

ABSTRACT

A method of data transfer between wireless transmit/receive units (WTRUs) is performed by a sending communication device soliciting environment information relating to active communication devices operating within the local area of the WTRU. The local area of the WTRU may be determined by an environment variable that may be configured to indicate a search radius. Within the local area, information relating to active candidate WTRUs is received through a communication peripheral. User actions on the user interface are converted to electromechanical signals which act as an input along with the environment information to select a target WTRU from the candidate WTRUs to receive the data transfer. The environment information and user input are used to uniquely discriminate the target WTRU as the intended recipient of the data transfer. Transmission instructions are generated based on the solicited information and the user input.

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	IPH-2-2235US02
		Application Number	
Title of Invention	DATA TRANSFER BETWEEN WIRELESS DEVICES		
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.)

Applicant Information:

Applicant 1						Remove	
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117		☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name		Family Name		Suffix	
	Alan	G.		Carlton			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service							
City	Mineola	State/Province	NY	Country of Residence i	US		
Citizenship under 37 CFR 1.41(b) i		GB					
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City	Mineola	State/Province		NY			
Postal Code	11501	Country i		US			
Applicant 2						Remove	
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117		☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name		Family Name		Suffix	
	Alexander			Reznik			
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City	Titusville	State/Province	NJ	Country of Residence i	US		
Citizenship under 37 CFR 1.41(b) i		US					
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Address 1		1212 River Road					
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Postal Code	08560	Country i		US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.							
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For further information see 37 CFR 1.33(a).

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	IPH-2-2235US02	
		Application Number		
Title of Invention	DATA TRANSFER BETWEEN WIRELESS DEVICES			
Customer Number	24374			
Email Address	JBrink@volpe-koenig.com	Add Email	Remove Email	

Application Information:

Title of the Invention	DATA TRANSFER BETWEEN WIRELESS DEVICES			
Attorney Docket Number	IPH-2-2235US02	Small Entity Status Claimed ☐		
Application Type	Nonprovisional			
Subject Matter	Utility			
Suggested Class (if any)		Sub Class (if any)		
Suggested Technology Center (if any)				
Total Number of Drawing Sheets (if any)	9	Suggested Figure for Publication (if any)	2	

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). Enter either 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)
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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this 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(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.			
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	non provisional of	61140126	2008-12-23
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	IPH-2-2235US02
		Application Number	
Title of Invention	DATA TRANSFER BETWEEN WIRELESS DEVICES		

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. 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(a).

			Remove
Application Number	Country ⁱ	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☐ Yes ☒ No
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Assignee 1				Remove
If the Assignee is an Organization check here. ☒				
Organization Name	INTERDIGITAL PATENT HOLDINGS, INC.			
Mailing Address Information:				
Address 1	3411 Silverside Road, Concord Plaza			
Address 2	Suite 105, Hagley Building			
City	Wilmington	State/Province	DE	
Country ⁱ	US	Postal Code	19810	
Phone Number		Fax Number		
Email Address				
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Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

Signature	/John D. Brink, Jr./		Date (YYYY-MM-DD)	2009-12-22
First Name	John D.	Last Name	Brink, Jr.	Registration Number
			60288	

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CLAIMS

What is claimed is:

1. A method for controlling communication of data in wireless communications, implemented in a wireless transmit/receive unit (WTRU), the method comprising:

detecting environment information relating to at least one candidate WTRU operating in a local area associated with the WTRU;

receiving user input;

processing the user input and the environment information; and

identifying at least one candidate WTRU as a target WTRU based at least in part on the user input, and wherein the user input relates to a selection of data for transfer between the WTRU and the target WTRU.

2. The method of claim 1, wherein detecting environment information comprises:

detecting a service supported by the at least one candidate WTRU;

establishing a radio dialog between the WTRU and the at least one candidate WTRU;

analyzing a signal received from the candidate WTRU;

exchanging detected service information between the WTRU and the at least one candidate WTRU.

3. The method of claim 2, wherein the service is detected by a Service Discovery Protocol (SDP).

4. The method of claim 3, wherein analyzing the signal received by the candidate WTRU is based on the power level of the received signal.

5. The method of claim 3, wherein analyzing the signal received by the candidate WTRU is based on the quality of the received signal.

6. The method of claim 1, wherein detecting environment information further comprises:

performing a first radius search, wherein a first number of candidate WTRUs are detected;

performing a second radius search based on the detected first number of candidate WTRUs; and

selecting a subset of the first number of candidate WTRUs, wherein the subset is selected based on service supported by each of the first number of candidate WTRUs.

7. A method of communicating data in wireless communications, implemented in a wireless transmit/receive unit (WTRU), the method comprising:

receiving user input;

soliciting information through a lower layer related to at least one candidate

WTRU operating in a local area of the WTRU;

identifying a target WTRU by processing the user input and the solicited information from the at least one candidate WTRU;

generating environment information based on the target WTRU;

generating transmission instructions based on the target WTRU; and

transmitting data to the target WTRU based on the environment information and the transmission instructions.

8. The method of claim 7, further comprising:

constructing a real-time local map including relative position information for the at least one candidate WTRU; and

identifying the target WTRU based at least in part on the real-time local map.

9. The method of claim 8 wherein the real-time local map includes relative location information relating to the at least one candidate determined through a triangulation procedure.

10. The method of claim 8, wherein the real-time local map includes relative location information relating to the at least one candidate WTRU established through Global Positioning Satellite (GPS) information.

11. The method of claim 8, wherein the real-time local map is determined by a radio dialog defined by a service discovery protocol.

12. The method of claim 7, further comprising each of the at least one candidate WTRUs:

constructing a real-time local map associated with each candidate WTRU;
and

exchanging real-time local map information between the at least one candidate WTRU and the WTRU.

13. A method of transmitting data between a sending wireless transmit/receive unit (WTRU) and at least one receiving WTRU, the method comprising:

receiving a gestural user input, wherein the gesture is directed toward a desired receiving WTRU;

analyzing an electromagnetic spectrum in a local area of the sending WTRU;
identifying at least one candidate WTRU operating in the electromagnetic spectrum and the local area of the sending WTRU;

processing the user input to select a target WTRU from the identified at least one candidate WTRU; and

transmitting data to the target WTRU.

14. A method of data transfer between a plurality of wireless transmit/receive units (WTRUs), the method comprising:

at a sending WTRU, soliciting environment information relating to active communication devices in a local area of the sending WTRU;

identifying a media element stored in a file system of the sending WTRU;

receiving a physical input from a user at the sending WTRU;

converting the physical input to an electromechanical signal;

selecting a target WTRU based on the electromechanical signal and the environment information;

generating configuration information and target transmission instructions based on the selected media element; and

instructing a communication peripheral to transmit the selected media element to the selected target WTRU based on the generated configuration information and transmission instructions.

15. The method of claim 14, wherein the soliciting information is based on a configuration variable which indicates a search radius defining the local area of the sending communication device.

16. The method of claim 14, wherein the soliciting information is obtained periodically and on a condition that the sending communication device enters a send operation.

17. The method of claim 14, wherein soliciting information relating to active communication devices is performed through a mesh network.

18. The method of claim 14, wherein soliciting information relating to active communication devices is performed through a sensor network.

19. The method of claim 18, wherein the sensor network is comprised of sensor devices that operate independently of the active communication devices to identify a location and an identity of the active communication devices.

20. The method of claim 14, wherein receiving a physical input from the user is performed through a touchscreen.

21. The method of claim 14, wherein receiving a physical input from the user comprises:

detecting the user touching a user interface;

sensing a motion of the user's touch;

detecting a release of the user's touch.

22. The method of claim 21, wherein detecting the user touching the user interface includes detecting the user touching a visual representation of the identified media element.

23. The method of claim 21, wherein selecting a receiving communication device comprises:

receiving an electromechanical signal, which indicates a direction of the motion of the user's touch;

analyzing the solicited information based on active communication devices in the local area of the sending communication device;

identifying a target receiving device located in a direction of the motion of the user's touch; and

selecting the target receiving device for transmitting the selected media element.

