based on physical proximity. Instead, Eldridge **explicitly** teaches a person of ordinary skill in the art the subject matter of connecting the mobile computing device to token-enabled server(s), which comprises a first set of data identifying a set of mobile computing devices and further comprises a second set of data identifying a set of document elements. The set of document elements received by the token-enabled server(s) defines locations of documents stored on the network, as described below.

Once a list of available services is received at the mobile computing device 118, the “Services Directory” screen 804 shown in FIG. 8 is presented at user interface 500. After being presented with display screen 804, a user invokes the print command button 802 while selecting print service 801 at user action 420. In the example shown in FIG. 8, the user selected the print service 801 that is coupled to the IR port to which the mobile computing device is communicating with. Responsive to selection of command 802, mobile computing device 118 returns to either display screens 518 or 604, which are shown in FIGS. 5 and 6 respectively. A user of the mobile computing device 118 can retrieve progress of any document transaction service requested by opening a service request status log (not shown). (column 10, Lines 54-67)

At action 422, the mobile computing device 118 transmits the request specified by the user in display screen 804 (shown in FIG. 8) (column 11, lines 1-3).

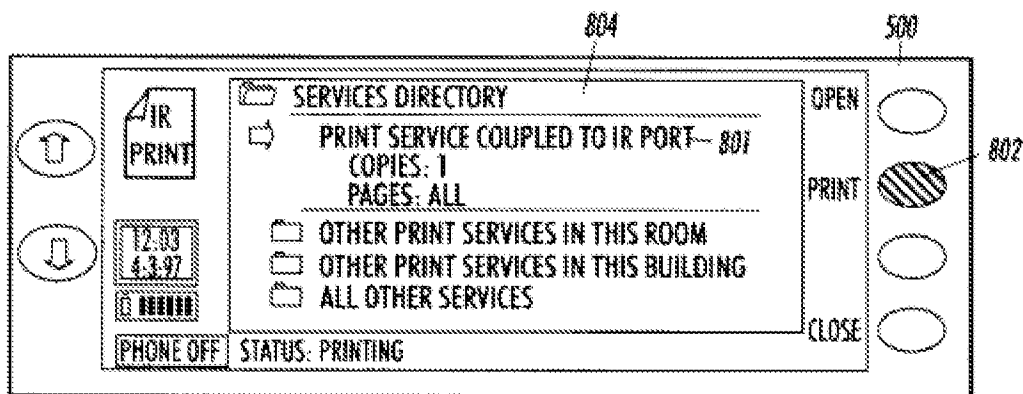


FIG. 8

Using this service, a process operating on a repository of shared documents monitors for changes to specified files or file locations. Identification of changes made to documents on the repository of shared documents results in the transmission of a document token to selected users of the mobile computing devices identifying the changes. Once the document token identifying the changed document on the repository of shared documents is received, the document referenced by the document token is readily printed, displayed, or forwarded using available document services (Abstract) [emphasis added].

As shown above, Eldridge describes the available services are received at the mobile computing device and presented at a user interface from the token enabled server(s) 126 over the network. The available services are available from the token enabled server(s) 126 over the network and not from “the output system” that is wirelessly discovered by the information apparatus based on physical proximity to the information apparatus as recited in the claim 1.

A person of ordinary skill in the art following Eldridge would not be motivated to modify “available document services” that is already available from the token enabled server(s) 126 over the network into “wirelessly discovering the output system based on physical proximity between the mobile information apparatus and the output system”. Because such unwarranted modification is completely unnecessary and redundant (and would require undue experimentation). Additionally, the modification from “available

document services” into “wireless discovery” would change the principle of operation of Eldridge to receive available services from the token enabled server(s) 126 over the network at the mobile computing device. The token-enabled server(s) 126 is necessary to define locations of documents stored on the network and further the directory server provides a list of available document services that is necessary for the mobile device to accessing access documents from the repository. The modification would change the principle of operation of Eldridge; and therefore, Eldridge teaches away from step (1) recited in claim 1.

3.2 Displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system device wirelessly discovered in (1) for user selection

Step (2) of amended claim 1, recites: “(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system device wirelessly discovered in (1) for user selection.”

Page 6 of the Office action acknowledges that: “Atkinson et al doesn't expressly teach (2) displays an user interface item or icon; (3) receives a selection of the user interface item or icon; and (4) the establishing of the wireless communication link is based on having received the indication of a selection of the user interface item or icon in (3).” However, pages 6-7 of the Office action asserts that Eldridge teaches:

(2) displays, on the screen interface of the mobile information apparatus, an user interface item or icon related to the output system device wirelessly discovered in (1) for user selection ***(i.e. once a list of available services is received at the mobile computing device 118, the "Services Directory" screen 804 shown in FIG. 8 is presented at user interface 500 (FIG. 8 and col. 10 lines 54-56))*** [emphasis in original].

Applicant respectfully disagrees. The Office action acknowledged that Eldridge does not teach the subject matter of “(1) wirelessly discovers the output system device based, at least in part, on physical proximity between the mobile information apparatus and the output system device” and also a touch sensitive screen. Because Eldridge

does not teach a touch sensitive screen nor wireless discovery of the output system device, it follows that Eldridge could not further teach “displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system device wirelessly discovered in (1) for user selection.”

Additionally, Eldridge does not disclose that an item/icon related to an output system device is wirelessly discovered based on physical proximity between the mobile information apparatus and the output system device. Instead, Eldridge teaches that the available services are received at the mobile computing device and presented at a user interface from token-based server(s) 126. The token-based server(s) 126 are on the wire-based networks 116 and 122, as described below.

Once a list of available services is received at the mobile computing device 118, the “Services Directory” screen 804 shown in FIG. 8 is presented at user interface 500. After being presented with display screen 804, a user invokes the print command button 802 while selecting print service 801 at user action 420. In the example shown in FIG. 8, the user selected the print service 801 that is coupled to the IR port to which the mobile computing device is communicating with. Responsive to selection of command 802, mobile computing device 118 returns to either display screens 518 or 604, which are shown in FIGS. 5 and 6 respectively. A user of the mobile computing device 118 can retrieve progress of any document transaction service requested by opening a service request status log (not shown) (column 10, lines 54-67) [emphasis added].

A. Token-Enabled Server

The token-enabled server 126, which operates on the wire-based networks 116 and 122, communicates with network devices indicated by reference numbers 102,104,106, 107, 108, 110, and 112, as well as, the RF and IR gateways 114 and 120. The token-enabled server 126 includes token aware services or servers 134, 136, 138, 140, 142, and 144. These token-aware services can either be operating centrally on token-enabled server 126 or individually on servers distributed over Intranet 116 or Internet 122. The services provided by the token-enabled server(s) 126 are shared between a plurality of users of the mobile computing devices 118 (column 4, lines 13-24) [emphasis added].

Using this service, a process operating on a repository of shared documents monitors for changes to specified files or file locations. Identification of changes made to documents on the repository of shared documents results in the transmission of a document token to selected users of the mobile computing devices identifying the changes. Once the

document token identifying the changed document on the repository of shared documents is received, the document referenced by the document token is readily printed, displayed, or forwarded using available document services (Abstract) [emphasis added].

As shown above, Eldridge does not teach that the user interface item or icon is “related to an output system device that is wirelessly discovered in (1) for user selection.” Instead, Eldridge teaches available services, from the token-based server(s) 126, are received at the mobile computing device and presented at a user interface. The token-based server(s) 126 are “on the wire-based networks 116 and 122” so that the token-enabled server(s) can properly define locations of documents stored on the network and so that “the services provided by the token-enabled server(s) 126 are shared between a plurality of users of the mobile computing devices 118.”

Furthermore, a person of ordinary skill in the art, at the time of invention and following Eldridge, would not modify Eldridge’s token enabled server(s) 126 into “(2) displays, on the screen interface of the mobile information apparatus, an user interface item or icon related to the output system device wirelessly discovered in (1) for user selection.” Such unwarranted modification would change the principle of operation of Eldridge to receive a list of available services, at the mobile computing device from token-based server(s) 126. The token-based server(s) 126 are “on the wire-based networks 116 and 122” to properly define locations of documents stored on the network so that “the services provided by the token-enabled server(s) 126 are shared between a plurality of users of the mobile computing devices 118.”

For further clarity of claim 1 with respect to the relationship between the steps, Applicant notes that each step of claim 1 recites antecedence and numbering referencing at least a previous step. Atkinson and Lamming do not make-up for the above shortcomings of Eldridge.

3.3 Receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon, related to the output system device wirelessly discovered in (1), displayed on the touch sensitive screen interface in (2)

Step (3) of amended claim 1 recites: “(3) receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon, related to the output system device wirelessly discovered in (1), displayed on the touch sensitive screen interface in (2).”

Pages 6-7 of the Office action asserts:

Eldridge teaches receives, via the screen interface, at least an indication of a selection of the user interface item or icon displayed on the screen interface in (2) **(i.e. a user invokes the print command button 802 while selecting print service 801. The user selected the print service 801 that is coupled to the IR port to which the mobile computing device is communicating with (FIG. 48, 8 and col. 10 lines 56-62))** [emphasis in original].

A passage and Fig. 8 of Eldridge is reproduced below.

Once a list of available services is received at the mobile computing device 118, the “Services Directory” screen 804 shown in FIG. 8 is presented at user interface 500. After being presented with display screen 804, a user invokes the print command button 802 while selecting print service 801 at user action 420. In the example shown in FIG. 8, the user selected the print service 801 that is coupled to the IR port to which the mobile computing device is communicating with. Responsive to selection of command 802, mobile computing device 118 returns to either display screens 518 or 604, which are shown in FIGS. 5 and 6 respectively. A user of the mobile computing device 118 can retrieve progress of any document transaction service requested by opening a service request status log (not shown) (column 10, lines 54-67).

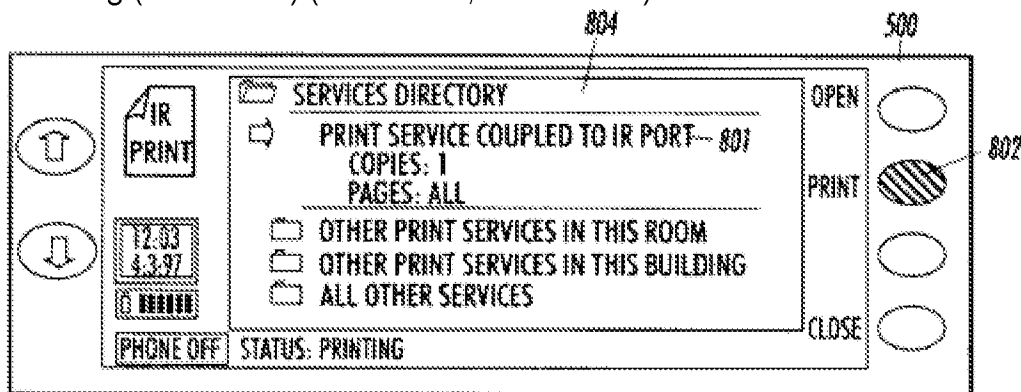


FIG. 8

Applicant disagrees with the above assertions. Here, Eldridge does not teach a touch sensitive screen, much less wireless discovery of the output system device. Therefore, it follows that Eldridge could not further teach “receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon, related to the output system device wirelessly discovered in (1), displayed on the touch sensitive screen interface in (2).”

Furthermore, the Office action implicitly admitted that Eldridge does not teach “wireless discovery.” Therefore, Eldridge could not further teach “receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon, related to the output system device wirelessly discovered in (1), displayed on the touch sensitive screen interface in (2)” [emphasis added].

Additionally, Eldridge does not disclose the subject matter of receives an indication of selection of the user interface item or icon that is related to the output system device wirelessly discovered in (1). Instead, Eldridge teaches away from the above subject matter, by teaching that that the mobile device transmits a request to the token enabled server(s) 126 for a list of available transaction services for a particular user. The user invokes the print command button, while selecting print service, as a user action. The token-based server(s) 126 are “on the wire-based networks 116 and 122”. In addition, the token-enabled server(s) is necessary to properly define locations of documents stored on the network so that “the services provided by the token-enabled server(s) 126 are shared between a plurality of users of the mobile computing devices 118.”

Additionally, the unwarranted modification of Eldridge would change the principle of operation of Eldridge of “using this service, a process operating on a repository of shared documents monitors for changes to specified files or file locations ... repository of shared documents results in the transmission of a document token to selected users of the mobile computing devices.”

For further clarity with respect to the relationship between the steps, Applicant notes that step 3 of claim 1 recites at least one antecedence and numbering referencing

at least a previous step. Atkinson and Lamming do not make-up for the above shortcomings of Eldridge.

3.4 Wirelessly establishes a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), based, at least in part, on having received the indication of a selection of the user interface item or icon in (3)

Step (4) of amended claim 1, recites:

“(4) Wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication or a wireless local area network communication, and the establishing of the wireless communication link is based, at least in part, on having received the indication of a selection of the user interface item or icon in (3)”

Page 7 of the Office action asserts that Eldridge teaches the above subject matter at: **“(i.e. the mobile computing device transmits the request specified by the user in display screen 804 (FIG. 4B, 8 and col. 11 lines 1-3))”** [emphasis in original]. For convenience the cited passage is provided below.

At action 422, the mobile computing device 118 transmits the request specified by the user in display screen 804 (shown in FIG. 8). Upon receipt of the service request, the IR network gateway 114 appends location-context information at action 426 (while the RF gateway 120 does not append context information at 424) before transmitting the received service request to the transaction server 144 (column 11, lines 1-10) [emphasis added].

The Applicant respectfully disagrees that the above passage discloses step (4) of amended claim 1. As shown above, Eldridge does not disclose “wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1).” Therefore, it follows

that Eldridge could not further teach “based, at least in part, on having received the indication of a selection of the user interface item or icon in (3).” Instead, Eldridge, at best, teaches that the mobile computing device transmits the request specified by the user in display screen, via a button, to the transaction server 144.

Additionally, because Eldridge does not teach the “output system device that is wirelessly discovered in (1),” it follows that Eldridge cannot further teach “wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1)”.

Moreover, because Eldridge does not teach “a selection of the user interface item or icon in (3)” as previously discussed, it follows that Eldridge could not further teach “the establishing of the wireless communication link is based, at least in part, on having received the indication of a selection of the user interface item or icon in (3).” Lamming and White do not make-up for the above deficiencies of Atkinson and Eldridge.

Finally, Applicant respectfully asserts that the combined references do not disclose or suggest the combination of steps as a whole, including:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system device, the wireless discovery of the output system device is based, at least in part, on physical proximity between the mobile information apparatus and the output system device;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system device wirelessly discovered in (1) for user selection;

(3) receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon, related to the output system device wirelessly discovered in (1), displayed on the touch sensitive screen interface in (2);

(4) wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication or a wireless local area network communication, and the establishing of the wireless

communication link is based, at least in part, on having received the indication of a selection of the user interface item or icon in (3); and

(5) wirelessly provides, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link established in (4), security information or authentication information to the output system device wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output system device.

Therefore, Applicant asserts that claim 1 is patentable because the combined references do not teach or suggest each and every element of the claim and taken as a whole. Claims 2-7 depend from and further limit independent claim 1, and thus are allowable for at least the same reasons as that independent claim. Independent claims 8 and 14 recite features that are analogous to claim 1. Accordingly, Applicant respectfully asserts that independent claims 8 and 14 are patentable for at least the same reasons as independent claim 1. Claims 9-13 and 15-20 depend from and further limit independent claims 8 and 14, and thus are allowable for at least the same reasons as those independent claims.

Conclusion

If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record as indicated below, at (503) 227-5631, or the representative of the Applicant of this application, William Ho Chang, at (503) 381-7056.

Dated: July 10, 2019

Respectfully submitted,

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Listing of Claims:

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application. Material to be inserted is in **bold and underline**, and material to be deleted is in ~~strikeout~~ or if the deletion is of five or fewer consecutive characters or would be difficult to see in double brackets [[]].

1. (Currently Amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to set up an output system device for accessing a service, operated, at least partly, over a network, ~~at least part of the software is either pre-installed at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network,~~ the output system device includes wireless communication circuitry for wireless communication and at least an output device for output of digital content, and the output system device is a distinct device from the mobile information apparatus, the mobile information apparatus includes:

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors, **and**

one or more wireless communication units **that include one or more radio frequency link controllers** for wireless communication; and

wherein, when the one or more processors included in the mobile information apparatus **execute** ~~executes~~ at least part of the software at the mobile information apparatus, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system device, the wireless ~~device~~ discovery of the output system device is based, at least in part, on physical proximity between the mobile information apparatus and the output system **device**;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, ~~[[an]]~~ a user interface item or icon related to the output system device wirelessly discovered in (1) for user selection;

(3) receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon, related to the output system device wirelessly discovered in (1), displayed on the touch sensitive screen interface in (2);

(4) wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication or a wireless local area network communication, and the establishing of the wireless communication link is based, at least in part, on having received the indication of a selection of the user interface item or icon in (3); and

(5) wirelessly provides ~~transmits~~, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link established in (4), security information or authentication information to the output system device wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the ~~output system device~~ mobile information apparatus to access services provided by the output system device. ~~the service operated, at least partly, over the network.~~

2. (Currently Amended) The medium according to claim 1, wherein the one or more wireless communication units of the mobile information apparatus support ~~supports~~ at least part of a protocol within Bluetooth specifications, and the wireless communication link between the mobile information apparatus and the output system device established in (4), using the one or more wireless communication units, is compatible with the at least part of a protocol within Bluetooth specifications.

3. (Original) The medium according to claim 2, wherein the one or more wireless communication units of the mobile information apparatus further support at least part of

a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

4. (Currently Amended) The medium according to ~~claim 3~~ **claim 1**, wherein the **mobile information apparatus further synchronizes or exchanges information with the output system device wirelessly discovered in (1).** ~~security information or authentication information wirelessly transmitted to the output system device in (5) is to facilitate, at least in part, the output system device to establish a wireless local area network connection between the mobile information apparatus and the output system device.~~

5. (Currently Amended) The medium according to claim 3, wherein the mobile information apparatus is embodied as a smart phone or an information pad, and the output system device includes at least one speaker for outputting audio digital content, and wherein the service operated, at least partly, over [[a]] **the** network, provides **the** audio digital content to the output system device.

6. (Original) The medium according to claim 1, wherein the output system device is at least one of a sound output system, a television system, an output controller connectable to a television, a projection system device, a printing system device, a speaker system device, or an information apparatus that is an Internet appliance, individually or in any combination.