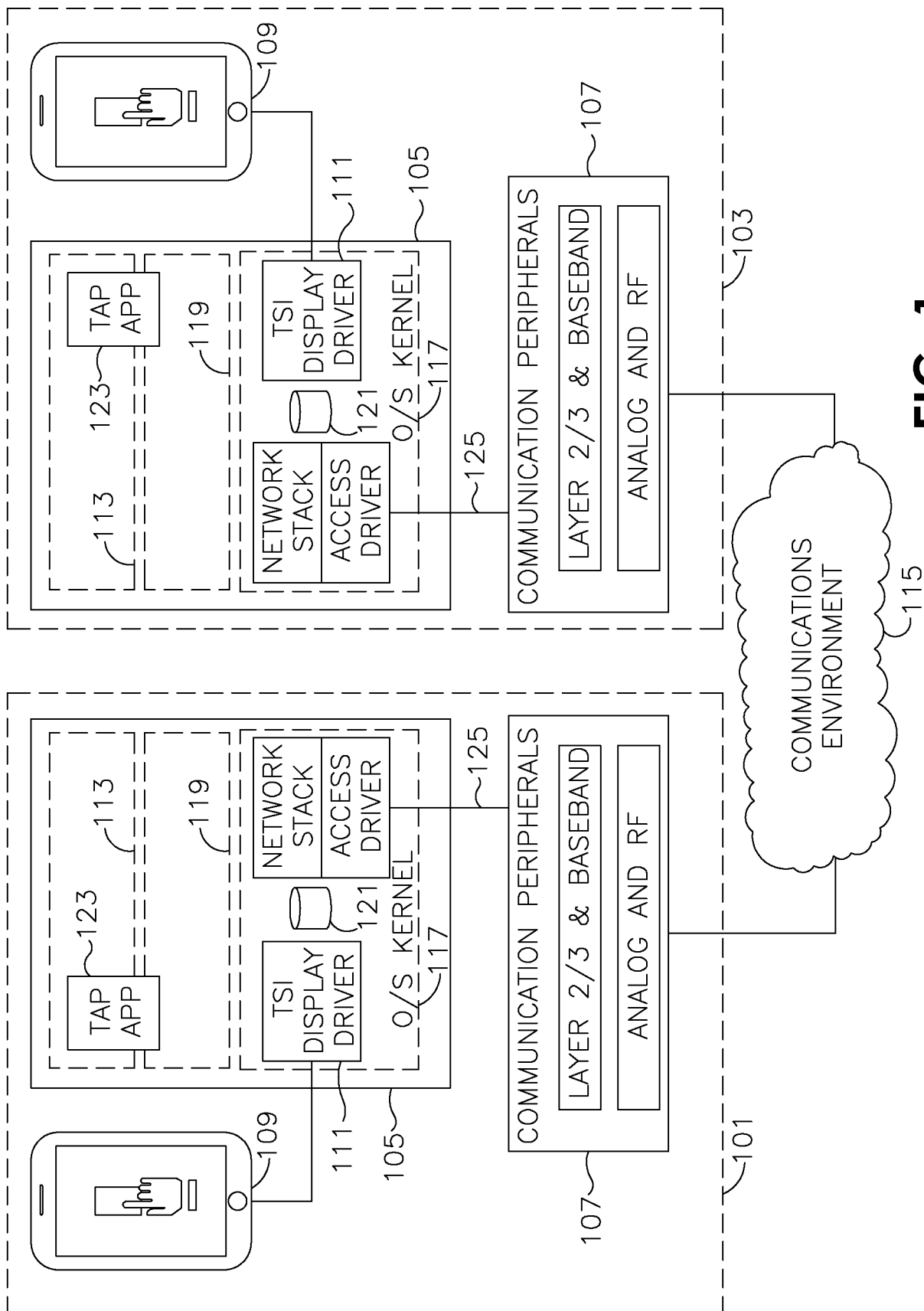
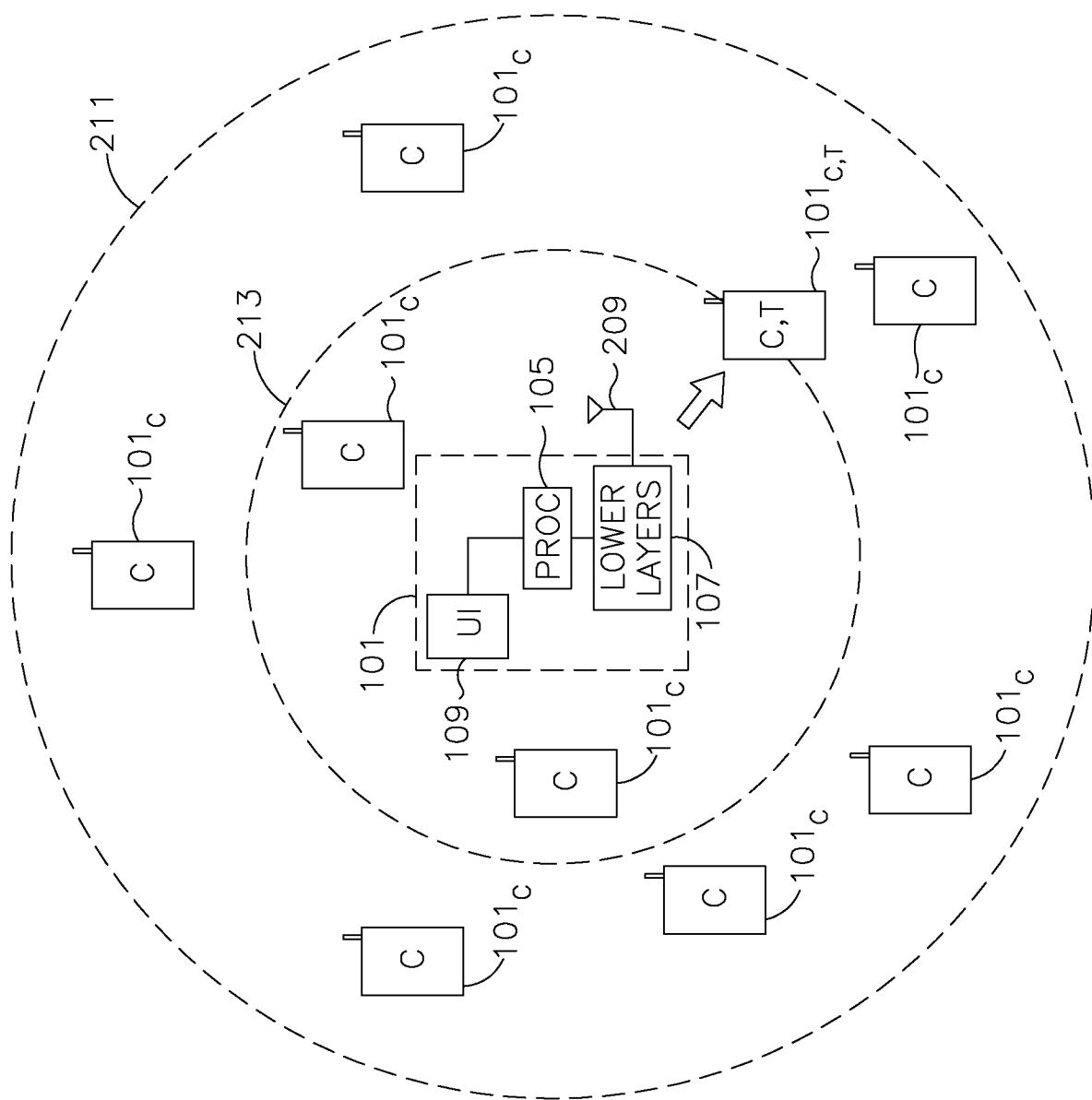


FIG. 1

**FIG. 2**

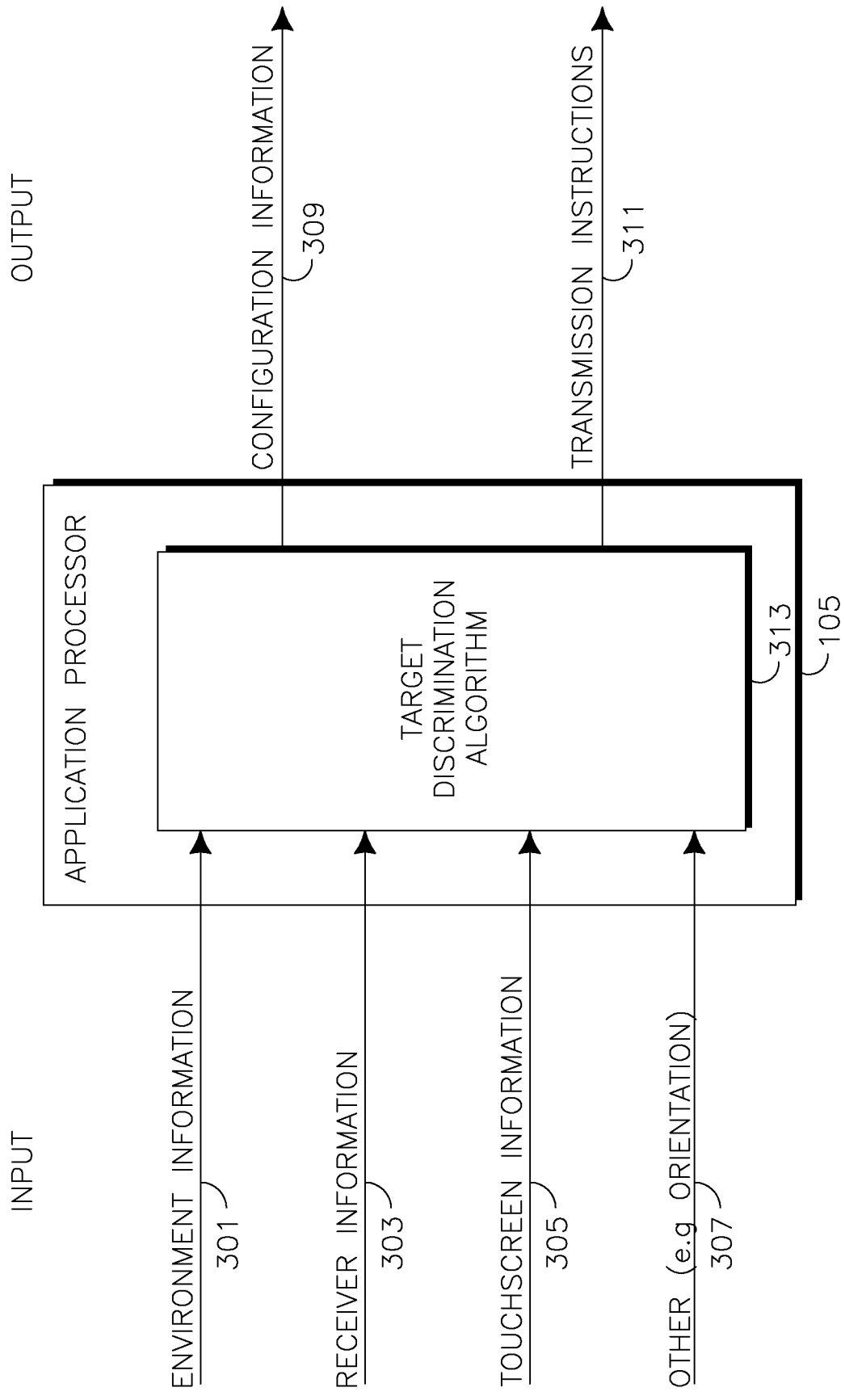
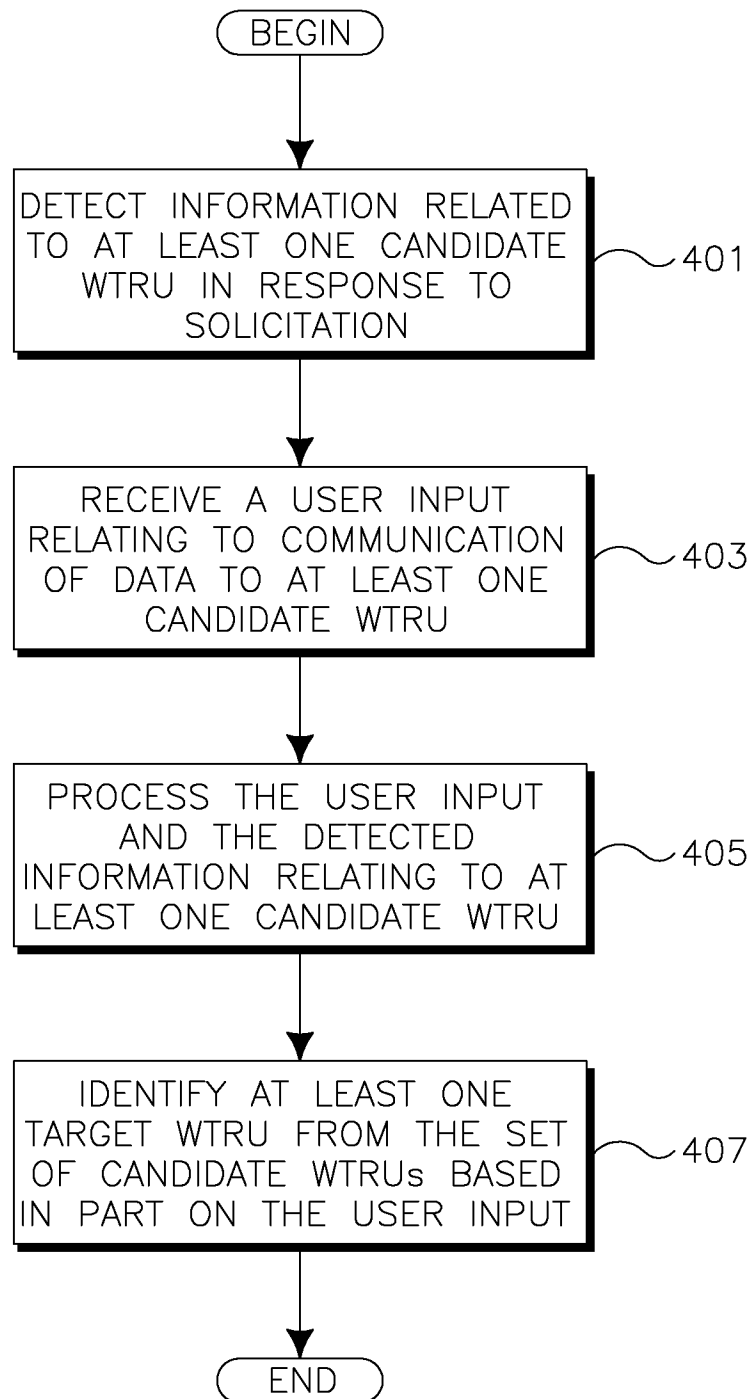


FIG. 3

**FIG. 4**

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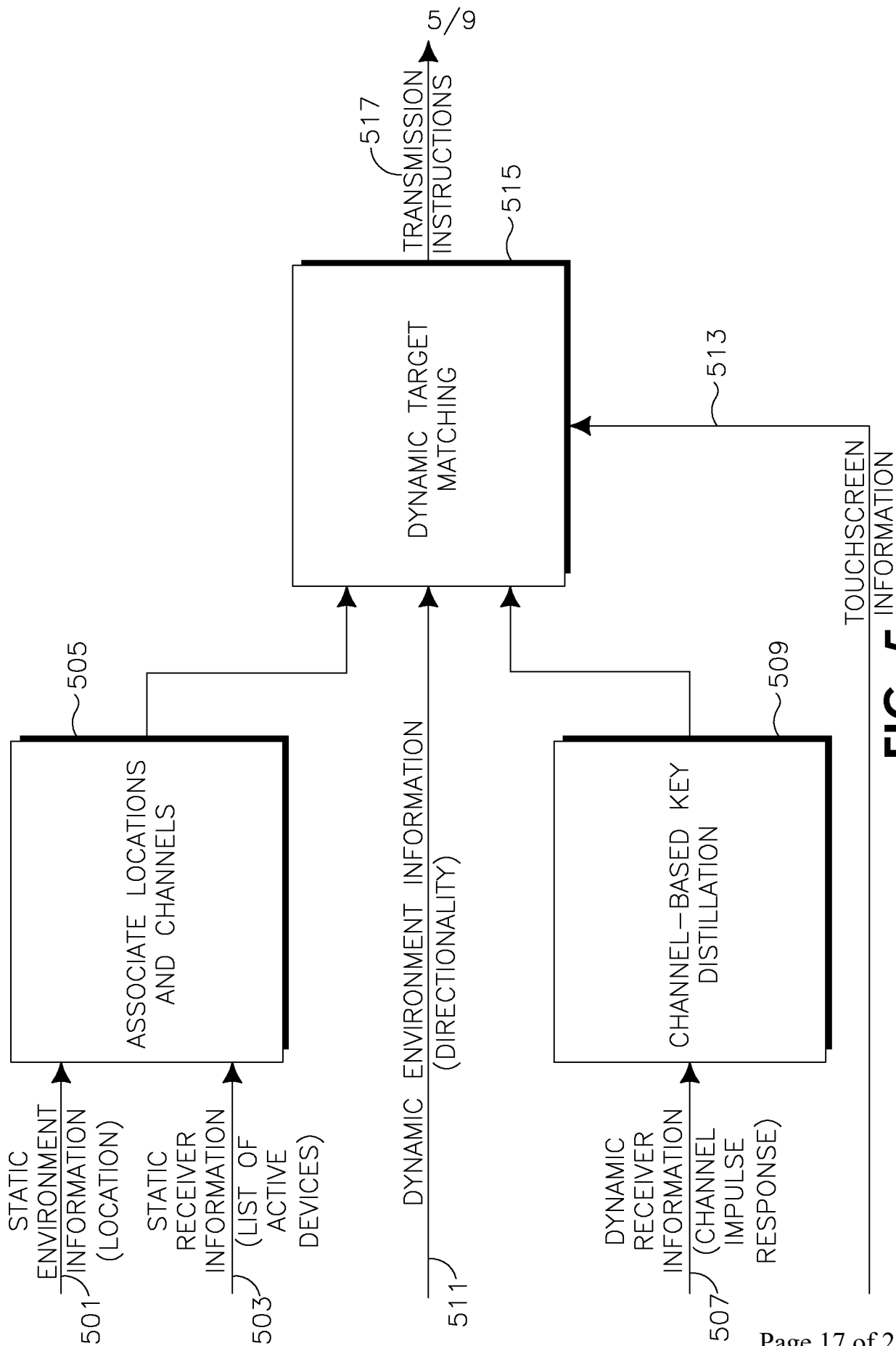
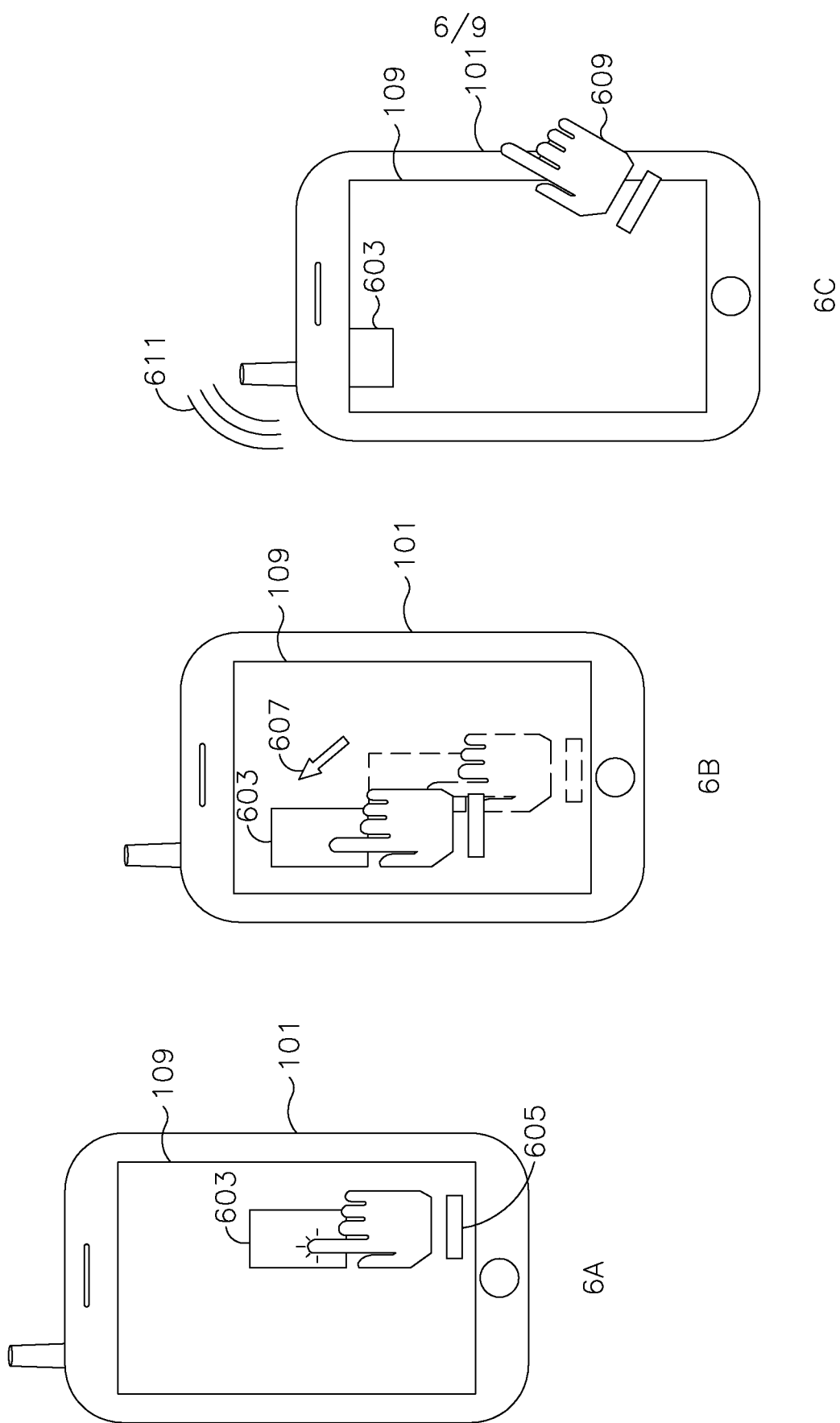