7. (Original) The medium according to claim 2, wherein the mobile information apparatus is a smart phone, and wherein, subsequent to establishing the wireless communication link between the mobile information apparatus and the output system device in (4), the mobile information apparatus further wirelessly manages or wirelessly drives the output system device using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4).

8. (Currently Amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile device for wirelessly ~~wireless~~ managing an output system to establish an output service using the output system, ~~at least part of the software is either pre-installed at the mobile device or downloadable, at least partly, to the mobile device from one or more servers accessible by the mobile device over a network,~~ the output system includes wireless communication circuitry for wireless communication and at least an output device for outputting digital content, the mobile device is a distinct device from the output system, the mobile device includes:

a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software,
one or more processors, and
one or more wireless communication units that include circuitry for wireless communication; and

wherein, when the one or more processors included in the mobile device execute ~~executes~~ at least part of the software at the mobile device, the mobile device executes a method, comprising:

(1) wirelessly discovering, using the one or more wireless communication units of the mobile device, one or more wireless devices that include the output system, the wireless discovering of the output system is based, at least in part, on short range wireless communication or ~~local~~-wireless local area network communication;

(2) wirelessly receiving, using the one or more wireless communication units of the mobile device, device information from the output system that has been wirelessly ~~wireless device~~ discovered by the mobile device in (1), the device information is related, at least in part, to the output system discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile device, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);

(4) receiving, via the touch sensitive screen interface of the mobile device, at least an indication of a selection of the user interface item displayed on the touch

sensitive screen interface in (3), the user interface item is related, at least in part, to the output system discovered in (1);

(5) establishing, using the one or more wireless communication units of the mobile device, a wireless communication link between the mobile device and the output system that is **wirelessly** ~~wireless device~~ discovered in (1), the wireless communication link is a short range wireless communication or a wireless local area network communication, and the establishing of the wireless communication link is subsequent to having received the indication of ~~[[a]]~~ **the** selection of the user interface item in (4); and

(6) wirelessly **providing** ~~transmitting~~ to the output system, using the one or more wireless communication units and via the wireless communication link established in (5), security information or authentication information, the wireless **providing** ~~transmitting~~ of the security information or **the** authentication information is to facilitate, at least in part, the output system to establish ~~[[an]]~~ **the** output service.

9. (Original) The medium according to claim 8, wherein the wireless discovering of the output system in (1) is based, at least in part, on physical proximity between the mobile device and the output system.

10. (Currently Amended) The medium according to claim 9, wherein the one or more wireless communication ~~[[unit]]~~ **units** of the mobile device support at least part of a protocol within IEEE 802.11 standards or within Bluetooth specifications, and the wireless communication link in (5) is compatible, with **the** at least part of a protocol within IEEE 802.11 standards or within Bluetooth specifications.

11. (Currently Amended) The medium according to claim 10, wherein, subsequent to wirelessly **providing** ~~transmitting~~ the security information or **the** authentication information to the output system in (6), the method further comprises establishing, using the one or more wireless communication units of the mobile device, a wireless local area network connection between the mobile device and output system.

12. (Currently Amended) The medium according to claim 11, wherein the establishing of the output service includes accessing a server operated, at least partly, over the Internet, the accessing of the server being subsequent to having established the wireless local area network connection, and wherein the security information or **the** authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, a biometric, a fingerprint, or a voice, individually or in any combination.

13. (Original) The medium according to claim 10, wherein the mobile device is at least a smart phone, and wherein the output system is at least one of a sound output system, a television system, a controller system connectable to a television, a projector system, a speaker system, a printing system, or an Internet appliance, individually or in any combination.

14. (Currently Amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to wirelessly manage or wirelessly drive an output device, the software is either pre-installed, at least partly, at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, and the output device is a distinct device from the mobile information apparatus, the mobile information apparatus includes:

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors, **and**

one or more wireless communication units **that include one or more radio frequency controllers** for wireless communication; and

wherein, when the one or more processors **execute** ~~executes~~ at least part of the software, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless ~~device~~-discovery of the output device is based, at least in part, on physical proximity between the mobile information apparatus and the output device;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item related, at least in part, to the output device wirelessly discovered in (1);

(3) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output device wirelessly discovered in (1), the wireless communication link is a direct short range ~~direct~~-wireless communication or a wireless local area network communication; and

(4) wirelessly manages or wirelessly drives, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), the output device,

wherein the wireless managing or the wireless driving of the output device in (4) further comprises:

(5) wirelessly sending, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), first information or a query to the output device; and

(6) wirelessly receiving, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), second information or a response from the output device, the second information or the response wirelessly received from the output device is in response to having wirelessly sent the first information or the query to the output device in (5).

15. (Currently Amended) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards, and the wireless communication link in (3) is compatible, with the at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

16. (Currently Amended) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link in (3) is compatible, with the at least part of a protocol within Bluetooth specifications.

17. (Currently Amended) The medium according to claim 16, wherein subsequent to the wireless discovery of the output device in (1), the mobile information apparatus further wirelessly receives, using the one or more wireless communication units of the mobile information apparatus, device information from the output device, the device information includes an attribute related, at least in part, to the output device, and wherein the user interface item displayed on the touch sensitive screen interface in (2) is related to the device information received from the output device.

18. (Currently Amended) The medium according to claim 14, wherein the method further comprises receiving, via the touch sensitive screen interface, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (2); and subsequent to receiving the indication of [[a]] the selection via the touch sensitive screen interface, the mobile information apparatus establishes the wireless communication link in (3).

19. (Original) The medium according to claim 15, wherein the mobile information apparatus is at least a smart phone, and wherein the output device is at least one of a sound output device, a speaker device, a television device, a controller device connectable to a television, a projector device, or an Internet appliance, individually or in any combination.

20. (Currently Amended) The medium according to claim 14, wherein the method further comprises wirelessly providing ~~transmitting~~, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), security information or authentication information to

the output device, the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, or a security key, a biometric, a fingerprint, or a voice, individually or in any combination; **and based, at least in part, on having successfully provided the security information or the authentication information to the output device, the mobile information apparatus receives services from the output device.**

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 15/594,440		Filing Date 05/12/2017		☐ To be Mailed				
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO												
APPLICATION AS FILED - PART I												
		(Column 1)	(Column 2)									
FOR		NUMBER FILED	NUMBER EXTRA		RATE (\$)		FEE (\$)					
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A	N/A		N/A							
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))		N/A	N/A		N/A							
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A	N/A		N/A							
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 = *		x \$80 =								
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 = *		x \$420 =								
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).										
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))												
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL							
APPLICATION AS AMENDED - PART II												
		(Column 1)	(Column 2)		(Column 3)							
AMENDMENT	07/10/2019	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)					
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	x \$ 100 =	0					
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	x \$ 460 =	0					
	☐ Application Size Fee (37 CFR 1.16(s))											
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
							TOTAL ADD'L FEE		0			
		(Column 1)	(Column 2)		(Column 3)							
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)					
	Total (37 CFR 1.16(i))	*	Minus	**	=	x \$ 0 =						
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x \$ 0 =						
	☐ Application Size Fee (37 CFR 1.16(s))											
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
							TOTAL ADD'L FEE					
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.							LIE					
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".							/BRENDA V HARRISON/					
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Suite 725
PORTLAND, OR 97201

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DRAGOESCU, CLAUDIA B	
ART UNIT	PAPER NUMBER
2141	

DATE MAILED: 09/25/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903

TITLE OF INVENTION: SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	12/26/2019

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(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903

TITLE OF INVENTION: SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	12/26/2019

EXAMINER	ART UNIT	CLASS-SUBCLASS
DRAGOESCU, CLAUDIA B	2141	715-736000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903
152	7590	09/25/2019	EXAMINER	
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP			DRAGOESCU, CLAUDIA B	
111 SW Columbia Street			ART UNIT	
Suite 725			PAPER NUMBER	
PORTLAND, OR 97201			2141	

DATE MAILED: 09/25/2019

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ROKU EXH 1003

Notice of Allowability	Application No. 15/594,440	Applicant(s) Chang et al.	
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment of 7/10/19.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-20. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)	5. ☒ Examiner's Amendment/Comment
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>7/10/19</u> .	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	
--	--

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions. This action is in response to the Amendment filed on 7/10/19. Claims 1-20 are pending in the case.

Information Disclosure Statement

2. The IDS of 7/10/19 has been considered. Cited in MPEP 2004 Aids or Compliance With Duty of Disclosure: It is desirable to avoid the submission of long lists of documents if it can be avoided. Eliminate clearly irrelevant and marginally pertinent cumulative information. If a long list is submitted, highlight those documents which have been specifically brought to applicant's attention and/or are known to be of most significance. See *Penn Van Boats, Inc. v. Sea Lark Boats, Inc.*, 359 F. Supp. 948, 175 USPQ 260 (S.D. Fla. 1972), aff'd, 479 F.2d 1338, 178 USPQ 577 (5th Cir. 1973), cert. denied, 414 U.S. 874 (1974). But cf. *Molins PLC v. Textron Inc.*, 48 F.3d 1172, 33 USPQ2d 1823 (Fed. Cir. 1995).

An applicant's duty of disclosure of material and information is not satisfied by presenting a patent examiner with "a mountain of largely irrelevant [material] from which he is presumed to have been able, with his expertise and with adequate time, to have found the critical [material]. It ignores the real world conditions under which examiners work." *Rohm & Haas Co. v. Crystal Chemical Co.*, 722 F.2d 1556, 1573 [220 USPQ 289] (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). (Emphasis in original). Patent

applicant has a duty not just to disclose pertinent prior art references but to make a disclosure in such way as not to "bury" it within other disclosures of less relevant prior art; See *Golden Valley Microwave Foods Inc. v. Weaver Popcorn Co. Inc.*, 24 USPQ2d 1801 (N.D. Ind. 1992); *Molins PLC v. Textron Inc.*, 26 USPQ2d 1889, at 1899 (D.Del 1992); *Penn Van Boats, Inc. v. Sea Lark Boats, Inc. et al.*, 175 USPQ 260, at 272 (S.D. Fl. 1972).

It is impractical for the examiner to review the references thoroughly with the number of references cited in the case (ten pages of Information Disclosure Statements, and more than forty references). By initialing each of the cited references on the accompanying 1449 forms, the examiner is merely acknowledging the submission of the cited references and merely indicating that only a cursory review is made of the cited references.

Allowable Subject Matter

3. Claims 1-20 are allowed. The following is an examiner's statement of reasons for allowance: independent claims 1, 8 and 14, when considered as a whole, are allowable over the prior art of record.

Specifically, the prior art of Atkinson teaches a method for discovery of remote devices, i.e. a process of discovering other active devices in accessible range. A first Bluetooth device accesses a second Bluetooth device, for example, a printer, to print documents stored on the first Bluetooth enabled device. The device, e.g. a mobile phone, discovers print services in range, then communicates with the remote device to

request an inquiry, to setup connections, for authentication, and remote device information. A Bluetooth wireless communication protocol is implemented to enable wireless devices to communicate with each other. A link manager searches for other Bluetooth devices within its communication range, establishes links, and sets up connections. Upon establishing a connection, an application that owns this connection is the only one that sees data for this connection. The link manager also handles authentication. The Bluetooth specification defines a set of authentication procedures like Link Key Request and PIN code request. The functionality could be provided with an application, for example, an application written for conducting a financial transaction with another device.

The prior art of Eldridge teaches that once a list of available services is received at a mobile computing device, a "Services Directory" screen is presented. A user invokes the print command button while selecting the print service. The print service is coupled to the IR port to which the mobile computing device is communicating with. The mobile computing device transmits the request specified by the user. The IR gateway authenticates the request using the certificate server.

The prior art of Lamming teaches a mobile device with a touch screen.

But the claims of the present invention recite a different combination of limitations. Claim 1 recites the following limitations that in combination with the other claim limitations are not taught by the combination of the prior art:

"(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system device, the wireless discovery of

the output system device is based, at least in part, on physical proximity between the mobile information apparatus and the output system device;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system device wirelessly discovered in (1) for user selection;

(3) receives, via the touch sensitive screen interface, at least an indication of a selection of the user interface item or icon, related to the output system device wirelessly discovered in (1), displayed on the touch sensitive screen interface in (2);

(4) wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication or a wireless local area network communication, and the establishing of the wireless communication link is based, at least in part, on having received the indication of a selection of the user interface item or icon in (3); and

(5) wirelessly provides, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link established in (4), security information or authentication information to the output system device wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output system device".

The dependent claims further add limitations to the allowable subject matter of the corresponding independent claims; thus are also allowable. Therefore the claims are allowed over the art because the claims differ in scope that is not seen or suggested by the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claudia Dragoescu whose telephone number is 571-270-7966. The examiner can normally be reached on Monday-Friday: 9:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Ng can be reached on 571-270-1698. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

Art Unit: 2141

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CLAUDIA DRAGOESCU/

Primary Examiner, Art Unit 2141

September 13, 2019

Issue Classification 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.	
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141	

CPC						
Symbol					Type	Version
G06F	/	3	/	1236	F	2013-01-01
H04W	/	76	/	10	I	2018-02-01
H04W	/	4	/	80	I	2018-02-01
G06F	/	3	/	1208	I	2013-01-01
G06F	/	3	/	122	I	2013-01-01
G06F	/	3	/	1226	I	2013-01-01
G06F	/	3	/	1245	I	2013-01-01
G06F	/	3	/	1247	I	2013-01-01
G06F	/	3	/	1284	I	2013-01-01
G06F	/	3	/	1285	I	2013-01-01
G06F	/	3	/	1288	I	2013-01-01
G06F	/	3	/	1292	I	2013-01-01
G06K	/	15	/	02	I	2013-01-01
G06Q	/	20	/	10	I	2013-01-01
G06K	/	15	/	181	I	2013-01-01
H04L	/	67	/	16	I	2013-01-01
H04L	/	67	/	303	I	2013-01-01
G06F	/	3	/	1258	I	2013-01-01
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G06F	/	3	/	1228	I	2013-01-01
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G06K	/	15	/	1836	I	2013-01-01
H04N	/	1	/	4413	I	2013-01-01
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H04N	/	7	/	16	I	2013-01-01
H04W	/	8	/	005	I	2013-01-01
H04W	/	12	/	06	I	2013-01-01
H04W	/	12	/	08	I	2013-01-01
G06F	/	3	/	1203	I	2013-01-01

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	13 September 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.	
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141	

CPC						
Symbol					Type	Version
G06F	/	3	/	1238	I	2013-01-01
G06F	/	3	/	1286	I	2013-01-01
H04N	/	1	/	00244	I	2013-01-01
H04N	/	1	/	00283	I	2013-01-01
H04N	/	1	/	00411	I	2013-01-01
H04N	/	1	/	00854	I	2013-01-01
H04N	/	1	/	00938	I	2013-01-01
H04N	/	1	/	32534	I	2013-01-01
H04N	/	1	/	32582	I	2013-01-01
H04W	/	76	/	14	I	2018-02-01
G06F	/	3	/	0481	I	2013-01-01
G06F	/	3	/	167	I	2013-01-01
G10L	/	15	/	22	I	2013-01-01
G10L	/	15	/	30	I	2013-01-01
H04N	/	1	/	00307	I	2013-01-01
H04N	/	1	/	00403	I	2013-01-01
H04N	/	1	/	00488	I	2013-01-01
G06F	/	3	/	04842	I	2013-01-01
G06F	/	3	/	0488	I	2013-01-01
G06F	/	3	/	14	I	2013-01-01
G06F	/	3	/	162	I	2013-01-01
Y02D	/	10	/	1592	A	2018-01-01
H04W	/	84	/	12	A	2013-01-01
G10L	/	2015	/	223	A	2013-01-01
H04N	/	2201	/	0039	A	2013-01-01
H04N	/	2201	/	0041	A	2013-01-01
H04N	/	2201	/	0053	A	2013-01-01
H04N	/	2201	/	0055	A	2013-01-01
H04N	/	2201	/	0082	A	2013-01-01
H04N	/	2201	/	0094	A	2013-01-01

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	13 September 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

<i>Issue Classification</i> 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 20	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141 (Primary Examiner) _____ (Date) 13 September 2019		O.G. Print Claim(s) 1	O.G. Print Figure 2

Issue Classification 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G06F	/	3	/ 048

NON-CLAIMED			
/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	13 September 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 20	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141 (Primary Examiner) _____ (Date) 13 September 2019		O.G. Print Claim(s) 1	O.G. Print Figure 2

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL **(Submitted Only via EFS-Web)**

Application Number	15594440	Filing Date	2017-05-12	Docket Number (if applicable)	FLEX.0022-008	Art Unit	2141
First Named Inventor	William Ho Chang			Examiner Name	Claudia B. Dragoescu		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☒ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
 (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
 The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
 Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	Peter D. Sabido/	Date (YYYY-MM-DD)	2019-12-24
Name	Peter D. Sabido	Registration Number	50353

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: December 24, 2019

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
Filed : May 12, 2017
For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE
Examiner : Claudia B. Dragoescu
Art Unit : 2141
Confirmation No.: 7903

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

**AMENDMENT ACCOMPANYING REQUEST
FOR CONTINUED EXAMINATION (37 C.F.R. § 1.114)**

This Amendment and the accompanying Request for Continued Examination pursuant to 37 C.F.R. § 1.114 and the associated fee under 37 C.F.R. § 1.17(e) are submitted.

Amendments to the Specification	Begin on page 2
Amendments to the Claims	Begin on page 3
Amendments to the Drawings	None
Remarks	Begin on page 18

Amendments to the Specification

Please make the amendments below to the specification. Material to be inserted is in underline, and material to be deleted is in ~~strikeout~~.

Please amend the abstract as follows:

Abstract of the Disclosure

Software and software applications for mobile devices to wirelessly manage or wirelessly setup an output system or output device are herein disclosed and enabled. Examples of mobile devices include smart phones and information pads having a touch sensitive screen. To set up an output system, the software running at the mobile device ~~information apparatus~~ wirelessly discovers the output system that is within physical proximity to the mobile device ~~information apparatus~~; receives selection of an item related to the wirelessly discovered output system via the touch sensitive screen; establishes a wireless communication link between the mobile device ~~information apparatus~~ and the output system; and wirelessly transmits, via the established wireless communication link, security information or authentication information to the output system for setting up the output system for service over a network. The software may further facilitate management of settings of the output system and may further wirelessly drive or control the output system.

Listing of Claims:

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application. Material to be inserted is in **bold and underline**, and material to be deleted is in ~~strikeout~~ or if the deletion is of five or fewer consecutive characters or would be difficult to see in double brackets [[]].

1. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to set up an output system ~~device~~ for accessing a service[[,]] **that is** operated, at least partly, over a network, the output system ~~device~~ includes wireless communication circuitry for wireless communication, **and the output system is associated** with at least an output device for output of digital content, and the output system ~~device~~ is a distinct device from the mobile information apparatus, the mobile information apparatus includes:

a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software,
one or more processors, and
one or more wireless communication units that include one or more radio frequency link controllers for wireless communication; and

wherein, when the one or more processors included in the mobile information apparatus execute at least part of the software at the mobile information apparatus, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system ~~device~~, the wireless discovery of the output system ~~device~~ is based, at least in part, on physical proximity between the mobile information apparatus and the output system ~~device~~;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system ~~device~~ wirelessly discovered in (1) for user selection;

(3) ~~receives~~ **obtains**, ~~[[via]]~~ **using** the touch sensitive screen interface **and from the user**, at least an indication of a selection of the user interface item or icon, related to the output system ~~device~~ wirelessly discovered in (1) ~~[[.]]~~ **and** displayed on the touch sensitive screen interface in (2);

(4) wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system ~~device~~ that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication **link** or a wireless local area network communication **link**, and the establishing of the wireless communication link is based, at least in part, on having ~~received~~ **obtained** the indication of ~~[[a]]~~ **the** selection of the user interface item or icon in (3); and

(5) wirelessly provides, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link established in (4), security information or authentication information, **from the mobile information apparatus** to the output system ~~device~~ wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output system ~~device~~.

2. (Currently amended) The medium according to claim 1, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link between the mobile information apparatus and the output system ~~device~~ established in (4), using the one or more wireless communication units, is compatible with the at least part of a protocol within Bluetooth specifications.

3. (Original) The medium according to claim 2, wherein the one or more wireless communication units of the mobile information apparatus further support at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

4. (Currently amended) The medium according to claim 1, wherein the mobile information apparatus further synchronizes or exchanges information with the output system ~~device~~ wirelessly discovered in (1).

5. (Currently amended) The medium according to claim 3, wherein the mobile information apparatus is embodied as a smart phone or an information pad, and the output system ~~device~~ includes at least one ~~speaker~~ **audio output device** for outputting audio digital content, and wherein the service operated, at least partly, over the network, provides the audio digital content to the output system ~~device~~.

6. (Currently amended) The medium according to claim 1, wherein the output system ~~device~~ is at least one of a sound output system, a television system, an output controller connectable to a television, a projection system ~~device~~, a printing system ~~device~~, a ~~speaker system device~~, or an information apparatus that is **at least** an Internet appliance, individually or in any combination; **and**

wherein subsequent to having wirelessly provided, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link established in (4), the security information or the authentication information to the output system in (5), the mobile information apparatus further executes at least part of the software at the mobile information apparatus using the one or more processors to:

(i) obtain, at the mobile information apparatus, the digital content for outputting at the output system; and

(ii) wirelessly transmit, using the one or more wireless communication units and over the wireless communication link established in (4), output data, related to the digital content obtained in (i), to the output system for processing or outputting at least part of the digital content at the output system.

7. (Previously presented) The medium according to claim 2, wherein the mobile information apparatus is a smart phone, and wherein, subsequent to establishing the wireless communication link between the mobile information apparatus and the output system device in (4), the mobile information apparatus further wirelessly manages or wirelessly drives the output system device using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4).

8. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile device for wirelessly managing an output system ~~to establish an output service using the output system~~, the output system includes wireless communication circuitry for wireless communication and at least **a connection to** an output device for outputting digital content, the mobile device is a distinct device from the output system, the mobile device includes:

- a touch sensitive screen interface for interacting with a user,
- memory for storing at least part of the software,
- one or more processors, and
- one or more wireless communication units that include circuitry for wireless communication; and

wherein, when the one or more processors, included in the mobile device, execute at least part of the software at the mobile device, the mobile device executes a method, comprising:

(1) wirelessly discovering, using the one or more wireless communication units of the mobile device, ~~one or more wireless devices that include~~ the output system, the wireless discovering of the output system is based, at least in part, on short range wireless communication or wireless local area network communication;

(2) wirelessly receiving, using the one or more wireless communication units of the mobile device, device information from the output system that has been wirelessly discovered by the mobile device in (1), the device information is related, at least in part, to the output system discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile device, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);

(4) receiving, ~~[[via]]~~ **using** the touch sensitive screen interface of the mobile device, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3), the user interface item is related, at least in part, to the output system discovered in (1);

(5) establishing, using the one or more wireless communication units of the mobile device, a wireless communication link between the mobile device and the output system that is wirelessly discovered in (1), the wireless communication link is a short range wireless communication **link** or a wireless local area network communication **link**, and the establishing of the wireless communication link is subsequent to having received the indication of the selection of the user interface item in (4); and

(6) wirelessly providing, **from the mobile device** to the output system, using the one or more wireless communication units and via the wireless communication link established in (5), security information or authentication information, the wireless providing of the security information or the authentication information is to facilitate, at least in part, the output system to establish ~~[[the]]~~ **an** output service **accessible by the mobile device**.

9. (Original) The medium according to claim 8, wherein the wireless discovering of the output system in (1) is based, at least in part, on physical proximity between the mobile device and the output system.

10. (Previously presented) The medium according to claim 9, wherein the one or more wireless communication units of the mobile device support at least part of a protocol within IEEE 802.11 standards or within Bluetooth specifications, and the wireless communication link in (5) is compatible, with the at least part of a protocol within IEEE 802.11 standards or within Bluetooth specifications.

11. (Currently amended) The medium according to claim 10, wherein, subsequent to wirelessly providing the security information or the authentication information to the output system in (6), the method further comprises:

(a) establishing, using the one or more wireless communication units of the mobile device, a wireless local area network connection between the mobile device and **the** output system; **and**

(b) wirelessly transmitting, using the one or more wireless communication units and over the wireless local area network connection established in (a), output data that is related to the digital content, to the output system for outputting at least part of the digital content at the output system.

12. (Currently amended) The medium according to claim 11, wherein **the mobile device is at least a smart phone** ~~establishing of the output service includes accessing a server operated, at least partly, over the Internet, the accessing of the server being subsequent to having established the wireless local area network connection, and~~ wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, ~~[[a]]~~ biometric **information**, ~~[[a]]~~ fingerprint **information**, or ~~[[a]]~~ voice, individually or in any combination.

13. (Original) The medium according to claim 10, wherein the mobile device is at least a smart phone, and wherein the output system is at least one of a sound output system, a television system, a controller system connectable to a television, a projector system, a speaker system, a printing system, or an Internet appliance, individually or in any combination.

14. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to wirelessly manage or wirelessly drive an output device, ~~the software is either pre-installed, at least partly, at the mobile information apparatus or downloadable, at least~~

~~partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network,~~ the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, and the output device is a distinct device from the mobile information apparatus, the mobile information apparatus includes:

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors, and

one or more wireless communication units that include one or more radio frequency controllers for wireless communication; and

wherein, when the one or more processors execute at least part of the software, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless discovery of the output device is based, at least in part, on physical proximity between the mobile information apparatus and the output device;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item related, at least in part, to the output device wirelessly discovered in (1);

(3) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output device wirelessly discovered in (1), the wireless communication link is a direct short range wireless communication link or a wireless local area network communication link; and

(4) wirelessly manages or wirelessly drives, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), the output device,

wherein the wireless managing or the wireless driving of the output device in (4) further comprises:

(5) wirelessly sending, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), first information or a query, **from the mobile information apparatus** to the output device; and

(6) wirelessly receiving, **at the mobile information apparatus**, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), second information or a response from the output device, the second information or the response wirelessly received from the output device is in response to having wirelessly sent the first information or the query **from the mobile information apparatus** to the output device in (5).

15. (Previously presented) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards, and the wireless communication link in (3) is compatible, with the at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

16. (Previously presented) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link in (3) is compatible, with the at least part of a protocol within Bluetooth specifications.

17. (Previously presented) The medium according to claim 16, wherein subsequent to the wireless discovery of the output device in (1), the mobile information apparatus further wirelessly receives, using the one or more wireless communication units of the mobile information apparatus, device information from the output device, the device information includes an attribute related, at least in part, to the output device, and wherein the user interface item displayed on the touch sensitive screen interface in (2) is related to the device information received from the output device.

18. (Currently amended) The medium according to claim 14, wherein, **when the one or more processors execute at least part of the software, the mobile information apparatus** ~~the method further comprises receiving~~ **obtains**, via the touch sensitive screen interface **and from the user**, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (2); and subsequent to ~~receiving~~ **obtaining** the indication of the selection via the touch sensitive screen interface, the mobile information apparatus establishes the wireless communication link in (3).

19. (Currently amended) The medium according to claim 15, wherein the mobile information apparatus is at least a smart phone, and wherein the output device is at least one of a sound output device, ~~a speaker device~~, a television device, a controller device connectable to a television, a projector device, or an Internet appliance, individually or in any combination; **and wherein the software is either pre-installed, at least partly, at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network.**

20. (Currently amended) The medium according to claim 14, wherein, **when the one or more processors execute at least part of the software, the mobile information apparatus** ~~the method further comprises~~ wirelessly **provides** providing, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (3), security information or authentication information to the output device, the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, or a security key, ~~[[a]]~~ **information**, a fingerprint, or ~~[[a]]~~ voice, individually or in any combination; and based, at least in part, on having successfully provided the security information or the

authentication information to the output device, the mobile information apparatus receives services from the output device.

21. (New) A method for wirelessly managing an output system using a mobile information apparatus, where the output system includes wireless communication circuitry for wireless communication with the mobile information apparatus and at least an output device for output of digital content, and the output system is a distinct and separate device from the mobile information apparatus, and where the mobile information apparatus includes:

one or more processors,

a software application running at the mobile information apparatus,

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software application, and

one or more wireless communication units that include one or more radio frequency controllers for wireless communication, and wherein the method comprises:

(1) wirelessly discovering, using the one or more wireless communication units of the mobile information apparatus, the output system, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

(2) wirelessly receiving, using the one or more wireless communication units of the mobile information apparatus, device information from the output system that has been wirelessly discovered by the mobile information apparatus in (1), the device information is related, at least in part, to the output system discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile information apparatus, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);

(4) establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system that is wirelessly discovered in (1), the wireless

communication link is a short range wireless communication link or a wireless local area network communication link;

(5) wirelessly sending from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4), first information or a query to the output system; and

(6) wirelessly receiving, at the mobile information apparatus, using the one or more wireless communication units and via the established wireless communication link in (4), second information or a response, from the output system, the second information or the response wirelessly received from the output system is in response to having wirelessly sent the first information or the query from the mobile information apparatus to the output system in (5).

22. (New) The method of claim 21, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards or least part of a protocol within Bluetooth specifications.

23. (New) The method of claim 22, wherein the method further comprises wirelessly providing, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4), security information or authentication information to the output system, and wherein based, at least in part, on having successfully provided the security information or the authentication information to the output system, the mobile information apparatus receives output services from the output system; and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, or a security key, biometric information, fingerprint information, or a voice, individually or in any combination.

24. (New) The method of claim 22, wherein subsequent to displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item for the user selection in (3), the method further comprises:

receiving, using the touch sensitive screen interface, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3); and

subsequent to receiving the indication of the selection using the touch sensitive screen interface, the mobile information apparatus establishes the wireless communication link in (4).

25. (New) The method of claim 22, wherein the output system is embodied, at least in part, as a television or an output controller that is wire connectable to a television; and wherein the method further comprises:

(a) obtaining, by the mobile information apparatus, audio or video digital content; and

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus and over the wireless communication link established in (4), output data related to the audio or video digital content, to the output system for processing at least part of the audio or video digital content at the output system.

26. (New) The method of claim 21, wherein the second information includes information that is related to at least one of the following: status information, response information related to the first information, device attribute information, or user interface information, individually or in any combination.

27. (New) The method of claim 21, wherein the method further comprises:

(7) wirelessly sending, from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus, and over the established wireless communication link in (4), voice data to the output system, the

voice data is related, at least in part, to a voice activated command from the user operating the mobile information apparatus.

28. (New) A mobile information apparatus for wirelessly managing an output device to establish an output service using the output device, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, the mobile information apparatus is a distinct device from the output device, and the mobile information apparatus includes:

- one or more processors,
- software executing at the mobile information apparatus,
- a touch sensitive screen interface for interacting with a user,
- memory for storing at least part of the software, and
- one or more wireless communication units that include one or more radio frequency link controllers for wireless communication, and

wherein the mobile information apparatus is configurable for:

- (1) wirelessly discovering, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless discovering of the output device is based, at least in part, on short range wireless communication or wireless local area network communication;
- (2) wirelessly receiving, using the one or more wireless communication units of the mobile device, device information from the output device that has been wirelessly discovered by the mobile information apparatus in (1), the device information is related, at least in part, to the output device discovered in (1);
- (3) receiving, from the user and using the touch sensitive screen interface, at least an indication of a selection of a user interface item or icon displayed on the touch sensitive screen interface, the user interface item or icon is related to the device information, wirelessly received in (2) from the output device wirelessly discovered in (1);
- (4) wirelessly establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile

information apparatus and the output device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication link or a wireless local area network communication link, and the establishing of the wireless communication link is based, at least in part, on having received the indication of the selection of the user interface item or icon in (3); and

(5) wirelessly providing, to the output device, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (4), security information or authentication information from the mobile information apparatus, the wireless providing of the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output device.

29. (New) The apparatus of claim 28, wherein the one or more wireless communication units include one or more chips or chipsets, and wherein the wireless communication link established in (4) is compatible, at least partly, with at least one of the following, individually or in any combination:

- (a) at least part of a protocol within IEEE 802.11 standards, or
- (b) at least part of a protocol within Bluetooth specifications.

30. (New) The apparatus of claim 29, wherein prior to receiving the indication of the selection of the user interface item or icon displayed on the touch sensitive screen interface, the mobile information apparatus is configurable for displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item or icon for user selection, the user interface item or icon is related, at least in part, to the device information wirelessly received from the output device in (2); and wherein the mobile information apparatus is further configurable for:

- (i) obtaining, by the mobile information apparatus, digital content for output;
- (ii) wirelessly transmitting, using the one or more wireless communication units and over the wireless communication link established in (4), output data related to the

digital content obtained in (i), to the output system for processing or outputting at least part of the digital content at the output system.

31. (New) The apparatus of claim 30, wherein the mobile information apparatus is at least a smart phone, and wherein the output device is at least one of a sound output device, a television device, a controller device connectable to a television, or a projector device, individually or in any combination; and wherein the output data includes audio data or video data.

32. (New) The apparatus of claim 29, wherein the wireless discovering of the output device in (1) is based, at least in part, on physical proximity between the mobile information apparatus and the output device; and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, a biometric ID, a fingerprint, or a voice ID, individually or in any combination.

33. (New) The apparatus of claim 29, wherein the mobile information apparatus is further configurable to synchronize or exchange information with the output device that is wirelessly discovered in (1) over the wireless communication link established in (4); and wherein the mobile information apparatus is further configurable to:

(a) wirelessly send, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4), first information or a query to the output device; and

(b) wirelessly receive, using the one or more wireless communication units of the mobile information apparatus and via the established wireless communication link in (4), second information or a response from the output device, the second information or the response wirelessly received from the output device is in response to having wirelessly sent the first information or the query from the mobile information apparatus to the output device in (a).

REMARKS

This Amendment and the accompanying Request for Continued Examination are being filed in response to the Notice of Allowance dated September 25, 2019. Claims 1-20 are pending and allowed in the present application.

1. **Notice of Allowance**

A Notice of Allowance was mailed on September 25, 2019 in which claims 1-20 were allowed. Applicant thanks the Examiner for the Notice of Allowance.

2. **Claims of Application**

In reviewing claims 1-20 of the application, Applicant found some minor grammatical errors and antecedence errors. Therefore, Applicant has amended the claims to address grammatical and antecedence errors to improve readability, consistency, and clarity of the claims.

3. **Abstract of Application**

Applicant has made minor amendments to the abstract for clarity and consistency.

4. **Information Disclosure Statement**

In reviewing this application, Applicant discovered that there were additional new references in other co-pending applications since the last filing of an Information Disclosure Statement by the Applicant.

Applicant notes the majority of the references that are cited in the Information Disclosure Statement have already been filed and examined by the same Examiner in one or more other co-pending applications. Therefore, Applicant believes that the burden to examine the newly submitted references should be minimal.

5. New Claims 21-33

Applicant has added new claims 21-33, which are fully supported in the specification as originally filed and also allowable for at least the same reasons as allowed claims 1-20.

Conclusion

If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record as indicated below, at (503) 227-5631, or the representative of the Applicant of this application, William Ho Chang, at (503) 381-7056.

Respectfully submitted,

Chernoff Vilhauer, L.L.P.
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NOTICE OF ALLOWANCE AND FEE(S) DUE

152 7590 01/30/2020
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP
111 SW Columbia Street
Suite 725
PORTLAND, OR 97201

EXAMINER	
DRAGOESCU, CLAUDIA B	
ART UNIT	PAPER NUMBER
2141	

DATE MAILED: 01/30/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903

TITLE OF INVENTION: SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	04/30/2020

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

152 7590 01/30/2020
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP
111 SW Columbia Street
Suite 725
PORTLAND, OR 97201

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903

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APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	04/30/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
DRAGOESCU, CLAUDIA B	2141	715-736000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



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15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903
152	7590	01/30/2020	EXAMINER	
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP			DRAGOESCU, CLAUDIA B	
111 SW Columbia Street			ART UNIT	
Suite 725			PAPER NUMBER	
PORTLAND, OR 97201			2141	
DATE MAILED: 01/30/2020				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ROKU EXH 1003

Notice of Allowability	Application No. 15/594,440	Applicant(s) Chang et al.	
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE of 12/24/19.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-33. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)	5. ☒ Examiner's Amendment/Comment
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>12/24/19</u> .	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	
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CONTINUED EXAMINATION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 12/24/19 has been entered. Claims 1-33 are presented for examination.

Remarks

2. The Information Disclosure Statement(s) (IDS) submitted on 12/24/19 has been considered.

Cited in MPEP 2004 Aids or Compliance With Duty of Disclosure: It is desirable to avoid the submission of long lists of documents if it can be avoided. Eliminate clearly irrelevant and marginally pertinent cumulative information. If a long list is submitted, highlight those documents which have been specifically brought to applicant's attention and/or are known to be of most significance. See *Penn Van Boats, Inc. v. Sea Lark Boats, Inc.*, 359 F. Supp. 948, 175 USPQ 260 (S.D. Fla. 1972), aff'd, 479 F.2d 1338,

178 USPQ 577 (5th Cir. 1973), cert. denied, 414 U.S. 874 (1974). But cf. *Molins PLC v. Textron Inc.*, 48 F.3d 1172, 33 USPQ2d 1823 (Fed. Cir. 1995).