FIG. 5

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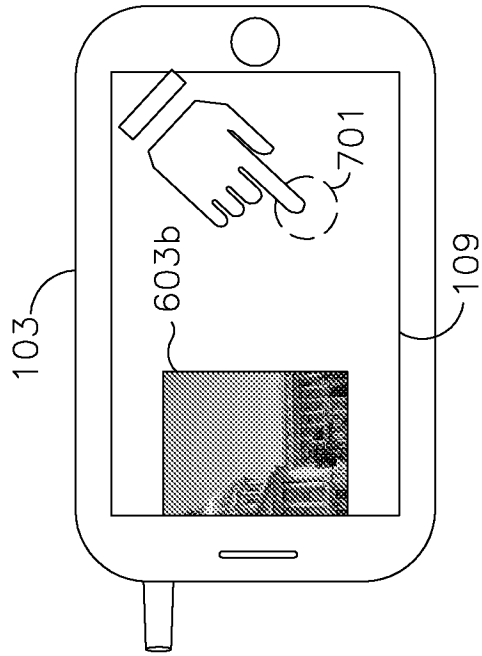


FIG. 7A

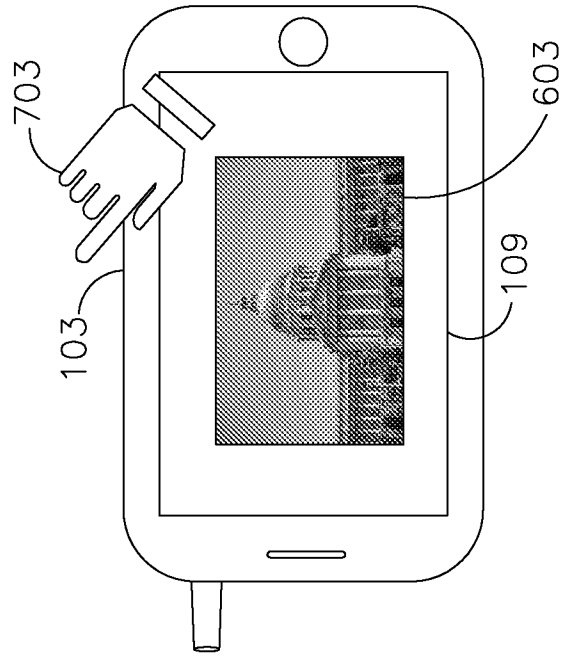
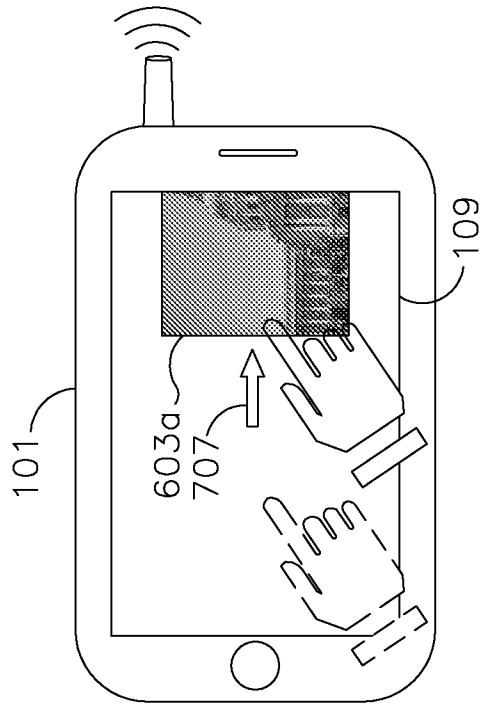
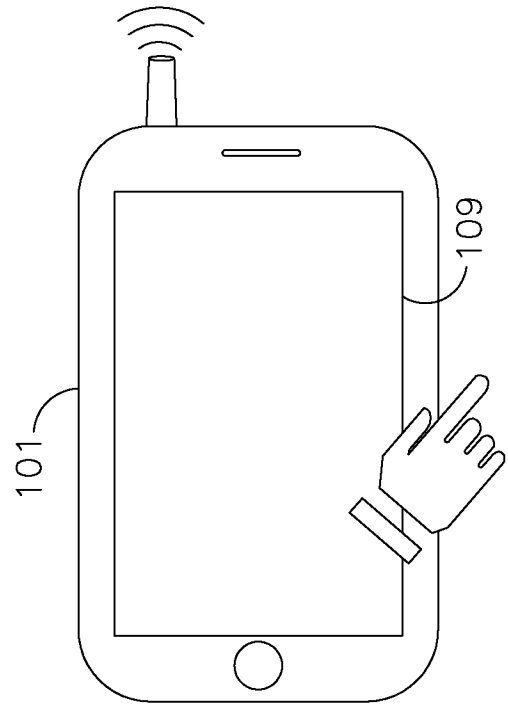


FIG. 7B



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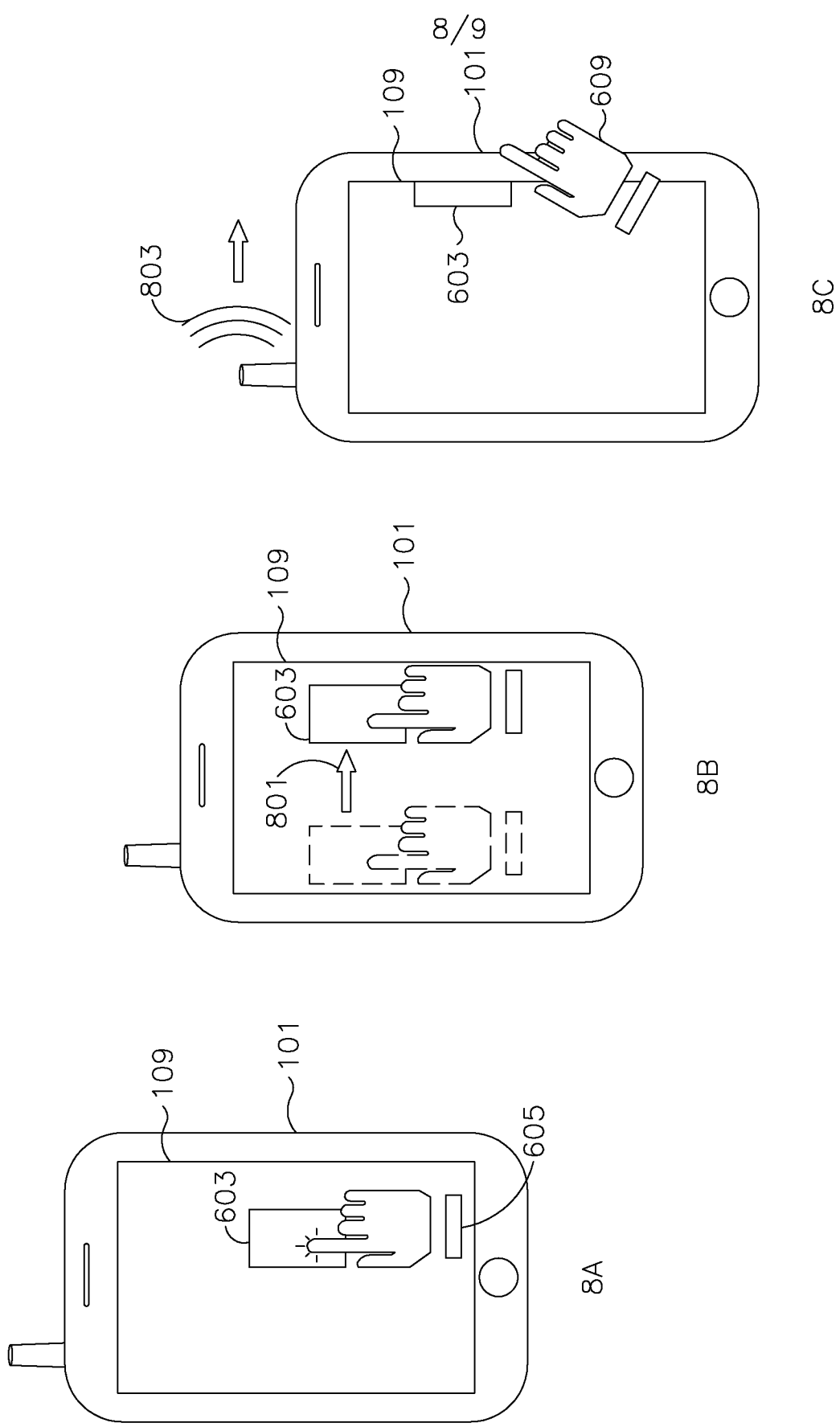