An applicant's duty of disclosure of material and information is not satisfied by presenting a patent examiner with "a mountain of largely irrelevant [material] from which he is presumed to have been able, with his expertise and with adequate time, to have found the critical [material]. It ignores the real world conditions under which examiners work." *Rohm & Haas Co. v. Crystal Chemical Co.*, 722 F.2d 1556, 1573 [220 USPQ 289] (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). (Emphasis in original). Patent applicant has a duty not just to disclose pertinent prior art references but to make a disclosure in such way as not to "bury" it within other disclosures of less relevant prior art; See *Golden Valley Microwave Foods Inc. v. Weaver Popcorn Co. Inc.*, 24 USPQ2d 1801 (N.D. Ind. 1992); *Molins PLC v. Textron Inc.*, 26 USPQ2d 1889, at 1899 (D.Del 1992); *Penn Van Boats, Inc. v. Sea Lark Boats, Inc. et al.*, 175 USPQ 260, at 272 (S.D. Fl. 1972).

It is impractical for the examiner to review the references thoroughly with the number of references cited in the case (50 references). By initialing each of the cited references on the accompanying 1449 forms, the examiner is merely acknowledging the submission of the cited references and merely indicating that only a cursory review is made of the cited references.

Allowable Subject Matter

3. Claims 1-33 are allowed. Independent claims 1, 8, 14, 21 and 28, when considered as a whole, are allowable over the prior art of record. The examiner's statement of reasons for allowance is presented in the previous Notice of Allowance dated 9/25/19.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claudia Dragoescu whose telephone number is 571-270-7966. The examiner can normally be reached on Monday-Friday: 9:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Ng can be reached on 571-270-1698. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

Art Unit: 2141

applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CLAUDIA DRAGOESCU/

Primary Examiner, Art Unit 2141

January 24, 2020

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: February 18, 2020

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
Filed : May 12, 2017
For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE
Examiner : Claudia B. Dragoescu
Art Unit : 2141
Confirmation No.: 7903

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

AMENDMENT AFTER ALLOWANCE

This Amendment, filed under 37 C.F.R. § 1.312 (Rule 312), is submitted in response to the Notice of Allowance dated January 30, 2020. Please charge any additional fees required, or credit any overpayments, to our deposit account number 03-1550.

Amendments to the Specification	Begin on page 2
Amendments to the Claims	Begin on page 3
Amendments to the Drawings	None
Remarks	Begin on page 20

Amendments to the Specification

Please make the amendments below to the specification. Material to be inserted is in underline, and material to be deleted is in ~~strikeout~~.

Please amend the abstract as follows:

Abstract of the Disclosure

Software and software applications for mobile devices to wirelessly manage or wirelessly setup an output system or output device are herein disclosed and enabled. Examples of mobile devices include smart phones and information pads having a touch sensitive screen. To set up an output system, the software running at the mobile device: wirelessly discovers the output system that is within physical proximity to the mobile device; receives selection of an item related to the wirelessly discovered output system via the touch sensitive screen; establishes a wireless communication link between the mobile device and the output system; and wirelessly transmits, via the established wireless communication link, security information or authentication information to the output system for setting up the output system for service. The software may further facilitate management of settings of the output system and may further wirelessly drive or control the output system over the wireless communication link.

Listing of Claims:

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application. Material to be inserted is in **bold and underline**, and material to be deleted is in ~~strikeout~~ or if the deletion is of five or fewer consecutive characters or would be difficult to see in double brackets [[]].

1. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to **wirelessly** set up an output system for ~~accessing a~~ **providing output** service **to the mobile information apparatus** ~~that is operated, at least partly, over a network,~~ the output system includes wireless communication circuitry for wireless communication, and the output system is associated with at least an output device for output of digital content, and the output system is a ~~distinct~~ **separate** device from the mobile information apparatus, the mobile information apparatus includes:

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors, and

one or more wireless communication units that include one or more radio frequency link controllers for wireless communication; and

wherein, when the one or more processors included in the mobile information apparatus execute at least part of the software at the mobile information apparatus, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system wirelessly discovered in (1) for user selection;

(3) obtains, using the touch sensitive screen interface **of the mobile information apparatus** and from the user, at least an indication of a selection of the user interface item or icon, related to the output system wirelessly discovered in (1) and displayed on the touch sensitive screen interface in (2);

(4) wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication link or a wireless local area network communication link, and the establishing of the wireless communication link is based, at least in part, on having obtained the indication of the selection of the user interface item or icon in (3); and

(5) wirelessly provides, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link **wirelessly** established in (4), security information or authentication information, from the mobile information apparatus to the output system **that is** wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output system.

2. (Currently amended) The medium according to claim 1, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link between the mobile information apparatus and the output system **wirelessly** established in (4), using the one or more wireless communication units, is compatible with [[the]] at least part of [[a]] **the** protocol within Bluetooth specifications.

3. (Original) The medium according to claim 2, wherein the one or more wireless communication units of the mobile information apparatus further support at least part of

a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

4. (Previously presented) The medium according to claim 1, wherein the mobile information apparatus further synchronizes or exchanges information with the output system wirelessly discovered in (1).

5. (Currently amended) The medium according to claim [[3]] **2**, wherein the mobile information apparatus is embodied as a smart phone or an information pad, and the output system includes at least one audio output device for outputting audio digital content, and wherein, subsequent to having provided the security information or the authentication information to the output system in (5), the mobile information apparatus is operable to access the services, provided by the output system, which include outputting, at the output system, ~~service operated, at least partly, over the network, provides the audio digital content~~ wirelessly received from the mobile information apparatus via the wireless communication link wirelessly established in (4). ~~to the output system.~~

6. (Currently amended) The medium according to claim [[1]] **3**, wherein the mobile information apparatus is embodied as a smart phone, and wherein the output system is at least one of a sound output system, a television system, an output controller connectable to a television, a projection system, a printing system, or an information apparatus that is at least an Internet appliance, individually or in any combination; and

wherein subsequent to having wirelessly provided, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (4), the security information or the authentication information to the output system in (5), the mobile information apparatus

further executes at least part of the software at the mobile information apparatus using the one or more processors to:

(i) obtain, at the mobile information apparatus, the digital content for outputting at the output system; and

(ii) wirelessly transmit, using the one or more wireless communication units **of the mobile information apparatus** and over the wireless communication link **wirelessly** established in (4), output data, related to the digital content obtained in (i), to the output system for processing or outputting at least part of the digital content at the output system; **and wherein the wireless communication link wirelessly established in (4), using the one or more wireless communication units of the mobile information apparatus, is compatible with at least a protocol within IEEE 802.11 standards.**

7. (Currently amended) The medium according to claim 2, wherein the mobile information apparatus is **embodied as** a smart phone, and wherein, subsequent to **wirelessly** establishing the wireless communication link between the mobile information apparatus and the output system ~~device~~ in (4), the mobile information apparatus further wirelessly manages or wirelessly drives the output system ~~device~~ using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **wirelessly established** in (4).

8. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile device for wirelessly managing an output system, the output system includes wireless communication circuitry for wireless communication and at least a connection to an output device for outputting digital content, the mobile device is a distinct **separate** device from the output system, the mobile device includes:

a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software,

one or more processors, and

one or more wireless communication units that include circuitry for wireless communication; and

wherein, when the one or more processors, included in the mobile device, execute at least part of the software at the mobile device, the mobile device executes a method, comprising:

(1) wirelessly discovering, using the one or more wireless communication units of the mobile device, the output system, the wireless discovering of the output system is based, at least in part, on short range wireless communication or wireless local area network communication;

(2) wirelessly receiving, using the one or more wireless communication units of the mobile device, device information from the output system that has been wirelessly discovered by the mobile device in (1), the device information is related, at least in part, to the output system **wirelessly** discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile device, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);

(4) receiving, using the touch sensitive screen interface of the mobile device **and from the user**, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3), the user interface item is related, at least in part, to the output system **wirelessly** discovered in (1);

(5) establishing, using the one or more wireless communication units of the mobile device, a wireless communication link between the mobile device and the output system that is wirelessly discovered in (1), the wireless communication link is a short range wireless communication link or a wireless local area network communication link, and the establishing of the wireless communication link is subsequent to having received the indication of the selection of the user interface item in (4); and

(6) wirelessly providing, from the mobile device to the output system, using the one or more wireless communication units **of the mobile device** and **[[via]] over** the

wireless communication link established in (5), security information or authentication information, the wireless providing of the security information or the authentication information facilitates ~~is to facilitate~~, at least in part, the mobile device to access output services provided by the output system, ~~to establish an output service accessible by the mobile device.~~

9. (Original) The medium according to claim 8, wherein the wireless discovering of the output system in (1) is based, at least in part, on physical proximity between the mobile device and the output system.

10. (Currently amended) The medium according to claim 9, wherein the one or more wireless communication units of the mobile device support at least part of a protocol within IEEE 802.11 standards or within Bluetooth specifications, and the wireless communication link established in (5) is compatible [[,]] with [[the]] at least part of [[a]] the protocol within IEEE 802.11 standards or within Bluetooth specifications.

11. (Currently amended) The medium according to claim 10, wherein, subsequent to wirelessly providing the security information or the authentication information to the output system in (6), the method further comprises:

(a) establishing, using the one or more wireless communication units of the mobile device, a wireless local area network connection between the mobile device and the output system; and

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile device and over the wireless local area network connection established in (a), output data that is related to the digital content, to the output system for outputting at least part of the digital content at the output system.

12. (Previously presented) The medium according to claim 11, wherein the mobile device is at least a smart phone, and wherein the security information or the

authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, biometric information, fingerprint information, or voice, individually or in any combination.

13. (Currently amended) The medium according to claim [[10]] **11**, wherein the mobile device is at least a smart phone or an information pad, and wherein the output system is at least one of a sound output system, a television system, a controller system connectable to a television, or a projector system, ~~a speaker system, a printing system, or an Internet appliance~~, individually or in any combination, **for outputting the digital content that includes audio data or video data.**

14. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to wirelessly manage or wirelessly drive an output device, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, and the output device is a ~~distinct~~ **separate** device from the mobile information apparatus, the mobile information apparatus includes:

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors, and

one or more wireless communication units that include one or more radio frequency controllers for wireless communication; and

wherein, when the one or more processors execute at least part of the software, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless discovery of the output device is based, at least in part, on physical proximity between the mobile information apparatus and the output device;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item related, at least in part, to the output device wirelessly discovered in (1);

(3) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output device **that is** wirelessly discovered in (1), the wireless communication link is a direct short range wireless communication link or a wireless local area network communication link; and

(4) wirelessly manages or wirelessly drives, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **established** in (3), the output device,

wherein the wireless managing or the wireless driving of the output device in (4) further comprises:

(5) wirelessly sending, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **established** in (3), first information or a query, from the mobile information apparatus to the output device; and

(6) wirelessly receiving, at the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **established** in (3), second information or a response from the output device, the second information or the response wirelessly received from the output device is in response to having wirelessly sent the first information or the query from the mobile information apparatus to the output device in (5).

15. (Currently amended) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards, and the wireless communication link **established** in (3) is compatible[[,]] with [[the]] at least part of [[a]] **the** protocol within

IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

16. (Currently amended) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link **established** in (3) is compatible[[,]] with [[the]] at least part of [[a]] **the** protocol within Bluetooth specifications.

17. (Currently amended) The medium according to claim 16, wherein subsequent to the wireless discovery of the output device in (1), the mobile information apparatus further wirelessly receives, using the one or more wireless communication units of the mobile information apparatus, device information from the output device, the device information includes an attribute related, at least in part, to the output device, and wherein the user interface item₁ displayed on the touch sensitive screen interface in (2)₁ is related to the device information **wirelessly** received from the output device.

18. (Previously presented) The medium according to claim 14, wherein, when the one or more processors execute at least part of the software, the mobile information apparatus further obtains, via the touch sensitive screen interface and from the user, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (2); and subsequent to obtaining the indication of the selection via the touch sensitive screen interface, the mobile information apparatus establishes the wireless communication link in (3).

19. (Currently amended) The medium according to claim 15, wherein the mobile information apparatus is at least a smart phone **or an information pad**, and wherein the output device is at least one of a sound output device, a television device, a controller device connectable to a television, a projector device, or an Internet

appliance, individually or in any combination; and wherein the software is either pre-installed, at least partly, at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network.

20. (Currently amended) The medium according to claim 14, wherein, when the one or more processors execute at least part of the software, the mobile information apparatus further wirelessly provides, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~—wireless communication link **established** in (3), security information or authentication information to the output device, the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, ~~[[or]]~~ a security key, biometric information, a fingerprint, or voice, individually or in any combination; and based, at least in part, on having successfully provided the security information or the authentication information to the output device, the mobile information apparatus ~~receives~~ **is operable to access** services **provided by** ~~[[from]]~~ the output device.

21. (Currently amended) A method for wirelessly managing an output system using a mobile information apparatus, ~~[[where]]~~ **wherein** the output system includes wireless communication circuitry for wireless communication with the mobile information apparatus and at least **a connection to** an output device for output of digital content, and the output system is a distinct and separate device from the mobile information apparatus, and ~~[[where]]~~ **wherein** the mobile information apparatus includes:

- one or more processors,
- a software application running at the mobile information apparatus,
- a touch sensitive screen interface for interacting with a user,
- memory for storing at least part of the software application, and

one or more wireless communication units that include one or more radio frequency controllers for wireless communication, and wherein the method comprises:

- (1) wirelessly discovering, using the one or more wireless communication units of the mobile information apparatus, the output system, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;
- (2) wirelessly receiving, using the one or more wireless communication units of the mobile information apparatus, device information from the output system that has been wirelessly discovered by the mobile information apparatus in (1), the device information is related, at least in part, to the output system wirelessly discovered in (1);
- (3) displaying, on the touch sensitive screen interface of the mobile information apparatus, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);
- (4) establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system that is wirelessly discovered in (1), the wireless communication link is a short range wireless communication link or a wireless local area network communication link;
- (5) wirelessly sending from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link established in (4), first information or a query to the output system; and
- (6) wirelessly receiving, at the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link established in (4), second information or a response, from the output system, the second information or the response wirelessly received from the output system is in response to having wirelessly sent the first information or the query from the mobile information apparatus to the output system in (5).

22. (Currently amended) The method of claim 21, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards or at least part of a protocol within Bluetooth specifications; **and wherein the wireless communication link established in (4) is compatible with at least part of the protocol within IEEE 802.11 standards, or at least part of the protocol within Bluetooth specifications.**

23. (Currently amended) The method of claim 22, wherein the method further comprises wirelessly providing, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~-wireless communication link **established** in (4), security information or authentication information to the output system, and wherein based, at least in part, on having successfully provided the security information or the authentication information to the output system, the mobile information apparatus **is operable to access** ~~receives~~ output services **provided by** ~~[[from]]~~ the output system; and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, ~~[[or]]~~ a security key, biometric information, fingerprint information, or ~~[[a]]~~ voice, individually or in any combination.

24. (Currently amended) The method of claim 22, wherein subsequent to displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item for the user selection in (3), the method further comprises:

receiving, using the touch sensitive screen interface **of the mobile information apparatus and from the user**, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3); and

subsequent to receiving the indication of the selection using the touch sensitive screen interface **of the mobile information apparatus and from the user**, the mobile information apparatus establishes the wireless communication link in (4).

25. (Currently amended) The method of claim 22, **wherein the mobile information apparatus is embodied as a smart phone or as an information pad,** **and** wherein the output system is embodied, at least in part, as a television or an output controller that is wire connectable to a television; and wherein the method further comprises:

(a) obtaining, by **the software application running at** the mobile information apparatus, audio or video digital content; and

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus and over the wireless communication link established in (4), output data related to the audio or video digital content, to the output system for processing at least part of the audio or video digital content, **obtained by the software application in (a),** at the output system.

26. (Previously presented) The method of claim 21, wherein the second information includes information that is related to at least one of the following: status information, response information related to the first information, device attribute information, or user interface information, individually or in any combination.

27. (Currently amended) The method of claim 21, wherein the method further comprises:

(7) wirelessly sending, from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus, and over the ~~established~~ wireless communication link **established** in (4), voice data to the output system, the voice data is related, at least in part, to a voice activated command from the user operating the mobile information apparatus.

28. (Currently amended) A mobile information apparatus for wirelessly managing an output device **and** to **access output services** ~~establish an output service~~ **provided**

~~by using~~ the output device, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, the mobile information apparatus is a ~~distinct~~ **separate** device from the output device, and the mobile information apparatus includes:

one or more processors,
software executing at the mobile information apparatus,
a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software, and
one or more wireless communication units that include one or more radio frequency link controllers for wireless communication, and

wherein the mobile information apparatus is configurable for:

- (1) wirelessly discovering, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless discovering of the output device is based, at least in part, on short range wireless communication or wireless local area network communication;
- (2) wirelessly receiving, using the one or more wireless communication units of the mobile ~~device~~ **information apparatus**, device information from the output device that has been wirelessly discovered by the mobile information apparatus in (1), the device information is **associated** related, at least in part, ~~[[to]]~~ **with** the output device **that is wirelessly** discovered in (1);
- (3) receiving, from the user and using the touch sensitive screen interface **of the mobile information apparatus**, at least an indication of a selection of a user interface item or icon displayed on the touch sensitive screen interface, the user interface item or icon is related to the device information, wirelessly received in (2) from the output device **that is** wirelessly discovered in (1);
- (4) wirelessly establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication link or a

wireless local area network communication link, and the establishing of the wireless communication link is based, at least in part, on having received the indication of the selection of the user interface item or icon in (3); and

(5) wirelessly providing, to the output device, using the one or more wireless communication units of the mobile information apparatus and ~~[[via]]~~ **over** the wireless communication link wirelessly established in (4), security information or authentication information from the mobile information apparatus, the wireless providing of the security information or the authentication information, **from the mobile information apparatus to the output device, facilitates** ~~is to facilitate~~, at least in part, the mobile information apparatus to access **the output** services provided by the output device.

29. (Currently amended) The apparatus of claim 28, wherein the one or more wireless communication units include one or more chips or chipsets, and wherein the wireless communication link **wirelessly** established in (4) is compatible, at least partly, with at least one of the following, individually or in any combination:

- (a) at least part of a protocol within IEEE 802.11 standards, or
- (b) at least part of a protocol within Bluetooth specifications.

30. (Currently amended) The apparatus of claim 29, wherein prior to receiving the indication of the selection of the user interface item or icon displayed on the touch sensitive screen interface **in (3)**, the mobile information apparatus is **further** configurable for displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item or icon for user selection, the user interface item or icon is related, at least in part, to the device information wirelessly received from the output device in (2); and wherein the mobile information apparatus is further configurable for:

- (i) obtaining, by the mobile information apparatus, digital content for output; **and**
- (ii) wirelessly transmitting, using the one or more wireless communication units **of the mobile information apparatus** and over the wireless communication link

wirelessly established in (4), output data related to the digital content obtained in (i), from the mobile information apparatus to the output device system for processing or outputting at least part of the digital content at the output device-system.

31. (Currently amended) The apparatus of claim 30, wherein the mobile information apparatus is at least a smart phone or an information pad, and wherein the output device is at least one of a sound output device, a television device, a controller device connectable to a television, or a projector device, individually or in any combination; and wherein the output data includes at least audio data or video data.

32. (Previously presented) The apparatus of claim 29, wherein the wireless discovering of the output device in (1) is based, at least in part, on physical proximity between the mobile information apparatus and the output device; and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, a biometric ID, a fingerprint, or a voice ID, individually or in any combination.

33. (Currently amended) The apparatus of claim 29, wherein the mobile information apparatus is further configurable to synchronize or exchange information with the output device that is wirelessly discovered in (1) over the wireless communication link wirelessly established in (4); and wherein the mobile information apparatus is further configurable to:

(a) wirelessly send, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~-wireless communication link wirelessly established in (4), first information or a query to the output device; and

(b) wirelessly receive, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~-wireless communication link wirelessly established in (4), second information or a response from the output device, the second information or the response wirelessly received from the output device is in

response to having wirelessly sent the first information or the query from the mobile information apparatus to the output device in (a).

REMARKS

This Amendment After Allowance is filed under 37 C.F.R. § 1.312 (Rule 312) in response to the Notice of Allowance dated January 30, 2020. Claims 1-33 are pending and allowed in the present application.

1. **Notice of Allowance**

A Notice of Allowance was mailed on January 30, 2020 in which claims 1-33 were allowed. Applicant thanks the Examiner for the Notice of Allowance.

2. **Claims of Application**

In reviewing claims 1-33 of the application, Applicant found some minor grammatical errors and antecedence errors. Therefore, Applicant has amended the claims to address grammatical and antecedence errors and to improve readability, consistency, and clarity of the claims.

3. **Abstract of Application**

Applicant has made minor amendments to the abstract for clarity and consistency.

4. **Information Disclosure Statement**

In reviewing this application, Applicant discovered that there were additional Office actions, Notice of Allowances, or references in other co-pending applications (by the same inventors and the same Applicant of present application) since the last filing of an Information Disclosure Statement by the Applicant.

Applicant notes that the status of other co-pending applications as well as a significant number of the references that are cited in the Information Disclosure Statement have already been filed, examined, or to be examined by the same Examiner in one or more other co-pending applications. Therefore, Applicant believes that the burden to examine the newly submitted references should be minimal.

Conclusion

If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record as indicated below, at (503) 227-5631, or William Chang, representative of the Applicant, at 503-381-7056.

Respectfully submitted,

Chernoff Vilhauer, L.L.P.
111 SW Columbia Street, Ste. 725
Portland, OR 97201

By: /Peter D. Sabido/
Peter D. Sabido
Reg. No. 50,353
Telephone No.: (503) 227-5631
Fax No. (503) 228-4373

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
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Alexandria, Virginia 22313-1450

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152 7590 01/30/2020
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(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903

TITLE OF INVENTION: SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE

APPL. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	04/30/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
DRAGOESCU, CLAUDIA B	2141	715-736000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Chernoff Vilhauer LLP
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Flexiworld Technologies, Inc.

Vancouver, WA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

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☒ The Director is hereby authorized to charge ~~XXXXXXXXXX~~ any deficiency, or credit any overpayment to Deposit Account No. 03-1550

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Peter D. Sabido/

Date February 18, 2020

Typed or printed name Peter D. Sabido

Registration No. 50353



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903
152	7590	02/27/2020	EXAMINER	
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP			DRAGOESCU, CLAUDIA B	
111 SW Columbia Street				
Suite 725				
PORTLAND, OR 97201				
			ART UNIT	PAPER NUMBER
			2141	
			NOTIFICATION DATE	DELIVERY MODE
			02/27/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Response to Rule 312 Communication	Application No.	Applicant(s)	
	15/594,440	Chang et al.	
	Examiner	Art Unit	AIA (FITF) Status
	CLAUDIA B DRAGOESCU	2141	No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☒ The amendment filed on 20 February 2020 under 37 CFR 1.312 has been considered, and has been:

a) ☐ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☒ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

The claims were not entered because of the large number of amendments to the claims. The amendments require further consideration by the examiner in order to determine if they represent a change of scope.

/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	
--	--

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: February 18, 2020

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
Filed : May 12, 2017
For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE
Examiner : Claudia B. Dragoescu
Art Unit : 2141
Confirmation No.: 7903

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

AMENDMENT AFTER ALLOWANCE

This Amendment, filed under 37 C.F.R. § 1.312 (Rule 312), is submitted in response to the Notice of Allowance dated January 30, 2020. Please charge any additional fees required, or credit any overpayments, to our deposit account number 03-1550.

Amendments to the Specification	Begin on page 2
Amendments to the Claims	Begin on page 3
Amendments to the Drawings	None
Remarks	Begin on page 20



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903
152	7590	03/10/2020	EXAMINER	
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP			DRAGOESCU, CLAUDIA B	
111 SW Columbia Street			ART UNIT	PAPER NUMBER
Suite 725			2141	
PORTLAND, OR 97201			NOTIFICATION DATE	DELIVERY MODE
			03/10/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent.docket@chernofflaw.com

Response to Rule 312 Communication	Application No.	Applicant(s)	
	15/594,440	Chang et al.	
	Examiner	Art Unit	AIA (FITF) Status
	CLAUDIA B DRAGOESCU	2141	No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☒ The amendment filed on 20 February 2020 under 37 CFR 1.312 has been considered, and has been:

a) ☐ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☒ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

The claims were NOT entered because of the large number of amendments to the claims. The amendments require further consideration by the examiner in order to determine if they represent a change of scope.

/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: February 18, 2020

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
Filed : May 12, 2017
For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE
Examiner : Claudia B. Dragoescu
Art Unit : 2141
Confirmation No.: 7903

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

AMENDMENT AFTER ALLOWANCE

This Amendment, filed under 37 C.F.R. § 1.312 (Rule 312), is submitted in response to the Notice of Allowance dated January 30, 2020. Please charge any additional fees required, or credit any overpayments, to our deposit account number 03-1550.

Amendments to the Specification	Begin on page 2
Amendments to the Claims	Begin on page 3
Amendments to the Drawings	None
Remarks	Begin on page 20



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	04/28/2020	10635365	FLEX.0022-008	7903

152 7590 04/08/2020

CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP
111 SW Columbia Street
Suite 725
PORTLAND, OR 97201

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 172 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

William Ho Chang, Vancouver, WA;
Flexiworld Technologies, Inc., Vancouver, WA;
Christina Ying Liu, San Francisco, CA;

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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL **(Submitted Only via EFS-Web)**

Application Number	15594440	Filing Date	2017-05-12	Docket Number (if applicable)	FLEX.0022-008	Art Unit	2141
First Named Inventor	William Ho Chang			Examiner Name	Claudia B. Dragoescu		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
 Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☒ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
 (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
 The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
 Deposit Account No 031550

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
 Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	Peter D. Sabido/	Date (YYYY-MM-DD)	2020-04-17
Name	Peter D. Sabido	Registration Number	50353

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: April 17, 2020

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
Filed : May 12, 2017
For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE
Examiner : Claudia B. Dragoescu
Art Unit : 2141
Confirmation No.: 7903

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

AMENDMENT ACCOMPANYING RCE

This Amendment and the accompanying Request for Continued Examination and Petition to Withdraw From Issue are submitted. Please charge any additional fees required, or credit any overpayments, to our deposit account number 03-1550.

Amendments to the Specification	Begin on page 2
Amendments to the Claims	Begin on page 3
Amendments to the Drawings	None
Remarks	Begin on page 24

Amendments to the Specification

Please make the amendments below to the specification. Material to be inserted is in underline, and material to be deleted is in ~~strikeout~~.

Please amend the abstract as follows:

Abstract of the Disclosure

Software and software applications for mobile devices to wirelessly manage or wirelessly setup an output system or output device are herein disclosed and enabled. Examples of mobile devices include smart phones and information pads having a touch sensitive screen. To set up an output system, the software running at the mobile device: wirelessly discovers the output system that is within physical proximity to the mobile device; receives, from a user, selection of an item related to the wirelessly discovered output system via the touch sensitive screen; establishes a wireless communication link between the mobile device and the output system; and wirelessly transmits, ~~via the established wireless communication link~~, security information or authentication information to the output system for setting up the output system for service. The software may further facilitate management of settings of the output system and may further wirelessly drive or control the output system over the wireless communication link.

Listing of Claims:

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application. Material to be inserted is in **bold and underline**, and material to be deleted is in ~~strikeout~~ or if the deletion is of five or fewer consecutive characters or would be difficult to see in double brackets [[]].

1. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to **wirelessly** set up an output system for ~~accessing a~~ **providing output** service **to the mobile information apparatus** ~~that is operated, at least partly, over a network,~~ the output system includes wireless communication circuitry for wireless communication, and the output system is associated with at least an output device for output of digital content, and the output system is a ~~distinct~~ **separate** device from the mobile information apparatus, the mobile information apparatus **comprises** ~~includes:~~

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors, and

one or more wireless communication units that include one or more radio frequency link controllers for wireless communication; and

wherein, when the one or more processors included in the mobile information apparatus execute at least part of the software at the mobile information apparatus, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system wirelessly discovered in (1) for user selection;

(3) obtains, using the touch sensitive screen interface **of the mobile information apparatus** and from the user, at least an indication of a selection of the user interface item or icon, related to the output system wirelessly discovered in (1) and displayed on the touch sensitive screen interface in (2);

(4) wirelessly provides, using the one or more wireless communication units of the mobile information apparatus, security information or authentication information, from the mobile information apparatus to the output system that is wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output system; and

[[(4)]] **(5) wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication link or a wireless local area network communication link, and the establishing of the wireless communication link is based, at least in part, on having obtained the indication of the selection of the user interface item or icon in (3); and**

wherein the mobile information apparatus wirelessly accesses the services provided by the output system, over the wireless communication link wirelessly established in (5), is based on having wirelessly provided the security information or the authentication information from the mobile information apparatus to the output system in (4).

~~(5) wirelessly provides, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link established in (4), security information or authentication information, from the mobile information apparatus to the output system wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output system.~~

2. (Currently amended) The medium according to claim 1, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link between the mobile information apparatus and the output system **wirelessly** established in ~~[[4]]~~ **(5)**, using the one or more wireless communication units, is compatible with ~~[[the]]~~ at least part of ~~[[a]]~~ **the** protocol within Bluetooth specifications.

3. (Original) The medium according to claim 2, wherein the one or more wireless communication units of the mobile information apparatus further support at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

4. (Previously presented) The medium according to claim 1, wherein the mobile information apparatus further synchronizes or exchanges information with the output system wirelessly discovered in (1).

5. (Currently amended) The medium according to claim ~~[[3]]~~ **2**, wherein the mobile information apparatus is embodied as a smart phone or an information pad, and the output system includes at least one audio output device for outputting audio digital content, and wherein, **subsequent to having wirelessly provided the security information or the authentication information to the output system in (4), the mobile information apparatus is operable to access the services, provided by the output system, which include outputting, at the output system,** ~~service operated, at least partly, over the network, provides the audio digital content~~ **wirelessly received from the mobile information apparatus via the wireless communication link wirelessly established in (5).** ~~to the output system.~~

6. (Currently amended) The medium according to claim ~~[[1]]~~ **3**, **wherein the mobile information apparatus is embodied as a smart phone, and** wherein the

output system is at least one of a sound output system, a television system, an output controller connectable to a television, a projection system, a printing system, or an information apparatus that is at least an Internet appliance, individually or in any combination; and

wherein, subsequent to having wirelessly provided, using the one or more wireless communication units of the mobile information apparatus ~~and via the wireless communication link established in (4)~~, the security information or the authentication information to the output system in ~~[(5)]~~ **(4)**, the mobile information apparatus further executes at least part of the software at the mobile information apparatus using the one or more processors to:

(i) obtain, at the mobile information apparatus, the digital content for outputting at the output system; and

(ii) wirelessly transmit, using the one or more wireless communication units **of the mobile information apparatus** and over the wireless communication link **wirelessly** established in ~~[(4)]~~ **(5)**, output data, related to the digital content obtained in (i), to the output system for processing or outputting at least part of the digital content at the output system; **and wherein the wireless communication link wirelessly established in (5), using the one or more wireless communication units of the mobile information apparatus, is compatible with at least a protocol within IEEE 802.11 standards.**

7. (Currently amended) The medium according to claim 2, wherein the mobile information apparatus is **embodied as** a smart phone, and wherein, subsequent to **wirelessly** establishing the wireless communication link between the mobile information apparatus and the output system ~~device~~ in ~~[(4)]~~ **(5)**, the mobile information apparatus further wirelessly manages or wirelessly drives the output system ~~device~~ using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **wirelessly established** in ~~[(4)]~~ **(5)**.

8. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile device for wirelessly managing an output system, the output system includes wireless communication circuitry for wireless communication and at least a connection to an output device for outputting digital content, the mobile device is a ~~distinct~~ **separate** device from the output system, the mobile device includes:

a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software,
one or more processors, and
one or more wireless communication units that include circuitry for wireless communication; and

wherein, when the one or more processors, included in the mobile device, execute at least part of the software at the mobile device, the mobile device executes a method, comprising:

(1) wirelessly discovering, using the one or more wireless communication units of the mobile device, the output system, the wireless discovering of the output system is based, at least in part, on short range wireless communication or wireless local area network communication;

(2) wirelessly receiving, using the one or more wireless communication units of the mobile device, device information from the output system that has been wirelessly discovered by the mobile device in (1), the device information is related, at least in part, to the output system **wirelessly** discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile device, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);

(4) receiving, using the touch sensitive screen interface of the mobile device **and from the user**, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3), the user interface item is related, at least in part, to the output system **wirelessly** discovered in (1);

(5) wirelessly providing, from the mobile device to the output system that is wirelessly discovered in (1) and selected in (4), using the one or more wireless communication units of the mobile device, security information or authentication information, the wireless providing of the security information or the authentication information facilitates, at least in part, the mobile device to access output services provided by the output system; and

[[(5)]] **(6)** establishing, using the one or more wireless communication units of the mobile device, a wireless communication link between the mobile device and the output system that is wirelessly discovered in (1), the wireless communication link is a short range wireless communication link or a wireless local area network communication link, and the establishing of the wireless communication link is subsequent to having received the indication of the selection of the user interface item in (4).[[; and]]

~~(6) wirelessly providing, from the mobile device to the output system, using the one or more wireless communication units and via the wireless communication link established in (5), security information or authentication information, the wireless providing of the security information or the authentication information is to facilitate, at least in part, the output system to establish an output service accessible by the mobile device.~~

9. (Currently amended) The medium according to claim 8, wherein the wireless discovering of the output system in (1) is based, at least in part, on physical proximity between the mobile device and the output system, **and wherein, subsequent to having wirelessly provided the security information or the authentication information from the mobile device to the output system in (5), the mobile device wirelessly accesses the output services provided by the output system over the wireless communication link established in (6).**

10. (Currently amended) The medium according to claim 9, wherein the one or more wireless communication units of the mobile device support at least part of a

protocol within IEEE 802.11 standards or within Bluetooth specifications, and the wireless communication link established in [(5)] **(6)** is compatible [,] with [the] at least part of [a] the protocol within IEEE 802.11 standards or within Bluetooth specifications.

11. (Currently amended) The medium according to claim 10, wherein, subsequent to wirelessly providing the security information or the authentication information to the output system in [(6)] **(5)**, the method further comprises:

(a) establishing, using the one or more wireless communication units of the mobile device, a wireless local area network connection between the mobile device and the output system; and

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile device and over the wireless local area network connection established in (a), output data that is related to the digital content, to the output system for outputting at least part of the digital content at the output system.

12. (Previously presented) The medium according to claim 11, wherein the mobile device is at least a smart phone, and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, biometric information, fingerprint information, or voice, individually or in any combination.

13. (Currently amended) The medium according to claim [(10)] **11**, wherein the mobile device is at least a smart phone or an information pad, and wherein the output system is at least one of a sound output system, a television system, a controller system connectable to a television, or a projector system, ~~a speaker system, a printing system, or an Internet appliance~~, individually or in any combination, for outputting the digital content that includes audio data or video data, individually or in combination.

14. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to wirelessly manage or wirelessly drive an output device, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, and the output device is a ~~distinct~~ **separate** device from the mobile information apparatus, the mobile information apparatus **comprises** ~~includes~~:

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors, and

one or more wireless communication units that include one or more radio frequency controllers for wireless communication; and

wherein, when the one or more processors execute at least part of the software, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless discovery of the output device is based, at least in part, on physical proximity between the mobile information apparatus and the output device;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item related, at least in part, to the output device wirelessly discovered in (1);

(3) establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output device **that is** wirelessly discovered in (1), the wireless communication link is a direct short range wireless communication link or a wireless local area network communication link; and

(4) wirelessly manages or wirelessly drives, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **established** in (3), the output device,

wherein the wireless managing or the wireless driving of the output device in (4) further comprises:

(5) wirelessly sending, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **established** in (3), first information or a query, from the mobile information apparatus to the output device; and

(6) wirelessly receiving, at the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **established** in (3), second information or a response from the output device, the second information or the response wirelessly received from the output device is in response to having wirelessly sent the first information or the query from the mobile information apparatus to the output device in (5).

15. (Currently amended) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards, and the wireless communication link **established** in (3) is compatible[[,]] with [[the]] at least part of [[a]] **the** protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

16. (Currently amended) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link **established** in (3) is compatible[[,]] with [[the]] at least part of [[a]] **the** protocol within Bluetooth specifications.

17. (Currently amended) The medium according to claim 16, wherein subsequent to the wireless discovery of the output device in (1), the mobile information apparatus

further wirelessly receives, using the one or more wireless communication units of the mobile information apparatus, device information from the output device, the device information includes an attribute related, at least in part, to the output device, and wherein the user interface item₁ displayed on the touch sensitive screen interface in (2)₁ is related to the device information **wirelessly** received from the output device.