FIG. 8

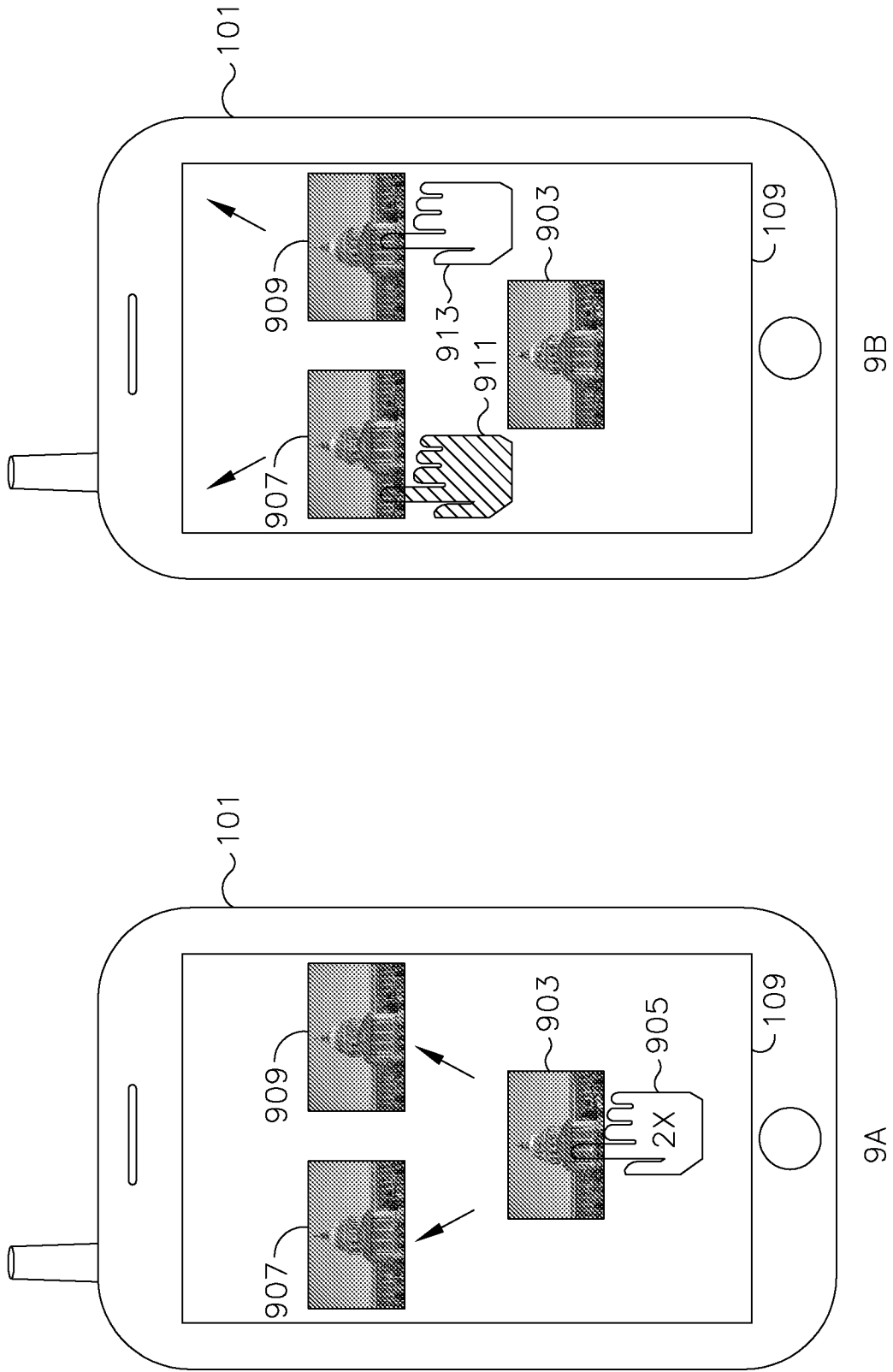


FIG. 9

Electronic Acknowledgement Receipt

EFS ID:	6691250
Application Number:	12644948
International Application Number:	
Confirmation Number:	7345
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES
First Named Inventor/Applicant Name:	Alan G. Carlton
Customer Number:	24374
Filer:	Matthew I. Cohen/Janice Selvato
Filer Authorized By:	Matthew I. Cohen
Attorney Docket Number:	IPH-2-2235US02
Receipt Date:	22-DEC-2009
Filing Date:	
Time Stamp:	16:57:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$1466
RAM confirmation Number	4183
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Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

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File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2235US02_Application_EFS.pdf	114254 c2fec6742b3d0611da74f29be3c79464cff9653	yes	25
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	17	
	Claims		18	24	
	Abstract		25	25	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	2235US02_Drawings_EFS.pdf	818357 70d334b2af8b389eeb2f4db78839a58cdaa69ac9	no	9
Warnings:					
Information:					
3	Application Data Sheet	2235US02_ADS_Form_SB_14.pdf	1100790 bd3bb079526cb00521a0694e59aae75da33fa12b	no	4
Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	37910 dlb2e4be7e62fa3d4a107646522ab20213e218f51	no	2
Warnings:					
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Total Files Size (in bytes):			2071311		

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Filing Date: 12/22/2009

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/644,948	
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OR
FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)	LARGE ENTITY
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A		RATE (\$)
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A		FEE (\$)
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A		RATE (\$)
TOTAL CLAIMS (37 CFR 1.16(j))	23	minus 20	=	3		FEE (\$)
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4	minus 3	=	1		RATE (\$)
APPLICATION SIZE FEE (37 CFR 1.16(s))						FEE (\$)
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))						
* If the difference in column 1 is less than zero, enter "0" in column 2.				195		390
				TOTAL		TOTAL
						1466
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		(Column 3)		OR
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)	ADDI-TIONAL FEE (\$)
	Total (37 CFR 1.16(i))	Minus **	=		X =	
	Independent (37 CFR 1.16(h))	Minus ***	=		X =	
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
				TOTAL		TOTAL
				ADD'T FEE		ADD'T FEE
(Column 1)		(Column 2)		(Column 3)		OR
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)	ADDI-TIONAL FEE (\$)
	Total (37 CFR 1.16(i))	Minus **	=		X =	
	Independent (37 CFR 1.16(h))	Minus ***	=		X =	
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
				TOTAL		TOTAL
				ADD'T FEE		ADD'T FEE

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
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Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		DATA TRANSFER BETWEEN WIRELESS DEVICES		
First Named Inventor/Applicant Name:		Alan G. Carlton		
Filer:		Matthew I. Cohen/Janice Selvato		
Attorney Docket Number:		IPH-2-2235US02		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Claims in excess of 20	1202	3	52	156
Independent claims in excess of 3	1201	1	220	220
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1466

SCORE Placeholder Sheet for IFW Content

Application Number: 12644948

Document Date: 12/22/2009

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[0001] DATA TRANSFER BETWEEN WIRELESS DEVICES

[0002] CROSS REFERENCE TO RELATED APPLICATIONS

[0003] This application claims the benefit of U.S. provisional application No. 61/140,126 filed December 23, 2008 which is incorporated by reference as if fully set forth herein.

[0004] FIELD OF INVENTION

[0005] This application is related to wireless communications.

[0006] BACKGROUND

[0007] In current communications, functionality that allows the transfer of data (such as files or digital media) between devices in both fixed and wireless environments is commonplace. Currently, data transfers may be performed using applications such as electronic mail, or multimedia message services (MMS) with the data being transmitted from one device to another through suitable technologies, for example, General Packet Radio Service (GPRS) or Wireless Local Area Network (WLAN). As the sophistication of user interfaces supporting data transfers has developed (for example, the emergence of touch screen and multi-touch technology), the user experience has been simplified considerably. These advances in user interface technology may be seen in devices such as the Apple® iPhone® and iPod Touch®.

[0008] Despite these advances, however, file transfers may still be a cumbersome, multi-step task requiring adaptation between multiple implementations. For example, many technologies involve a fragmented approach to access and manipulation of files such as attachments. These hurdles inhibit the more regular use of file transfer schemes in spontaneous situations. A simplified and more intuitive approach to data transfer between devices is therefore required.

[0009] SUMMARY

[0010] A method for controlling communication of data in wireless communications, implemented in a wireless transmit/receive unit (WTRU) detects environment information relating to at least one candidate WTRU operating in a local area associated with the WTRU. A user input is received via a user interface, wherein the user input relates to a selection of data for transfer between the WTRU and at least one of the candidate WTRUs and to an identified target WTRU. The user input is processed as well as the information relating to the at least one candidate WTRU. At least one target WTRU is identified from the at least one candidate WTRU based in part on the user input. Information relating to candidate WTRUs is solicited through a lower layer. Environment information is used to identify the target WTRU and transmission instructions are generated to enable transmission of data to the target WTRU.

[0011] BRIEF DESCRIPTION OF THE DRAWINGS

[0012] A more detailed understanding may be had from the following description, given by way of example in conjunction with the accompanying drawings wherein:

[0013] Figure 1 shows a sending and receiving wireless transmit/receive unit (WTRU) that may be used for data transfer between devices;

[0014] Figure 2 shows a wireless communication environment for data communication between devices;

[0015] Figure 3 shows a target discrimination algorithm for identifying a target WTRU;

[0016] Figure 4 is a block diagram of a method of communicating data between wireless devices;

[0017] Figure 5 is a block diagram of physical layer security for data communication between devices;

[0018] Figure 6 shows a user input for transferring a data file between devices;

[0019] Figures 7A and 7B show a user experience during a data communication between devices at a sending device and a receiving device;

[0020] Figure 8 shows a user input for transferring a data file to a target device, where the user input includes a directional indication of the location of the target device; and

[0021] Figure 9 shows a user input for transferring a data file from a sending device to multiple receiving devices.