18. (Previously presented) The medium according to claim 14, wherein, when the one or more processors execute at least part of the software, the mobile information apparatus further obtains, via the touch sensitive screen interface and from the user, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (2); and subsequent to obtaining the indication of the selection via the touch sensitive screen interface, the mobile information apparatus establishes the wireless communication link in (3).

19. (Currently amended) The medium according to claim 15, wherein the mobile information apparatus is at least a smart phone **or an information pad**, and wherein the output device is at least one of a sound output device, a television device, a controller device connectable to a television, a projector device, or an Internet appliance, individually or in any combination; and wherein the software is either pre-installed, at least partly, at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network.

20. (Currently amended) The medium according to claim 14, wherein, when the one or more processors execute at least part of the software, the mobile information apparatus further wirelessly provides, using the one or more wireless communication units of the mobile information apparatus ~~and via the established wireless communication link in (3)~~, security information or authentication information to the output device, the security information or the authentication information includes one or

more of a name, a password, identification information, an ID number, a PIN, an IP address, [[or]] a security key, biometric information, a fingerprint, or voice, individually or in any combination; and based, at least in part, on having successfully provided the security information or the authentication information to the output device, the mobile information apparatus ~~receives~~ **is operable to access** services **provided by** [[from]] the output device.

21. (Currently amended) A method for wirelessly managing an output system using a mobile information apparatus, [[where]] **wherein** the output system includes wireless communication circuitry for wireless communication with the mobile information apparatus and at least **a connection to** an output device for output of digital content, and the output system is a distinct and separate device from the mobile information apparatus, and [[where]] **wherein** the mobile information apparatus includes:

one or more processors,

a software application running at the mobile information apparatus,

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software application, and

one or more wireless communication units that include one or more radio frequency controllers for wireless communication, and wherein the method comprises:

(1) wirelessly discovering, using the one or more wireless communication units of the mobile information apparatus, the output system, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

(2) wirelessly receiving, using the one or more wireless communication units of the mobile information apparatus, device information from the output system that has been wirelessly discovered by the mobile information apparatus in (1), the device information is related, at least in part, to the output system **wirelessly** discovered in (1);

- (3) displaying, on the touch sensitive screen interface of the mobile information apparatus, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);
- (4) establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system that is wirelessly discovered in (1), the wireless communication link is a short range wireless communication link or a wireless local area network communication link;
- (5) wirelessly sending from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link **established** in (4), first information or a query to the output system; and
- (6) wirelessly receiving, at the mobile information apparatus, using the one or more wireless communication units **of the mobile information apparatus** and via the ~~established~~ wireless communication link **established** in (4), second information or a response, from the output system, the second information or the response wirelessly received from the output system is in response to having wirelessly sent the first information or the query from the mobile information apparatus to the output system in (5).

22. (Currently amended) The method of claim 21, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards or **at** least part of a protocol within Bluetooth specifications; **and wherein the wireless communication link established in (4) is compatible with at least part of the protocol within IEEE 802.11 standards, or at least part of the protocol within Bluetooth specifications.**

23. (Currently amended) The method of claim 22, wherein the method further comprises wirelessly providing, using the one or more wireless communication units of

the mobile information apparatus ~~and via the established wireless communication link in~~ (4), security information or authentication information to the output system, and wherein based, at least in part, on having successfully provided the security information or the authentication information to the output system, the mobile information apparatus **is operable to access** ~~receives~~ output services **provided by** ~~[[from]]~~ the output system; and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, ~~[[or]]~~ a security key, biometric information, fingerprint information, or ~~[[a]]~~ voice, individually or in any combination.

24. (Currently amended) The method of claim 22, wherein subsequent to displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item for the user selection in (3), the method further comprises:

receiving, using the touch sensitive screen interface **of the mobile information apparatus and from the user**, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3); and,

subsequent to receiving the indication of the selection using the touch sensitive screen interface **of the mobile information apparatus and from the user**, the mobile information apparatus establishes the wireless communication link in (4).

25. (Currently amended) The method of claim 22, **wherein the mobile information apparatus is embodied as a smart phone or as an information pad,** **and** wherein the output system is embodied, at least in part, as a television or an output controller that is wire connectable to a television; and wherein the method further comprises:

(a) obtaining, by **the software application running at** the mobile information apparatus, audio or video digital content; and

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus and over the wireless communication link established

in (4), and to the output system, output data related to the audio or video digital content obtained by the software application in (a); ~~to the output system for processing at least part of the audio or video digital content at the output system.~~ and

(c) outputting, at the output device included in or connected to the output system, at least part of the audio or video digital content that is related, at least in part, to the output data wirelessly transmitted in (b) and that is obtained by the software application in (a).

26. (Previously presented) The method of claim 21, wherein the second information includes information that is related to at least one of the following: status information, response information related to the first information, device attribute information, or user interface information, individually or in any combination.

27. (Currently amended) The method of claim 21, wherein the method further comprises:

(7) wirelessly sending, from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus, and over the ~~established~~ wireless communication link established in (4), voice data to the output system, the voice data is related, at least in part, to a voice activated command from the user operating the mobile information apparatus.

28. (Currently amended) A mobile information apparatus for wirelessly managing an output device and to access output services ~~establish an output service~~ provided by using the output device, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, the mobile information apparatus is a ~~distinct~~ separate device from the output device, and the mobile information apparatus comprises includes:

one or more processors,

software executing at the mobile information apparatus,

a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software, and
one or more wireless communication units that include one or more radio
frequency link controllers for wireless communication, and
wherein the mobile information apparatus is configurable for:

- (1) wirelessly discovering, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless discovering of the output device is based, at least in part, on short range wireless communication or wireless local area network communication;
- (2) wirelessly receiving, using the one or more wireless communication units of the mobile ~~device~~ **information apparatus**, device information from the output device that has been wirelessly discovered by the mobile information apparatus in (1), the device information is **associated** related, at least in part, ~~[[to]]~~ **with** the output device **that is wirelessly** discovered in (1);
- (3) receiving, from the user and using the touch sensitive screen interface **of the mobile information apparatus**, at least an indication of a selection of a user interface item or icon displayed on the touch sensitive screen interface, the user interface item or icon is related to the device information, wirelessly received in (2) from the output device **that is** wirelessly discovered in (1);
- (4) wirelessly establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication link or a wireless local area network communication link, and the establishing of the wireless communication link is based, at least in part, on having received the indication of the selection of the user interface item or icon in (3); and
- (5) wirelessly providing, to the output device, using the one or more wireless communication units of the mobile information apparatus and ~~[[via]]~~ **over** ~~[[the]]~~ **short range** wireless communication link ~~wirelessly established in (4)~~, security information or

authentication information from the mobile information apparatus, the wireless providing of the security information or the authentication information, from the mobile information apparatus to the output device, facilitates ~~is to facilitate~~, at least in part, the mobile information apparatus to access the output services provided by the output device, and

(6) wherein, based on having wirelessly provided the security information or the authentication information from the mobile information apparatus to the output device in (5), the mobile information apparatus wirelessly accesses the output services provided by the output device, over the wireless communication link wirelessly established in (4).

29. (Currently amended) The apparatus of claim 28, wherein the one or more wireless communication units include one or more chips or chipsets, and wherein the wireless communication link wirelessly established in (4) is compatible, at least partly, with at least one of the following, individually or in any combination:

- (a) at least part of a protocol within IEEE 802.11 standards, or
- (b) at least part of a protocol within Bluetooth specifications.

30. (Currently amended) The apparatus of claim 29, wherein prior to receiving the indication of the selection of the user interface item or icon ~~displayed on the touch sensitive screen interface~~ in (3), the mobile information apparatus is further configurable for displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item or icon for user selection, the user interface item or icon is related, at least in part, to the device information wirelessly received from the output device in (2); and wherein the mobile information apparatus is further configurable for:

- (i) obtaining, by the mobile information apparatus, digital content for output; and
- (ii) wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus and over the wireless communication link

wirelessly established in (4), output data related to the digital content obtained in (i), from the mobile information apparatus to the output device ~~system~~ for processing or outputting at least part of the digital content at the output device ~~system~~.

31. (Currently amended) The apparatus of claim 30, wherein the mobile information apparatus is at least a smart phone or an information pad, and wherein the output device is at least one of a sound output device, a television device, a controller device connectable to a television, or a projector device, individually or in any combination; and wherein the output data includes at least audio data or video data individually or in combination.

32. (Previously presented) The apparatus of claim 29, wherein the wireless discovering of the output device in (1) is based, at least in part, on physical proximity between the mobile information apparatus and the output device; and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, a biometric ID, a fingerprint, or a voice ID, individually or in any combination.

33. (Currently amended) The apparatus of claim 29, wherein the mobile information apparatus is further configurable to synchronize or exchange information with the output device that is wirelessly discovered in (1) over the wireless communication link wirelessly established in (4); and wherein the mobile information apparatus is further configurable to:

(a) wirelessly send, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link wirelessly established in (4), first information or a query to the output device; and

(b) wirelessly receive, using the one or more wireless communication units of the mobile information apparatus and via the ~~established~~ wireless communication link wirelessly established in (4), second information or a response from the output device,

the second information or the response wirelessly received from the output device is in response to having wirelessly sent the first information or the query from the mobile information apparatus to the output device in (a).

34. (New) A method for wirelessly managing an output system using a mobile information apparatus, wherein the output system includes wireless communication circuitry for wireless communication with the mobile information apparatus and at least a connection to an output device for output of digital content, and the output system is a distinct and separate device from the mobile information apparatus, and wherein the mobile information apparatus includes:

- one or more processors,
- a software application running at the mobile information apparatus,
- a touch sensitive screen interface for interacting with a user,
- memory for storing at least part of the software application, and
- one or more wireless communication units that include one or more radio frequency controllers for wireless communication, and wherein the method comprises:

- (1) wirelessly discovering the output system using the one or more wireless communication units of the mobile information apparatus, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

- (2) wirelessly receiving, using the one or more wireless communication units of the mobile information apparatus, device information from the output system that is wirelessly discovered by the mobile information apparatus in (1), the device information is related, at least in part, to the output system wirelessly discovered in (1);

- (3) displaying, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the device information wirelessly received from the output system in (2) for user selection;

- (4) establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information

apparatus and the output system that is wirelessly discovered in (1), and subsequent to wirelessly receiving the device information in (2), the wireless communication link is a short range wireless communication link or a wireless local area network communication link;

(5) wirelessly sending, from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link established in (4), first information or a query to the output system;

(6) wirelessly receiving, at the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link established in (4), second information or a response, from the output system, the second information or the response wirelessly received from the output system is in response to having wirelessly sent the first information or the query from the mobile information apparatus to the output system in (5); and

(7) repeating any combination of steps or operations in (5) and in (6), by the mobile information apparatus, for the mobile information apparatus to wirelessly manage or wirelessly drive the output system without a need to repeat at least steps or operations in (1) – (4).

35. (New) The method of claim 34, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards or at least part of a protocol within Bluetooth specifications; and wherein the wireless communication link established in (4) is compatible with at least part of the protocol within IEEE 802.11 standards or with at least part of the protocol within Bluetooth specifications.

36. (New) The method of claim 34, wherein, subsequent to displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item or icon in (3) for the user selection, and wherein the method further comprises:

receiving, using the touch sensitive screen interface of the mobile information apparatus and from the user, at least an indication of a selection of the user interface item or icon displayed on the touch sensitive screen interface in (3); and

subsequent to receiving the indication of the selection using the touch sensitive screen interface of the mobile information apparatus and from the user, the mobile information apparatus establishes the wireless communication link in (4).

37. (New) The method of claim 35, wherein the mobile information apparatus is embodied as a smart phone or as an information pad, and wherein the output system is embodied, at least in part, as a television or an output controller that is wire connectable to a television; and wherein the method further comprises:

(a) obtaining, by the software application running at the mobile information apparatus, audio or video digital content; and

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus, over the wireless communication link established in (4) and to the output system, output data related to the audio or video digital content that is obtained by the software application in (a); and

(c) outputting, at the output device included in or connected to the output system, at least part of the audio or video digital content that is related, at least in part, to the output data wirelessly transmitted in (b) and that is obtained by the software application in (a).

38. (New) The method of claim 34, wherein the method further comprises:

wirelessly sending, from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus, over the wireless communication link established in (4), and to the output system, voice data that is related, at least in part, to a voice activated command from the user operating the mobile information apparatus.

39. (New) The method according to claim 34, wherein the method further comprises:

wirelessly synchronizing software or data between the mobile information apparatus and the output system over the wireless communication link established in (4); and

wherein the second information includes information that is related to at least one of status information, response information related to the first information, device attribute information, or user interface information, individually or in any combination.

REMARKS

This Amendment and the accompanying Request for Continued Examination are in response to the Issue Notification received April 8, 2020. Claims 1-33 are pending and allowed in the present application.

Applicant is e-filing a Petition to Withdraw From Issue After Payment of Issue Fee for the Office on April 17, 2020 for the Office to consider this Amendment Accompanying Request for Continued Examination and the accompanying Request for Continued Examination. In this Amendment, Applicant amends the pending claims and adds new claims 34-39, which are supported in the specification as originally filed.

Conclusion

If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record as indicated below, at (503) 227-5631, or William Chang, representative of the Applicant, at 503-381-7056.

Respectfully submitted,

Chernoff Vilhauer, L.L.P.
111 SW Columbia Street, Ste. 725
Portland, OR 97201

By:

Peter D. Sabido
Reg. No. 50,353
Telephone No.: (503) 227-5631
Fax No. (503) 228-4373

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web		PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce
Electronic Petition Request	PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)	
Application Number	15594440	
Filing Date	12-May-2017	
First Named Inventor	William Chang	
Art Unit	2141	
Examiner Name	CLAUDIA DRAGOESCU	
Attorney Docket Number	FLEX.0022-008	
Title	SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE	
An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary. APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c). A grantable petition requires the following items: (1) Petition fee; and (2) One of the following reasons: (a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable; (b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or (c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).		
Petition Fee		
☐ Small Entity		
☐ Micro Entity		
☒ Regular Undiscounted		
Reason for withdrawal from issue		

- ☐ One or more claims are unpatentable
- ☒ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees)
- ☐ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).

RCE request, submission, and fee.

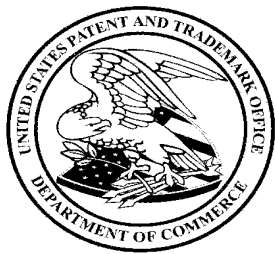
- ☒ I certify, in accordance with 37 CFR 1.4(d)(4) that :
The RCE request ,submission, and fee have already been filed in the above-identified application on 2020.04.17
- ☐ Are attached.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

- ☒ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application.
- ☐ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity.
- ☐ A sole inventor
- ☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application
- ☐ A joint inventor; all of whom are signing this e-petition

Signature	/Peter D. Sabido/
Name	Peter D. Sabido
Registration Number	50353



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : April 17, 2020

In re Application of :

William Chang

DECISION ON PETITION

UNDER CFR 1.313(c)(2)

Application No : 15594440

Filed : 12-May-2017

Attorney Docket No : FLEX.0022-008

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed April 17, 2020 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED**.

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 2141 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

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NOTICE OF ALLOWANCE AND FEE(S) DUE

152 7590 05/26/2020
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP
111 SW Columbia Street
Suite 725
PORTLAND, OR 97201

EXAMINER	
DRAGOESCU, CLAUDIA B	
ART UNIT	PAPER NUMBER
2141	

DATE MAILED: 05/26/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903

TITLE OF INVENTION: SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$1000.00	\$0	08/26/2020

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
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P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

152 7590 05/26/2020
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP
111 SW Columbia Street
Suite 725
PORTLAND, OR 97201

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903

TITLE OF INVENTION: SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$1000.00	\$0	08/26/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
DRAGOESCU, CLAUDIA B	2141	715-736000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903
152	7590	05/26/2020	EXAMINER	
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP			DRAGOESCU, CLAUDIA B	
111 SW Columbia Street			ART UNIT	
Suite 725			PAPER NUMBER	
PORTLAND, OR 97201			2141	
DATE MAILED: 05/26/2020				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ROKU EXH 1003

Notice of Allowability	Application No. 15/594,440	Applicant(s) Chang et al.	
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE of 4/20/2020.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-39. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>4/20/2020</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☒ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
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/CLAUDIA DRAGOESCU/
Primary Examiner, Art Unit 2141

CONTINUED EXAMINATION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 4/20/2020 has been entered. Claims 1-39 are presented for examination.

Remarks

2. The Information Disclosure Statement submitted on 4/20/2020 has been considered.

Cited in MPEP 2004 Aids or Compliance With Duty of Disclosure: It is desirable to avoid the submission of long lists of documents if it can be avoided. Eliminate clearly irrelevant and marginally pertinent cumulative information. If a long list is submitted, highlight those documents which have been specifically brought to applicant's attention and/or are known to be of most significance. See *Penn Van Boats, Inc. v. Sea Lark Boats, Inc.*, 359 F. Supp. 948, 175 USPQ 260 (S.D. Fla. 1972), aff'd, 479 F.2d 1338,

178 USPQ 577 (5th Cir. 1973), cert. denied, 414 U.S. 874 (1974). But cf. *Molins PLC v. Textron Inc.*, 48 F.3d 1172, 33 USPQ2d 1823 (Fed. Cir. 1995).

An applicant's duty of disclosure of material and information is not satisfied by presenting a patent examiner with "a mountain of largely irrelevant [material] from which he is presumed to have been able, with his expertise and with adequate time, to have found the critical [material]. It ignores the real world conditions under which examiners work." *Rohm & Haas Co. v. Crystal Chemical Co.*, 722 F.2d 1556, 1573 [220 USPQ 289] (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). (Emphasis in original). Patent applicant has a duty not just to disclose pertinent prior art references but to make a disclosure in such way as not to "bury" it within other disclosures of less relevant prior art; See *Golden Valley Microwave Foods Inc. v. Weaver Popcorn Co. Inc.*, 24 USPQ2d 1801 (N.D. Ind. 1992); *Molins PLC v. Textron Inc.*, 26 USPQ2d 1889, at 1899 (D.Del 1992); *Penn Van Boats, Inc. v. Sea Lark Boats, Inc. et al.*, 175 USPQ 260, at 272 (S.D. Fl. 1972).

It is impractical for the examiner to review the references thoroughly with the number of references cited in the case (50 references). By initialing each of the cited references on the accompanying 1449 forms, the examiner is merely acknowledging the submission of the cited references and merely indicating that only a cursory review is made of the cited references.