[0022] DETAILED DESCRIPTION

[0023] When referred to hereafter, the terminology "wireless transmit/receive unit (WTRU)" includes but is not limited to a user equipment (UE), a communications device, a mobile station, a fixed or mobile subscriber unit, a pager, a cellular telephone, a personal digital assistant (PDA), a computer, or any other type of device capable of operating in a wireless environment. When referred to hereafter, the terminology "base station" includes but is not limited to a Node-B, a site controller, an access point (AP), or any other type of interfacing device capable of operating in a wireless environment.

[0024] Figure 1 is an illustration of a sending WTRU 101 and a receiving WTRU 103 whereby data is transferred between the WTRUs. The sending WTRU 101 and the receiving WTRU 103 are similarly equipped. The sending WTRU 101 and receiving WTRU 103 are separated by a communications environment 115 that may include other similarly equipped WTRUs which are not shown for simplicity. In general, WTRU 101, and WTRU 103 are each minimally comprised of an application processor 105, a communication peripheral 107, and a touchscreen/display peripheral 109. The communication peripheral 107 may be implemented as a wireless personal area network (WPAN) device, for example Bluetooth®, Wireless Universal Serial Bus (W-USB) or WiFi® in ad-hoc mode. The application processor 105 may be equipped with software such as an operating system (O/S)/ kernel 117 (for example, Linux® or

Windows®), middleware 119, and applications 113. The O/S may include necessary drivers to provide support for the touchscreen 109 and the communication peripheral 107 in addition to a file system 121 for storing media. An application 123 (hereinafter referred to as “TapAPP”) may include application software configured to implement a method of data transfer between WTRU 101 and WTRU 103. TapAPP 123 may run on the application processor 105 running a high-end O/S such as Linux ® or Windows®, for example. The communication peripherals 107 may include technologies such as a third generation partnership (3GPP) second or third generation standards (2G/3G) modem, Bluetooth® or WiFi®. Any combination or all of these communication technologies may be implemented in a single component design. Other peripherals such as a touchscreen/display 109, may also be supported. Peripherals 107, 109 may be operationally coupled to the application processor 105 through a physical interface 125 which, by way of example, may be a serial peripheral interface (SPI) or shared memory. The application processor 105 may provide support for the peripherals 107, 109 through drivers or general application software.

[0025] TapAPP 123 may run on either or both of the sending 101 and receiving 103 WTRUs. TapAPP 123 may run on any communications device, and may be run in a send or receive mode. TapAPP 123 runs on the embedded O/S 117 and may be implemented as a native application, a Java® application or any other suitable type of application on the WTRUs 101, 103. TapAPP 123 may be a stand alone application 113 or may be tightly bound to middleware 119 thereby providing a background process, giving the user an “always on” usage experience. Additionally or alternatively, TapAPP 123 may be implemented as a plug-in application that may be launched by a user as needed in a manner known in the art. TapAPP 123 may provide display features to indicate a current state of the application (i.e. send or receive mode). For example, while in send mode, TapAPP 123 may allow the user to access and display a media file, such as a digital photograph for transfer, on the touchscreen/display 109. In one representation of receive mode, TapAPP 123 may provide a touch point on the

screen 109 or illuminate a touch point upon the user touching the touchscreen 109, thereby enabling the user to access the underlying functionality of TapAPP 123 and receive the data transfer from the sending WTRU 101. The underlying mechanics and technologies of touchscreens and displays are beyond the scope of this disclosure and are therefore omitted for the sake of clarity.

[0026] Referring to Figure 2, a WTRU 101 configured for communicating data to target WTRU 101_{c,t} is shown. The WTRU 101 comprises a user interface (UI) 109, a processor 105, a communication peripheral 107, and an antenna 209. Other components located within the WTRU 101, for example, are a transmitter and receiver, but are not shown to avoid obfuscating the data communication illustration of Figure 2. The communication peripheral 107 operates in the lower layers, for example, the physical (PHY) communication layer. The communication peripheral 107 receives and processes information relating to the electromagnetic environment in which the WTRU 101 is operating. The electromagnetic environment (hereafter referred to as local areas 211, 213) contains information being provided by the energy emanating from other WTRUs 101_c operating within the local areas 211, 213 of the WTRU 101.

[0027] The local area in which WTRU 101 is operating may be configured to be a smaller radius of communication as identified by 213, or the local area may be configured to be a larger radius as identified by 211. The radius that defines the local areas 211, 213 may be configured at the WTRU 101 by a user-defined variable that defines a search radius with respect to the WTRU 101. Additionally, the local area in which the WTRU 101 is operating may be defined by any other appropriate manner. The communication peripheral 107 receives and maintains the environment information relating to the WTRUs 101_c operating within the local areas 211, 213.

[0028] WTRUs 101_c operating within the local areas 211, 213 of WTRU 101 are referred to as candidate WTRUs 101_c because they are potential recipients of data to be communicated by WTRU 101. As shown in Figure 2, there may be more than one candidate WTRU 101_c as indicated by the WTRUs denoted with a “c”. Candidate

WTRUs 101_c may be WTRUs similarly equipped like WTRU 101. From the candidate WTRUs 101_c, at least one target WTRU 101_{c,t} will be selected. Figure 2 shows only one target WTRU 101_{c,t}, but there may be more than one target WTRU 101_{c,t} selected from the candidate WTRUs 101_c. For example, one WTRU 101 configured to communicate data to another WTRU, may communicate data to one or a multitude of other WTRUs selected from a set of candidate WTRUs 101_c.

[0029] WTRU 101 comprises a UI 109 which may allow a user to provide user input to the WTRU 101. Through the UI 109, the user may provide user preferences relating to the communication of data from the WTRU 101. The UI 109, may be implemented, for example, in a touchscreen/display. Using a touchscreen display, the user may provide gestural actions to indicate user preferences. The user's gestures may be directed to some visual depiction displayed on the touchscreen/display. The user may manipulate the visual depiction through a pre-defined gesture that is indicative of the user's preferences regarding the data communication. For example, the visual depiction may identify a selected media element stored in the WTRU 101. The user may manipulate the visual depiction of the media element to indicate the movement of the media element through the local areas 211, 213, in which the WTRU 101 is operating. Such movement, for example, may include distance denoted by the speed at which the visual depiction is moved across the UI 109, or alternatively by the pressure exerted on the surface of the UI 109 by the user. Other gestural inputs may be defined to indicate user preferences. Direction of a data communication within the local areas 211, 213 where the WTRU 101 is operating may be indicated by a movement of the visual depiction in the direction to indicate the direction of the data communication. Thus, for example, if the user wishes a data communication to occur between the user's WTRU 101 and another WTRU operating in local areas 211, 213 (i.e. the user has identified a desired target WTRU 101_{c,t}), the user may provide a gesture via the UI 109 that is representative of the distance and direction of the selected target WTRU 101_{c,t} with respect to the sending WTRU 101.

[0030] WTRU 101 includes a processor 105 that is configurable to process information from the UI 109 and the communication peripheral 107. Electromechanical signals from the UI 109 are provided as inputs to the processor 105. Processor 105 may be configurable to execute machine readable instructions stored in any type of memory. Processor 105 is also configured to receive environment information stored by the communication peripheral 107. The environment information and the user input are then used as inputs to the processor 105 and are processed to identify a target WTRU 101_{c,t}. The electromechanical inputs from the UI 109, which may include for example, an indication of direction and distance, are then correlated to the environment information stored at the lower layers by the communication peripheral 107. Based on the correlation, a identification of at least one target WTRU 101_{c,t} is determined and a data communication from the WTRU 101 may be transmitted to the identified target WTRU 101_{c,t}.

[0031] The lower level information is provided to the application processor 105 according to the communication technology being used. For example, the information available to the application processor 205 may vary based on an implementation using a Third Generation Partnership Project (3GPP) technology, an Institute of Electronic and Electrical Engineers (IEEE) standard such as WiFi, or some other communication technology. For example IEEE 802.21 standard may be used where the TapAPP may register with an 802.21 client or other proprietary client to access and process lower layer information. Specific information relevant to the TapAPP's identification of a target WTRU 101_{c,t} may be provided from the communications peripheral 107.

[0032] Figure 3 shows inputs that may be used to drive a target discrimination algorithm 313 that uniquely identifies a target WTRU for transfer of data. Possible inputs include environment information 301, receiver information 303, touchscreen information 305 and other information 307, such as WTRU 101 orientation for example where the WTRU 101 includes an accelerometer and supporting drivers. After processing the available inputs 301, 303, 305, and 307 by the application processor 105

through a target discrimination algorithm 313, configuration information 309 and transmission instructions 311 are generated as outputs.

[0033] The environment information 301 may, for example, be generated as follows. The application processor 105 may process instructions to periodically solicit information from the communication peripheral 107 relating to candidate WTRUs 101_c operating in the local areas 211, 213 of a communicating WTRU 101. A configuration variable may be provided that allows the end user to define a search radius (e.g. 2-3m) in which to solicit information. Devices outside the configured search radius will be excluded from received environment information. Throughout the timeframe that the application processor 105 is running a data communication application, the solicited information will be regenerated or updated. Upon receiving a user input indicating a data communication is desired, the solicited environment information 301 may be refreshed. The information collected regarding the candidate WTRUs 101_c is included in the environment information 301 and may be used as an input to the target discrimination algorithm 313. In an embodiment, environment information 301 may be solicited by a localization method. For example, in a mesh network or a sensor network, the solicitation may include both the neighboring devices as well as independent device elements that enable the location and identity of each candidate WTRU to be determined accurately. Such a network may be comprised of independent sensors that respond to the communication peripheral 107 of the communicating WTRU 101, or may include the candidate WTRUs 101_c operating in the local areas 211, 213 of the communicating WTRU 101.

[0034] The environment information 301 may be gathered via a service discovery protocol (SDP) such as currently available in protocols such as Bluetooth®, for example. This protocol allows the WTRU 101 to discover the services (e.g. TapAPP as described herein) that are supported by other WTRUs operating in the local environment. An application such as TapAPP described above may invoke SDP functionality to discover all of the TapAPP enabled WTRUs operating in a particular

location. For example, a Bluetooth® connection may be used to implement a SDP for this purpose. A radio dialog between the WTRU 101 and one or more candidate WTRUs 101_c is established according to the defined SDP. Information received in the radio dialog may be analyzed and filtered (e.g. power level, or quality of a received signal) to determine the individual candidate WTRUs 101_c or set of candidate WTRUs 101_c in a local proximity. When a set of candidate WTRUs 101_c is determined, a second level of search radius granularity may be applied by further defined radio dialogs between the WTRU 101 and a subset of candidate WTRUs 101_c. In addition to the SDP information directly discoverable by the WTRU 101, each candidate WTRU 101_c may exchange additional locally gathered information (e.g. GPS, or other location information gathered via a localization scheme) with other candidate WTRUs 101_c. On a condition that a sufficient number of candidate WTRUs 101_c are identified by the SDP, triangulation mechanisms may be implemented to establish a view of relative locations between a set of identified candidate WTRUs 101_c. The entire environment discovery procedure may be implemented continuously and in real-time while the TapAPP is running on all the candidate WTRUs 101_c with the TapAPP capabilities to update and maintain a real-time local map that is preserved in each instance of the TapAPP.

[0035] The receiver information 303, may be generated according to the following example. During data communication, send and receive operations are initiated between a sending WTRU 101 and a target WTRU 101_{c,t}. The user of the sending WTRU 101 initiates, through a user input, a send operation for a selected media element. On the receiving side, the target WTRU 101_{c,t} user may touch and hold the touchscreen of the target WTRU 101_{c,t} for all or part of the transfer process. The user input of the target WTRU 101_{c,t} may result in the target WTRU 101_{c,t} transmitting a radio signal to the sending WTRU 101, for example, an acknowledgement signal, the radio signal may be reported to the application processor 105. This receiver information 303 may serve as an input to the target discrimination algorithm 313.

[0036] A user input received from the UI 109, for example a touchscreen/display, may be translated into application signals by the touchscreen/display 109 or processor 105. This touchscreen information 305 is input to the target discrimination algorithm 313 to identify a target WTRU 101_{c,t}. Touchscreen information 305 may include a file reference, speed, pressure, acceleration, timing information, direction, etc. File reference information may be used to identify a selected media element stored in the file system of the sending WTRU 101 that is the object of the data communication.

[0037] Directional inputs provided by the user via the touchscreen/display 109 may be synthesized to establish relative orientation to the real-time local map and select a target WTRU 101_{c,t} from the identified group of candidate WTRUs 101_c to establish a one-to-one communication between the transmitting WTRU 101 and the target WTRU 101_{c,t} or a selected one-to-many communication to a plurality of target WTRUs 101_{c,t}. In an example of a user input, an accelerometer associated with the WTRU 101 may provide input regarding the orientation of the WTRU 101 with respect to the real-time local map. For example, if the WTRU 101 was held upside-down, the real-time local map would be referenced and applied upside-down as dictated by the orientation of the sending WTRU 101.

[0038] Other information 307 may be used as an input to the target discrimination algorithm 313. For example, if the sending WTRU 101 device is equipped with an accelerometer and supporting drivers, the orientation of the sending WTRU 101 may be used as input information 307. Any type of other information 307 germane to the selection of a target WTRU 101_{c,t} may be used as an input to the target discrimination algorithm 313.

[0039] Configuration information 309 may include settings for attributes such as power level, antenna orientation, security parameters and the like. Transmission instructions 311 may include information regarding the data to be communicated and the identity of the target WTRU 101_{c,t} as well as instructions for implementing the transfer through specific components in the communication peripheral. The

configuration information 309 and transmission instructions 311 may be delivered to the communication peripheral 107. The configuration information 309 and transmission instructions 311 may impact the configuration of the Layer 2/3 baseband components, (e.g., the power settings), and/or the analog and radio frequency components, (e.g., antenna orientation of the communication peripheral 107). The application processor 105 in the sending WTRU 101 may control the manner in which the data is transferred to the target WTRU 101_{c,t}, for example, by breaking the data into blocks corresponding to the manner in which the visual depiction of the data should appear at the target WTRU 101_{c,t}. This control may involve the appending of some segmentation/display guidance information to the file blocks that may be used at the target WTRU 101_{c,t} receiver to help render the visual depiction in a synergistic manner which is described in more detail hereinafter with respect to Figure 7.

[0040] Figure 4 shows a method of identifying a target WTRU 101_{c,t} for a data communication with multiple WTRUs. Environment information 301 is solicited and information related to at least one candidate WTRU 101_c operating in the local area of the sending WTRU 101 is detected 401. A user input is received 403, for example, through a touchscreen/display UI 109, wherein the user input is related to the communication of data from the sending WTRU 101 to at least one candidate WTRU 101_c. The user input and the environment information relating to the candidate WTRUs 101_c is processed simultaneously 405. For example, in a target discrimination algorithm 313 as described in Figure 3. At least one target WTRU 101_{c,t} is identified from the set of candidate WTRUs 407. The target WTRU 101_{c,t} is identified at least in part on the user input received and the environment information 301 detected.

[0041] Physical layer security mechanisms may be applied to establish the environment information 301 as well as securing the data for short range data communication between WTRUs 101. The data may be transferred only as far as is necessary to reach a minimal set of users in the local environment of the sending WTRU 101. The target discrimination algorithm 313 may be configured to secure the

file from beyond a local group (i.e. the local environment of the sending WTRU 101) and excluding others. One example of achieving this is a secure data transfer based on the reciprocity of the wireless channels between the sending WTRU 101 and the target WTRU 101_{c,t}. The uniqueness and reciprocity of the wireless channel may be utilized to accomplish this in two steps. First, the location information for a particular WTRU 101 is associated with a channel impulse response (CIR) from that WTRU 101, which is unique, albeit variable. The CIR may be used to generate a secret key stream for that location. A more detailed description of such a secret key encryption may be found in U.S. Patent Application No. 11/339,958 which is herein incorporated by reference. A common cipher source, for example, Advanced Encryption Standard (AES), may be seeded with the key, and the information for the target WTRU 101_{c,t} is encrypted with it. Alternatively or in addition, the CIR based information may be used to authenticate the message. The result is that only the selected target WTRU 101_{c,t} may receive the data, because only the target WTRU 101_{c,t} has the required channel-based key.

[0042] Figure 5 shows an implementation of physical layer security for data communication between multiple WTRUs 101. The static (or slowly changing) physical location 501 of WTRUs 101 operating in the local areas 211, 213 and their respective radio channels 503 are input to a locations and channels association unit 505 that associates the locations 501 and the channels 503 of each WTRU 101 operating in the local areas 211, 213. Dynamic receiver information 507 relating to the CIR of each communicating WTRU 101 is used by channel-based key distillation unit 509, which continuously generates channel-based encryption keys for each WTRU 101 in the local environment. When required by a user, as indicated by touchscreen information 513, a target WTRU 101_{c,t} may be identified from an available listing of candidate WTRUs 101_c by the dynamic target matching algorithm 515. The dynamic target matching algorithm 515, receives input from the locations and channels association unit 505, the channel-based encryption keys 509, and the touchscreen information 513, and the directional information 511 of the sending WTRU as inputs to identify one or more

target WTRUs 101_{c,t} as the recipient(s) of the data communication. Transmission instructions 517 are generated to facilitate the data transfer to the target WTRUs 101_{c,t}.

[0043] Referring now to Figure 6, a user input action for sending a file to another device is shown. The data transfer may take place from a sending WTRU 101 as shown in Figure 1. The sending WTRU 101 may use an application such as TapAPP 123 to facilitate the data transfer. The sending WTRU 101 may have a touchscreen/display device 109 through which an end user may provide input information to the sending WTRU 101. The transfer application (TapAPP 123) may be running on the sending WTRU 101. As an example, TapAPP 123 may be configured to receive a simple three step hand (or finger) motion to enable the data transfer. The three steps include a tap 6A, a push action 6B, and a release action 6C. Referring to 6A, the user taps 605 the touchscreen 109 at a location on the touchscreen 109 where a visual depiction 603 of a media element to be transferred is displayed. Without lifting the finger used to tap 605 the visual depiction 603, the user then pushes the visual depiction 603 of the media element across the touchscreen 109 as shown by the directional arrow 607 in Figure 6B. In an embodiment, the direction in which the user pushes the visual depiction 603 may simulate the direction of a target receiving WTRU 101_{c,t} which is the intended recipient of the media element to be transferred. The media element may be any type of data file capable of being stored on the WTRU 101, for example, the media element may be a digital photograph, a video file, a word processing document or the like. When the user has pushed the visual depiction 603 of the media element in the direction the user would like the media element to be transferred, the user then releases 609 contact with the visual depiction 603 to initiate the data transfer. The three user actions 6A, 6B, and 6C, provide inputs to the touchscreen 109, which may be converted to electromechanical signals through mechanisms known in the art. The electromechanical signals may serve as input to the TapAPP 123 application, which may generate environmental information and

transmission instructions relating to a target WTRU 101_{c,t} selected by TapAPP in a manner explained above with respect to Figure 3. The environmental information 301 and transmission instructions 311 are then processed by the WTRU 101 and the media element is transmitted 611.