Allowable Subject Matter

3. Claims 1-39 are allowed. Independent claims 1, 8, 14, 21, 28 and 34, when considered as a whole, are allowable over the prior art of record. The examiner's statement of reasons for allowance is presented in the previous Notice of Allowance dated 9/25/19.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claudia Dragoescu whose telephone number is 571-270-7966. The examiner can normally be reached on Monday-Friday: 9:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Ng can be reached on 571-270-1698. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CLAUDIA DRAGOESCU/

Primary Examiner, Art Unit 2141

May 19, 2020

Issue Classification 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.	
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141	

CPC						
Symbol					Type	Version
G06F	/	3	/	1236	F	2013-01-01
G06F	/	3	/	0488	I	2013-01-01
G06F	/	3	/	04842	I	2013-01-01
G06F	/	3	/	122	I	2013-01-01
G06F	/	3	/	1203	I	2013-01-01
G06F	/	3	/	1205	I	2013-01-01
G06F	/	3	/	128	I	2013-01-01
G06F	/	3	/	1208	I	2013-01-01
G06F	/	3	/	1226	I	2013-01-01
G06F	/	3	/	1228	I	2013-01-01
G06F	/	3	/	1229	I	2013-01-01
G06F	/	3	/	1238	I	2013-01-01
G06F	/	3	/	1245	I	2013-01-01
G06F	/	3	/	1247	I	2013-01-01
G06F	/	3	/	1253	I	2013-01-01
G06F	/	3	/	1258	I	2013-01-01
G06F	/	3	/	1284	I	2013-01-01
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G06F	/	3	/	1288	I	2013-01-01
G06F	/	3	/	1292	I	2013-01-01
G06F	/	3	/	14	I	2013-01-01
G06F	/	3	/	162	I	2013-01-01
G06F	/	3	/	167	I	2013-01-01
G06K	/	15	/	02	I	2013-01-01
G06K	/	15	/	181	I	2013-01-01
G06K	/	15	/	1836	I	2013-01-01
G06Q	/	20	/	10	I	2013-01-01
G10L	/	15	/	22	I	2013-01-01
G10L	/	15	/	30	I	2013-01-01
H04L	/	67	/	16	I	2013-01-01

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	39	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	19 May 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.	
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141	

CPC						
Symbol					Type	Version
H04L	/	67	/	303	I	2013-01-01
H04N	/	1	/	00244	I	2013-01-01
H04N	/	1	/	00283	I	2013-01-01
H04N	/	1	/	00307	I	2013-01-01
H04N	/	1	/	00403	I	2013-01-01
H04N	/	1	/	00411	I	2013-01-01
H04N	/	1	/	00488	I	2013-01-01
H04N	/	1	/	00854	I	2013-01-01
H04N	/	1	/	00938	I	2013-01-01
H04N	/	1	/	32534	I	2013-01-01
H04N	/	1	/	32582	I	2013-01-01
H04N	/	1	/	442	I	2013-01-01
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H04N	/	7	/	16	I	2013-01-01
H04W	/	4	/	80	I	2018-02-01
H04W	/	8	/	005	I	2013-01-01
H04W	/	12	/	06	I	2013-01-01
H04W	/	12	/	08	I	2013-01-01
H04W	/	76	/	10	I	2018-02-01
H04W	/	76	/	14	I	2018-02-01
G06F	/	3	/	0481	I	2013-01-01
Y02D	/	10	/	1592	A	2018-01-01
G10L	/	2015	/	223	A	2013-01-01
H04N	/	2201	/	0039	A	2013-01-01
H04N	/	2201	/	0041	A	2013-01-01
H04N	/	2201	/	0053	A	2013-01-01
H04N	/	2201	/	0055	A	2013-01-01
H04N	/	2201	/	0082	A	2013-01-01
H04N	/	2201	/	0094	A	2013-01-01
H04W	/	84	/	12	A	2013-01-01

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	39	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	19 May 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

<i>Issue Classification</i> 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	39	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	19 May 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G06F	/	3	/ 048

NON-CLAIMED			
/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	39	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	19 May 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification 	Application/Control No. 15/594,440	Applicant(s)/Patent Under Reexamination Chang et al.
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10	19	19	28	28	37	37						
2	2	11	11	20	20	29	29	38	38						
3	3	12	12	21	21	30	30	39	39						
4	4	13	13	22	22	31	31								
5	5	14	14	23	23	32	32								
6	6	15	15	24	24	33	33								
7	7	16	16	25	25	34	34								
8	8	17	17	26	26	35	35								
9	9	18	18	27	27	36	36								

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 39	
/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141 (Primary Examiner) _____ (Date) 19 May 2020		O.G. Print Claim(s) 1	O.G. Print Figure 2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: July 27, 2020

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
Filed : May 12, 2017
For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE
Examiner : Claudia B. Dragoescu
Art Unit : 2141
Confirmation No.: 7903

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

AMENDMENT AFTER ALLOWANCE

This Amendment, filed under 37 C.F.R. § 1.312 (Rule 312), is submitted in response to the Notice of Allowance dated May 26, 2020. Please charge any additional fees required, or credit any overpayments, to our deposit account number 03-1550.

Amendments to the Specification	Begin on page 2
Amendments to the Claims	Begin on page 3
Amendments to the Drawings	None
Remarks	Begin on page 24

Amendments to the Specification

Please make the amendments below to the specification. Material to be inserted is in underline, and material to be deleted is in ~~strikeout~~.

Please replace the current abstract with the abstract provided below.

Abstract of the Disclosure

Mobile device or mobile software configured for wirelessly managing or wirelessly setting up an output system are herein disclosed and enabled. Examples of mobile devices include smart phones and information pads having a touch sensitive screen. The mobile software, which is executable at the mobile device, causes the mobile device to: wirelessly discover the output system that is within physical proximity to the mobile device; receive, via the touch sensitive screen and from a user, selection of an item related to the wirelessly discovered output system; establish a wireless communication link between the mobile device and the output system; and wirelessly transmit security information or authentication information to the output system for setting up the output system for service. The mobile software may further facilitate management of settings of the output system and may further wirelessly drive or control the output system over the wireless communication link.

Listing of Claims:

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application. Material to be inserted is in **bold and underline**, and material to be deleted is in ~~strikeout~~ or if the deletion is of five or fewer consecutive characters or would be difficult to see in double brackets [[]].

1. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to wirelessly set up an output system for providing output service to the mobile information apparatus, the output system includes wireless communication circuitry for wireless communication, and the output system is associated with at least an output device for output of digital content, and the output system is a separate device from the mobile information apparatus, the mobile information apparatus comprises:

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software,

one or more processors, and

one or more wireless communication units that include one or more radio frequency link controllers for wireless communication; and

wherein, when the one or more processors included in the mobile information apparatus execute at least part of the software at the mobile information apparatus, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output system, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the output system wirelessly discovered in (1) for user selection;

(3) obtains, using the touch sensitive screen interface of the mobile information apparatus and from the user, at least an indication of a selection of the user interface item or icon, related to the output system wirelessly discovered in (1) and displayed on the touch sensitive screen interface in (2);

(4) wirelessly provides, using the one or more wireless communication units of the mobile information apparatus, security information or authentication information, from the mobile information apparatus to the output system that is wirelessly discovered in (1) and selected in (3), the security information or the authentication information is to facilitate, at least in part, the mobile information apparatus to access services provided by the output system; and

(5) wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication link or a wireless local area network communication link, and the **wireless** establishing of the wireless communication link is based, at least in part, on **the mobile information apparatus** having obtained the indication of the selection of the user interface item or icon in (3); and

wherein the mobile information apparatus wirelessly accesses the services, **which is** provided by the output system[[,]] over the wireless communication link wirelessly established in (5), [[is]] based on having wirelessly provided the security information or the authentication information from the mobile information apparatus to the output system in (4).

2. (Previously presented) The medium according to claim 1, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link between the mobile information apparatus and the output system wirelessly established

in (5), using the one or more wireless communication units, is compatible with at least part of the protocol within Bluetooth specifications.

3. (Original) The medium according to claim 2, wherein the one or more wireless communication units of the mobile information apparatus further support at least part of a protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

4. (Previously presented) The medium according to claim 1, wherein the mobile information apparatus further synchronizes or exchanges information with the output system wirelessly discovered in (1).

5. (Currently amended) The medium according to claim 2, wherein the mobile information apparatus is embodied as a smart phone or an information pad, and the output system includes at least one audio output device for outputting audio digital content, and wherein, subsequent to **the mobile information apparatus** having wirelessly provided the security information or the authentication information to the output system in (4), the mobile information apparatus is operable to access the services, provided by the output system, which include outputting, at the output system, audio digital content wirelessly received from the mobile information apparatus via the wireless communication link wirelessly established in (5).

6. (Currently amended) The medium according to claim 3, wherein the mobile information apparatus is embodied as a smart phone, and wherein the output system is at least one of a sound output system, a television system, an output controller connectable to a television, a projection system, a printing system, or an information apparatus that is at least an Internet appliance, individually or in any combination; and

wherein, subsequent to having wirelessly provided, using the one or more wireless communication units of the mobile information apparatus, the security

information or the authentication information to the output system in (4), the mobile information apparatus further executes at least part of the software at the mobile information apparatus using the one or more processors to:

(i) obtain, **via the touch sensitive screen interface** at the mobile information apparatus, the digital content for outputting at the output system; and

(ii) wirelessly transmit, using the one or more wireless communication units of the mobile information apparatus and over the wireless communication link wirelessly established in (5), output data, related to the digital content obtained in (i), to the output system for processing or outputting at least part of the digital content at the output system; and wherein the wireless communication link wirelessly established in (5), using the one or more wireless communication units of the mobile information apparatus, is compatible with at least a protocol within IEEE 802.11 standards.

7. (Previously presented) The medium according to claim 2, wherein the mobile information apparatus is embodied as a smart phone, and wherein, subsequent to wirelessly establishing the wireless communication link between the mobile information apparatus and the output system in (5), the mobile information apparatus further wirelessly manages or wirelessly drives the output system using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (5).

8. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile device for wirelessly managing an output system, the output system includes wireless communication circuitry for wireless communication and at least a connection to an output device for outputting digital content, the mobile device is a separate device from the output system, the mobile device includes:

a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software,

one or more processors, and

one or more wireless communication units that include circuitry for wireless communication; and

wherein, when the one or more processors, included in the mobile device, execute at least part of the software at the mobile device, the mobile device executes a method, comprising:

(1) wirelessly discovering, **by the mobile device and** using the one or more wireless communication units of the mobile device, the output system, the wireless discovering of the output system is based, at least in part, on short range wireless communication or wireless local area network communication;

(2) wirelessly receiving, **by the mobile device and** using the one or more wireless communication units of the mobile device, device information from the output system that has been wirelessly discovered by the mobile device in (1), the device information is related, at least in part, to the output system wirelessly discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile device, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);

(4) receiving, **by the mobile device and** using the touch sensitive screen interface of the mobile device and from the user, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3), the user interface item is related, at least in part, to the output system wirelessly discovered in (1);

(5) wirelessly providing, from the mobile device to the output system that is wirelessly discovered in (1) and selected in (4), using the one or more wireless communication units of the mobile device, security information or authentication information, the wireless providing of the security information or the authentication information facilitates, at least in part, the mobile device to access output services provided by the output system; and

(6) **wirelessly** establishing, using the one or more wireless communication units of the mobile device, a wireless communication link between the mobile device and the output system that is wirelessly discovered in (1), the wireless communication link is a short range wireless communication link or a wireless local area network communication link, and the **wireless** establishing of the wireless communication link is subsequent to **the mobile device** having received the indication of the selection of the user interface item in (4).

9. (Currently amended) The medium according to claim 8, wherein the wireless discovering of the output system in (1) is based, at least in part, on physical proximity between the mobile device and the output system, and wherein, subsequent to **the mobile device** having wirelessly provided the security information or the authentication information ~~from the mobile device~~ to the output system in (5), the mobile device wirelessly accesses the output services provided by the output system over the wireless communication link **wirelessly** established in (6).

10. (Currently amended) The medium according to claim 9, wherein the one or more wireless communication units of the mobile device support at least part of a protocol within IEEE 802.11 standards or within Bluetooth specifications, and the wireless communication link **wirelessly** established in (6) is compatible with at least part of the protocol within IEEE 802.11 standards or within Bluetooth specifications.

11. (Currently amended) The medium according to claim 10, wherein, subsequent to **the mobile device having** wirelessly ~~providing~~ **provided** the security information or the authentication information to the output system in (5), the method further comprises:

(a) **wirelessly** establishing, using the one or more wireless communication units of the mobile device, a wireless local area network connection between the mobile device and the output system; and

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile device and over the wireless local area network connection wirelessly established in (a), output data that is related to the digital content, from the mobile device to the output system for outputting at least part of the digital content at the output system.

12. (Previously presented) The medium according to claim 11, wherein the mobile device is at least a smart phone, and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, biometric information, fingerprint information, or voice, individually or in any combination.

13. (Previously presented) The medium according to claim 11, wherein the mobile device is at least a smart phone or an information pad, and wherein the output system is at least one of a sound output system, a television system, a controller system connectable to a television, or a projector system, individually or in any combination, for outputting the digital content that includes audio data or video data, individually or in combination.

14. (Currently amended) A non-transitory computer readable storage medium having recorded therein software that is executable at a mobile information apparatus to wirelessly manage or wirelessly drive an output device, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, and the output device is a separate device from the mobile information apparatus, the mobile information apparatus comprises:

a touch sensitive screen interface for interacting with a user,
memory for storing at least part of the software,
one or more processors, and

one or more wireless communication units that include one or more radio frequency link controllers for wireless communication; and

wherein, when the one or more processors execute at least part of the software, the mobile information apparatus:

(1) wirelessly discovers, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless discovery of the output device is based, at least in part, on physical proximity between the mobile information apparatus and the output device;

(2) displays, on the touch sensitive screen interface of the mobile information apparatus, a user interface item related, at least in part, to the output device wirelessly discovered in (1);

(3) wirelessly establishes, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output device that is wirelessly discovered in (1), the wireless communication link is a direct short range wireless communication link or a wireless local area network communication link; and

(4) wirelessly manages or wirelessly drives, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (3), the output device,

wherein the wireless managing or the wireless driving of the output device in (4) further comprises:

(5) wirelessly sending, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (3), first information or a query, from the mobile information apparatus to the output device; and

(6) wirelessly receiving, by the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (3), second information or a response from the output device, the second information or the response wirelessly

received from the output device is in response to **the mobile information apparatus** having wirelessly sent the first information or the query ~~from the mobile information apparatus~~ to the output device in (5).

15. (Currently amended) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards, and the wireless communication link **wirelessly** established in (3) is compatible with at least part of the protocol within IEEE 802.11 standards for direct wireless communication or for wireless local area network communication.

16. (Currently amended) The medium according to claim 14, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within Bluetooth specifications, and the wireless communication link **wirelessly** established in (3) is compatible with at least part of the protocol within Bluetooth specifications.

17. (Currently amended) The medium according to claim 16, wherein subsequent to the wireless discovery of the output device in (1), the mobile information apparatus further wirelessly receives, using the one or more wireless communication units of the mobile information apparatus, device information from the output device, the device information includes an attribute related, at least in part, to the output device **wirelessly discovered in (1)**, and wherein the user interface item, displayed on the touch sensitive screen interface in (2), is related to the device information wirelessly received from the output device.

18. (Currently amended) The medium according to claim 14, wherein, when the one or more processors execute at least part of the software, the mobile information apparatus further obtains, via the touch sensitive screen interface **of the mobile**

information apparatus and from the user, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (2); and subsequent to obtaining the indication of the selection via the touch sensitive screen interface of the mobile information apparatus, the mobile information apparatus wirelessly establishes the wireless communication link in (3).

19. (Previously presented) The medium according to claim 15, wherein the mobile information apparatus is at least a smart phone or an information pad, and wherein the output device is at least one of a sound output device, a television device, a controller device connectable to a television, a projector device, or an Internet appliance, individually or in any combination; and wherein the software is either pre-installed, at least partly, at the mobile information apparatus or downloadable, at least partly, to the mobile information apparatus from one or more servers accessible by the mobile information apparatus over a network.

20. (Previously presented) The medium according to claim 14, wherein, when the one or more processors execute at least part of the software, the mobile information apparatus further wirelessly provides, using the one or more wireless communication units of the mobile information apparatus, security information or authentication information to the output device, the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, biometric information, a fingerprint, or voice, individually or in any combination; and based, at least in part, on having successfully provided the security information or the authentication information to the output device, the mobile information apparatus is operable to access services provided by the output device.

21. (Currently amended) A mobile information apparatus ~~A method for~~ wirelessly managing an output system ~~using a mobile information apparatus~~, wherein

the output system includes wireless communication circuitry for wireless communication with the mobile information apparatus and at least a connection to an output device for output of digital content, and the output system is a distinct and separate device from the mobile information apparatus, and wherein the mobile information apparatus **comprises** includes:

one or more processors,

[[a]] software **or software** application running at the mobile information apparatus,

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the software **or the software** application, and

one or more wireless communication units that include one or more radio frequency **link** controllers for wireless communication, **and wherein the mobile information apparatus, using the software or the software application, is configured for wirelessly managing the output system, which** ~~the method~~ comprises:

(1) wirelessly discovering, using the one or more wireless communication units of the mobile information apparatus, the output system, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

(2) wirelessly receiving, **by the mobile information apparatus and** using the one or more wireless communication units of the mobile information apparatus, device information from the output system that has been wirelessly discovered by the mobile information apparatus in (1), the device information is related, at least in part, to the output system wirelessly discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile information apparatus, a user interface item for user selection, the user interface item is related, at least in part, to the device information wirelessly received from the output system in (2);

(4) wirelessly establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output system that is wirelessly discovered in (1), the wireless communication link is a short range wireless communication link or a wireless local area network communication link;

(5) wirelessly sending from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (4), first information or a query to the output system; and

(6) wirelessly receiving, ~~[[at]]~~ by the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (4), second information or a response, from the output system, the second information or the response wirelessly received from the output system is in response to the mobile information apparatus having wirelessly sent the first information or the query ~~from the mobile information apparatus~~ to the output system in (5).

22. (Currently amended) The ~~method~~ mobile information apparatus of claim 21, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards or at least part of a protocol within Bluetooth specifications; and wherein the wireless communication link wirelessly established in (4) is compatible with at least part of the protocol within IEEE 802.11 standards, or at least part of the protocol within Bluetooth specifications.

23. (Currently amended) The ~~method~~ mobile information apparatus of claim 22, wherein the mobile information apparatus, using the software or the software

application, is further configured for ~~method further comprises~~ wirelessly providing, using the one or more wireless communication units of the mobile information apparatus, security information or authentication information to the output system, and wherein based, at least in part, on **the mobile information apparatus** having successfully provided the security information or the authentication information to the output system, the mobile information apparatus is operable to access output services provided by the output system; and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, biometric information, fingerprint information, or voice, individually or in any combination.

24. (Currently amended) The ~~method~~ **mobile information apparatus** of claim 22, wherein subsequent to displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item for the user selection in (3), **the mobile information apparatus, using the software or the software application, is further configured for** ~~the method further comprises:~~

receiving, using the touch sensitive screen interface of the mobile information apparatus and from the user, at least an indication of a selection of the user interface item displayed on the touch sensitive screen interface in (3); and,

subsequent to the receiving the indication of the selection using the touch sensitive screen interface of the mobile information apparatus and from the user, the mobile information apparatus **wirelessly** establishes the wireless communication link in (4).

25. (Currently amended) The ~~method~~ **mobile information apparatus** of claim 22, wherein the mobile information apparatus is embodied as a smart phone or as an information pad, and wherein the output system is embodied, at least in part, as a television or an output controller that is wire connectable to a television; and wherein

the mobile information apparatus, using the software or the software application, is further configured for ~~the method further comprises:~~

(a) obtaining, by the software application running at the mobile information apparatus, audio or video digital content; ~~[[and]]~~

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus and over the wireless communication link **wirelessly** established in (4), and **from the mobile information apparatus** to the output system, output data related to the audio or video digital content obtained by the software application in (a); and

(c) outputting, at the output device included in or connected to the output system, at least part of the audio or video digital content that is related, at least in part, to the output data wirelessly transmitted in (b) and that is obtained by the software application in (a).

26. (Currently amended) The ~~method~~ **mobile information apparatus** of claim 21, wherein the second information includes information that is related to at least one of the following: status information, response information related to the first information, device attribute information, or user interface information, individually or in any combination.

27. (Currently amended) The ~~method~~ **mobile information apparatus** of claim 21, wherein **using the software or the software application, is further configured for** ~~the method further comprises:~~

(7) wirelessly sending, from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus, and over the wireless communication link **wirelessly** established in (4), voice data to the output system, the voice data is related, at least in part, to a voice activated command from the user operating the mobile information apparatus.

28. (Currently amended) A mobile information apparatus for wirelessly managing an output device and to access output services provided by the output device, the output device includes wireless communication circuitry for wireless communication with the mobile information apparatus, the mobile information apparatus is a separate device from the output device, and the mobile information apparatus comprises:

- one or more processors,
- software executing at the mobile information apparatus,
- a touch sensitive screen interface for interacting with a user,
- memory for storing at least part of the software, and
- one or more wireless communication units that include one or more radio frequency link controllers for wireless communication, and

wherein the mobile information apparatus is configurable for:

- (1) wirelessly discovering, using the one or more wireless communication units of the mobile information apparatus, the output device, the wireless discovering of the output device is based, at least in part, on short range wireless communication or wireless local area network communication;

- (2) wirelessly receiving, using the one or more wireless communication units of the mobile information apparatus, device information from the output device that ~~has been~~ is wirelessly discovered by the mobile information apparatus in (1), the device information is associated, at least in part, with the output device that is wirelessly discovered in (1);

- (3) receiving, from the user and using the touch sensitive screen interface of the mobile information apparatus, at least an indication of a selection of a user interface item or icon displayed on the touch sensitive screen interface, the user interface item or icon is related to the device information, wirelessly received in (2) from the output device that is wirelessly discovered in (1);

- (4) wirelessly establishing, using the one or more wireless communication units of the mobile information apparatus, a wireless communication link between the mobile information apparatus and the output

device that is wirelessly discovered in (1), the wireless communication link being a direct short range wireless communication link or a wireless local area network communication link, and the wireless establishing of the wireless communication link is based, at least in part, on the mobile information apparatus having received the indication of the selection of the user interface item or icon in (3);
[[and]]

(5) wirelessly providing, to the output device, using the one or more wireless communication units of the mobile information apparatus and over short range wireless communication, security information or authentication information from the mobile information apparatus, the wireless providing of the security information or the authentication information, from the mobile information apparatus to the output device, facilitates, at least in part, the mobile information apparatus to access the output services provided by the output device, and

(6) wherein, based on the mobile information apparatus having wirelessly provided the security information or the authentication information ~~from the mobile information apparatus~~ to the output device in (5), the mobile information apparatus wirelessly accesses the output services provided by the output device, over the wireless communication link wirelessly established in (4).

29. (Currently amended) The mobile information apparatus of claim 28, wherein the one or more wireless communication units include one or more chips or chipsets, and wherein the wireless communication link wirelessly established in (4) is compatible, at least partly, with at least one of the following, individually or in any combination:

- (a) at least part of a protocol within IEEE 802.11 standards, or
- (b) at least part of a protocol within Bluetooth specifications.

30. (Currently amended) The mobile information apparatus of claim 29, wherein prior to receiving the indication of the selection of the user interface item or icon

in (3), the mobile information apparatus is further configurable for displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item or icon for user selection, the user interface item or icon is related, at least in part, to the device information wirelessly received from the output device in (2); and wherein the mobile information apparatus is further configurable for:

- (i) obtaining, by the mobile information apparatus, digital content for output; and
- (ii) wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus and over the wireless communication link wirelessly established in (4), output data related to the digital content obtained in (i), from the mobile information apparatus to the output device for processing or outputting at least part of the digital content at the output device.

31. (Currently amended) The **mobile information** apparatus of claim 30, wherein the mobile information apparatus is at least a smart phone or an information pad, and wherein the output device is at least one of a sound output device, a television device, a controller device connectable to a television, or a projector device, individually or in any combination; and wherein the output data includes at least audio data or video data individually or in combination.

32. (Currently amended) The **mobile information** apparatus of claim 29, wherein the wireless discovering of the output device in (1) is based, at least in part, on physical proximity between the mobile information apparatus and the output device; and wherein the security information or the authentication information includes one or more of a name, a password, identification information, an ID number, a PIN, an IP address, a security key, a biometric ID, a fingerprint, or a voice ID, individually or in any combination.

33. (Currently amended) The **mobile information** apparatus of claim 29, wherein the mobile information apparatus is further configurable to synchronize or

exchange information with the output device, that is wirelessly discovered in (1), over the wireless communication link wirelessly established in (4); and wherein the mobile information apparatus is further configurable to:

(a) wirelessly send, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (4), first information or a query to the output device; and

(b) wirelessly receive, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link wirelessly established in (4), second information or a response from the output device, the second information or the response wirelessly received from the output device is in response to **the mobile information apparatus** having wirelessly sent the first information or the query ~~from the mobile information apparatus~~ to the output device in (a).

34. (Currently amended) A method for wirelessly managing an output system using a mobile information apparatus, wherein the output system includes wireless communication circuitry for wireless communication with the mobile information apparatus and at least a connection to an output device for output of digital content, and the output system is a distinct and separate device from the mobile information apparatus, and wherein the mobile information apparatus includes:

one or more processors,

[[a]] **software or** software application running at the mobile information apparatus,

a touch sensitive screen interface for interacting with a user,

memory for storing at least part of the **software or the** software application, and

one or more wireless communication units that include one or more radio frequency **link** controllers for wireless communication, and wherein the method comprises:

(1) wirelessly discovering, **by the mobile information apparatus,** the output system using the one or more wireless communication units of the mobile information

apparatus, the wireless discovery of the output system is based, at least in part, on physical proximity between the mobile information apparatus and the output system;

(2) wirelessly receiving, **by the mobile information apparatus and** ~~[[,]]~~ using the one or more wireless communication units of the mobile information apparatus, device information from the output system that is wirelessly discovered by the mobile information apparatus in (1), the device information is related, at least in part, to the output system wirelessly discovered in (1);

(3) displaying, on the touch sensitive screen interface of the mobile information apparatus, a user interface item or icon related to the device information wirelessly received from the output system in (2) for user selection;

(4) **wirelessly** establishing, using the one or more wireless communication units of the mobile information apparatus **and subsequent to wirelessly receiving the device information in (2)**, a wireless communication link between the mobile information apparatus and the output system that is wirelessly discovered in (1), ~~and subsequent to wirelessly receiving the device information in (2)~~, the wireless communication link is a short range wireless communication link or a wireless local area network communication link;

(5) wirelessly sending, from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link **wirelessly** established in (4), first information or a query to the output system;

(6) wirelessly receiving, ~~[[at]]~~ **by** the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus and via the wireless communication link **wirelessly** established in (4), second information or a response, from the output system, the second information or the response wirelessly received from the output system is in response to **the mobile information apparatus** having wirelessly sent the first information or the query ~~from the mobile information apparatus~~ to the output system in (5); and

(7) repeating any combination of steps or operations in (5) and in (6), by the mobile information apparatus, for the mobile information apparatus to wirelessly manage or wirelessly drive the output system without a need to repeat at least steps or operations in (1) – (4).

35. (Currently amended) The method of claim 34, wherein the one or more wireless communication units of the mobile information apparatus support at least part of a protocol within IEEE 802.11 standards or at least part of a protocol within Bluetooth specifications; and wherein the wireless communication link **wirelessly** established in (4) is compatible with at least part of the protocol within IEEE 802.11 standards or with at least part of the protocol within Bluetooth specifications.

36. (Currently amended) The method of claim 34, wherein, subsequent to displaying, on the touch sensitive screen interface of the mobile information apparatus, the user interface item or icon in (3) for the user selection, and wherein the method further comprises:

receiving, using the touch sensitive screen interface of the mobile information apparatus and from the user, at least an indication of a selection of the user interface item or icon displayed on the touch sensitive screen interface in (3); and

subsequent to receiving the indication of the selection using the touch sensitive screen interface of the mobile information apparatus and from the user, the mobile information apparatus **wirelessly** establishes the wireless communication link in (4).

37. (Currently amended) The method of claim 35, wherein the mobile information apparatus is embodied as a smart phone or as an information pad, and wherein the output system is embodied, at least in part, as a television or an output controller that is wire connectable to a television; and wherein the method further comprises:

(a) obtaining, by the software application running at the mobile information apparatus, audio or video digital content; [[and]]

(b) wirelessly transmitting, using the one or more wireless communication units of the mobile information apparatus, over the wireless communication link **wirelessly** established in (4) and **from the mobile information apparatus** to the output system, output data related to the audio or video digital content that is obtained by the software application in (a); and

(c) outputting, at the output device included in or connected to the output system, at least part of the audio or video digital content that is related, at least in part, to the output data wirelessly transmitted in (b) and that is obtained by the software application in (a).

38. (Currently amended) The method of claim 34, wherein the method further comprises:

wirelessly sending, from the mobile information apparatus, using the one or more wireless communication units of the mobile information apparatus, over the wireless communication link **wirelessly** established in (4), and to the output system, voice data that is related, at least in part, to a voice activated command from the user operating the mobile information apparatus.

39. (Currently amended) The method according to claim 34, wherein the method further comprises:

wirelessly synchronizing, **by the mobile information apparatus**, software or data between the mobile information apparatus and the output system over the wireless communication link **wirelessly** established in (4); and

wherein the second information includes information that is related to at least one of status information, response information related to the first information, device attribute information, or user interface information, individually or in any combination.

REMARKS

This Amendment After Allowance is filed under 37 C.F.R. § 1.312 (Rule 312) and is submitted in response to the Notice of Allowance dated May 26, 2020. Claims 1-39 are pending and allowed in the present application.

The issue fee was previously paid for this application on February 18, 2020 and the application was withdrawn from issue on April 17, 2020 with the filing of a Request for Continued Examination. Thus, Applicant would like to re-apply the previously paid issue fee for the issuance of the present application after the amendments in this Amendment After Allowance are entered.

1. Notice of Allowance

A Notice of Allowance was mailed on May 26, 2020 in which claims 1-39 were allowed. Applicant thanks the Examiner for the Notice of Allowance.

2. Claims of Application

In reviewing claims 1-39 of the application, Applicant found some minor grammatical errors and antecedence errors. Therefore, Applicant has amended the claims to address grammatical and antecedence errors to improve readability, consistency, and clarity of the claims.

3. Abstract of Application

Applicant has made minor amendments to the abstract to address to improve readability, consistency, and clarity of the claims.

4. Information Disclosure Statement

Applicant is filing one or more Information Disclosure Statements citing references from the parent and other related co-pending applications.

Applicant notes the majority of the references that are cited in the Information Disclosure Statement(s) have already been filed and examined in one or more other co-pending applications and in the parent application. Therefore, Applicant believes that the burden to examine the newly submitted references should be minimal.

Conclusion

If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record as indicated below, at (503) 227-5631, or William Chang, representative of the Applicant, at 503-381-7056.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: July 27, 2020

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
Filed : May 12, 2017
For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
SYSTEM OR OUTPUT DEVICE FOR SERVICE
Examiner : Claudia B. Dragoescu
Art Unit : 2141
Confirmation No.: 7903

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

COMMENTS ON THE STATEMENT OF REASONS FOR ALLOWANCE

The U.S. Patent and Trademark Office issued a Notice of Allowance dated May 26, 2020 on the above-identified patent application.

The Notice included remarks in which the Examiner paraphrased and commented on Applicant's claimed invention as part of the stated reasons for allowance of claims 1-39. Applicant agrees with the Examiner's conclusions regarding the patentability of the allowed claims, without necessarily agreeing with or acquiescing in the Examiner's reasoning. In particular, Applicant believes that the application is allowable because the prior art fails to teach or suggest the invention as claimed, independent of how the invention is paraphrased.

Please contact the undersigned regarding any questions or comments, or if a telephone call would expedite issuance of the patent.

Respectfully submitted,

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903

152 7590 08/13/2020
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EXAMINER

DRAGOESCU, CLAUDIA B

ART UNIT	PAPER NUMBER
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2141

NOTIFICATION DATE	DELIVERY MODE
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08/13/2020

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent.docket@chernofflaw.com

Response to Rule 312 Communication	Application No.		Applicant(s)		
	15/594,440		Chang et al.		
	Examiner		Art Unit	AIA (FITF) Status	
	CLAUDIA B DRAGOESCU		2141	No	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☒ The amendment filed on 27 July 2020 under 37 CFR 1.312 has been considered, and has been:

a) ☐ entered.

b) ☒ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

Attachment: Information Disclosure Statement, 7/27/2020

/CLAUDIA DRAGOESCU/ Primary Examiner, Art Unit 2141	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Date: July 27, 2020

William Ho Chang
Christina Ying Liu

Serial No. : 15/594,440
 Filed : May 12, 2017
 For : SOFTWARE APPLICATION FOR A MOBILE DEVICE TO
 WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT
 SYSTEM OR OUTPUT DEVICE FOR SERVICE
 Examiner : Claudia B. Dragoescu
 Art Unit : 2141
 Confirmation No.: 7903

Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA. 22313-1450

AMENDMENT AFTER ALLOWANCE

This Amendment, filed under 37 C.F.R. § 1.312 (Rule 312), is submitted in response to the Notice of Allowance dated May 26, 2020. Please charge any additional fees required, or credit any overpayments, to our deposit account number 03-1550.

Amendments to the Specification	Begin on page 2
Amendments to the Claims	Begin on page 3
Amendments to the Drawings	None
Remarks	Begin on page 24



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	10/13/2020	10802776	FLEX.0022-008	7903

152 7590 09/23/2020

CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP
111 SW Columbia Street
Suite 725
PORTLAND, OR 97201

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 159 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

William Ho Chang, Vancouver, WA;
Flexiworld Technologies, Inc., Vancouver, WA;
Christina Ying Liu, San Francisco, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web		PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce
Electronic Petition Request	PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)	
Application Number	15594440	
Filing Date	12-May-2017	
First Named Inventor	William Chang	
Art Unit	2141	
Examiner Name	CLAUDIA DRAGOESCU	
Attorney Docket Number	FLEX.0022-008	
Title	SOFTWARE APPLICATION FOR A MOBILE DEVICE TO WIRELESSLY MANAGE OR WIRELESSLY SETUP AN OUTPUT SYSTEM OR OUTPUT DEVICE FOR SERVICE	
An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary. APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c). A grantable petition requires the following items: (1) Petition fee; and (2) One of the following reasons: (a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable; (b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or (c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).		
Petition Fee		
☐ Small Entity		
☐ Micro Entity		
☒ Regular Undiscounted		
Reason for withdrawal from issue		

- ☐ One or more claims are unpatentable
- ☒ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees)
- ☐ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).

RCE request, submission, and fee.

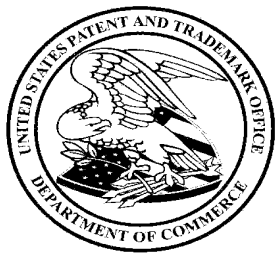
- ☐ I certify, in accordance with 37 CFR 1.4(d)(4) that :
- ☐ The RCE request ,submission, and fee have already been filed in the above-identified application on
- ☒ Are attached.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

- ☒ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application.
- ☐ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity.
- ☐ A sole inventor
- ☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application
- ☐ A joint inventor; all of whom are signing this e-petition

Signature	/Peter D. Sabido/
Name	Peter D. Sabido
Registration Number	50353



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
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Decision Date : October 1, 2020

In re Application of :

William Chang

DECISION ON PETITION

UNDER CFR 1.313(c)(2)

Application No : 15594440

Filed : 12-May-2017

Attorney Docket No : FLEX.0022-008

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed October 1, 2020 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED**.

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 2141 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

ROKU EXH. 1003



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	05/12/2017	William Ho Chang	FLEX.0022-008	7903
152	7590	10/20/2020	EXAMINER	
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP			DRAGOESCU, CLAUDIA B	
111 SW Columbia Street				
Suite 725				
PORTLAND, OR 97201				
			ART UNIT	PAPER NUMBER
			2141	
			NOTIFICATION DATE	DELIVERY MODE
			10/20/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent.docket@chernofflaw.com

Corrected Notice of Allowability	Application No. 15/594,440	Applicant(s) Chang et al.	
	Examiner CLAUDIA B DRAGOESCU	Art Unit 2141	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
 All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the QPIDS of 10/1/2020.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 1-39. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>10/1/2020</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☐ Examiner's Amendment/Comment 6. ☐ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
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/CLAUDIA DRAGOESCU/
 Primary Examiner, Art Unit 2141



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/594,440	11/24/2020	10846031	FLEX.0022-008	7903

152 7590 11/04/2020
CHERNOFF, VILHAUER, MCCLUNG & STENZEL, LLP
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Suite 725
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ISSUE NOTIFICATION

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