[0044] Figures 7A and 7B are an illustration of a data transfer depicted from the perspective of both a sending WTRU 101 and a receiving WTRU 103. The data transfer is a process between two or more WTRUs. For example, the data transfer may originate from one sending WTRU 101 and be directed toward one or more receiving WTRUs 103. As seen in Figure 7A, the media element being transferred in this example is a digital photograph. A visual depiction 603 may be displayed on the touchscreen/display 109. The sender may touch the touchscreen 109 and push 707 the visual depiction 603 of the digital photograph in the direction of the intended receiving WTRU 103. A receiving WTRU 103 may run TapAPP 123 to enable the receiving WTRU 103 to receive the transferred data. The receiving WTRU 103, for example, may be running TapAPP 123 in a receive mode. The TapAPP 123 provides an indication 603b or a prompt that a data transfer is ready for receiving. To receive a file, the user may touch 701 the touchscreen 109 to initiate reception of the data transfer. The user may touch 701 the touchscreen 109 for the entire time the data transfer is taking place, or the user may touch 701 the touchscreen 109 for some portion of the time the data transfer is occurring.

[0045] During the transfer, the visual depiction 603 may be configured to display the progress of the data transfer to the user at one or both of the sending WTRU 101 and the receiving WTRU 103. As shown in Figure 7A on the sending WTRU 101 as visual depiction 603a, the portion of the data transfer remaining to be sent may be displayed on the touchscreen/display 109 of the sending WTRU 101 as a partial visual depiction 603a of the digital photograph. As the data transfer progresses, the visual depiction 603a is updated to indicate the remaining amount of data to be transferred. Similarly, at the receiving WTRU 103, a visual depiction 603b may be displayed on the

touchscreen/display 109 of the receiving WTRU 103 to indicate to a user the amount of the data transfer that has been transmitted to the receiving WTRU 103. As shown in Figure 7B, when the data transfer is complete, the visual depiction 603 is displayed in its entirety at the receiving WTRU 103. Upon receipt of the file, the user of the receiving WTRU 103 may release the touchscreen 109 and the receiving WTRU 103 may send an application level acknowledgment to the sending WTRU 101. Thus, as shown in Figures 7A and 7B, the user may observe the visual depiction 603a disappearing from the sending WTRU 101 while the visual depiction 603b is emerging on the receiving WTRU103 in such manner that the overall visual depiction 603 is preserved for the duration of the data transfer. The underlying data transfer mechanism may prioritize the transfer of data file elements to enable this user experience. In an alternate embodiment, this user experience may be provided at the application level. The file may be transferred as a whole, but the rendering aspect of the application on both the send and receive sides of the data transfer creates the appearance of a progressive and contiguous data transfer.

[0046] Figure 8 is an illustration of the user experience while sending a data transfer in a direction of a targeted recipient. The same three step process described in Figure 6 is utilized where the sender taps 605 a visual depiction 603 of the selected media element. As shown in Figure 8B, the sender then pushes the visual depiction 603 of the media element to the right 801 which may simulate the physical direction with relation to the sending WTRU 101 where an intended receiving WTRU 103 (not shown) is operating. Based on the input information of the user, including the direction 801 in which the sender pushed the visual depiction 603 of the media element, the sending WTRU 101 may be configured to transmit the data transfer in a direction 803 matching the direction of the user action direction 801. The visual depiction 603 may be configured to indicate the progress of the data transfer and may accomplish this by causing the visual depiction 603 to disappear from the

touchscreen/display 109 in the same direction as the user action direction 801. Antenna orientation may be utilized to control the transmission direction 803.

[0047] Figure 9 shows an illustration of a UI 109 being used to perform a data communication to multiple receiving WTRUs. The user may tap on a visual depiction 903 of a media element selected for communication to a receiving WTRU as shown in Figure 9A. As shown, the user may tap on the visual depiction 903 multiple times 905.

While in the example of Figure 9A, the user taps the visual depiction 903 twice, the user may tap the visual depiction 903 any number of times corresponding to the intended number of receiving WTRUs. Upon performing a multiple tap 905, the master visual depiction 903 will be split into a number of secondary visual depictions 907, 909 equal to the number of taps 905 of the user. This action by the user will lock the master visual depiction 903 while allowing the secondary visual depictions 907, 909 to be manipulated by the user via the UI 109. For example, with respect to Figure 9B, a user may use a two-hand, two finger motion to move secondary visual depiction 907 in the direction of a first target WTRU, while simultaneously moving secondary visual depiction 909 in the direction of a second target WTRU. The user may also use a single-hand, single finger motion to move each secondary visual depiction 907, 909 sequentially. Upon release of the secondary visual depiction 907, 909, the data is communicated to a target WTRU identified by the process described herein regarding Figure 2. The secondary visual depictions 907, 909 may be smaller than the master visual depiction 903, or the secondary depictions may be the same size as the master depiction. Alternatively, the secondary depictions 907, 909 may have a visually distinguishing feature that distinguishes them from the master depiction 903 to the user.

[0048] Although features and elements are described above in particular combinations, each feature or element can be used alone without the other features and elements or in various combinations with or without other features and elements. The methods or flow charts provided herein may be implemented in a computer

program, software, or firmware incorporated in a computer-readable storage medium for execution by a general purpose computer or a processor. Examples of computer-readable storage mediums include a read only memory (ROM), a random access memory (RAM), a register, cache memory, semiconductor memory devices, magnetic media such as internal hard disks and removable disks, magneto-optical media, and optical media such as CD-ROM disks, and digital versatile disks (DVDs).

[0049] Suitable processors include, by way of example, a general purpose processor, a special purpose processor, a conventional processor, a digital signal processor (DSP), a plurality of microprocessors, one or more microprocessors in association with a DSP core, a controller, a microcontroller, Application Specific Integrated Circuits (ASICs), Field Programmable Gate Arrays (FPGAs) circuits, any other type of integrated circuit (IC), and/or a state machine.

[0050] A processor in association with software may be used to implement a radio frequency transceiver for use in a wireless transmit receive unit (WTRU), user equipment (UE), terminal, base station, radio network controller (RNC), or any host computer. The WTRU may be used in conjunction with modules, implemented in hardware and/or software, such as a camera, a video camera module, a videophone, a speakerphone, a vibration device, a speaker, a microphone, a television transceiver, a hands free headset, a keyboard, a Bluetooth® module, a frequency modulated (FM) radio unit, a liquid crystal display (LCD) display unit, an organic light-emitting diode (OLED) display unit, a digital music player, a media player, a video game player module, an Internet browser, and/or any wireless local area network (WLAN) or Ultra Wide Band (UWB) module.

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/644,948	12/22/2009	2617	1466	IPH-2-2235US02	23	4

CONFIRMATION NO. 7345

24374

VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

FILING RECEIPT



OC000000039584595

Date Mailed: 01/12/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Alan G. Carlton, Mineola, NY;
Alexander Reznik, Titusville, NJ;

Assignment For Published Patent Application

INTERDIGITAL PATENT HOLDINGS, INC., Wilmington, DE

Power of Attorney: None

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/140,126 12/23/2008

Foreign Applications

If Required, Foreign Filing License Granted: 01/11/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/644,948**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

Title

DATA TRANSFER BETWEEN WIRELESS DEVICES

Preliminary Class

455

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER**Title 35, United States Code, Section 184****Title 37, Code of Federal Regulations, 5.11 & 5.15****GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/644,948	12/22/2009	Alan G. Carlton	IPH-2-2235US02

CONFIRMATION NO. 7345

FORMALITIES LETTER



24374
VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

Date Mailed: 01/12/2010

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of \$130 for a non-small entity, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$130 for a non-small entity

- \$130 Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/nhassani/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the PATENT APPLICATION of:

Carlton et al.

Application No.: 12/644,948

Confirmation No.: 7345

Filed: December 22, 2009

For: DATA TRANSFER BETWEEN
WIRELESS DEVICES

Group: 2617

Examiner: Not Yet Known

Our File: IPH-2-2235US02

Date: March 12, 2010

**COMMUNICATION IN RESPONSE TO
NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION**

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

Sir:

In response to the Notice to File Missing Parts of Nonprovisional Application mailed from the Office on January 12, 2010, the following are enclosed:

1. Fully executed Declaration and Power of Attorney to
Customer No. 24374; and

Please charge the surcharge fee of \$130.00 to the Deposit Account of InterDigital Communications Corporation, Deposit Account No. 09-0435.

Applicant: Carlton et al.
Application No.: 12/644,948

An early action on the merits is respectfully requested.

Respectfully submitted,

Carlton et al.

By /Scott Wolinsky/
Scott Wolinsky
Registration No. 46,413
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

SW/kl
Enclosure

Electronic Acknowledgement Receipt

EFS ID:	7197057
Application Number:	12644948
International Application Number:	
Confirmation Number:	7345
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES
First Named Inventor/Applicant Name:	Alan G. Carlton
Customer Number:	24374
Filer:	Harry Vartanian/Karen Lynch
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPH-2-2235US02
Receipt Date:	12-MAR-2010
Filing Date:	22-DEC-2009
Time Stamp:	12:22:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 130
RAM confirmation Number	10987
Deposit Account	090435
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	2235US02_ResponseToMissing Parts_EFS.pdf	50547 b47f2dbfc8867e913a194e2fab7553f1a14a6b72	no	2
Warnings:					
Information:					
2	Oath or Declaration filed	2235US02_ExecutedDeclaration_EFS.PDF	403166 84ea22122d5ffcb5b42ce241f27815ca21f9fc9f	no	6
Warnings:					
Information:					
3	Fee Worksheet (PTO-875)	fee-info.pdf	29940 44f5881417e288c67b9a929482dc23755136334b	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			483653		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Electronic Acknowledgement Receipt

EFS ID:	7197057
Application Number:	12644948
International Application Number:	
Confirmation Number:	7345
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES
First Named Inventor/Applicant Name:	Alan G. Carlton
Customer Number:	24374
Filer:	Harry Vartanian/Karen Lynch
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPH-2-2235US02
Receipt Date:	12-MAR-2010
Filing Date:	22-DEC-2009
Time Stamp:	12:22:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 130
RAM confirmation Number	10987
Deposit Account	090435
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	2235US02_ResponseToMissing Parts_EFS.pdf	50547 b47f2dbfc8867e913a194e2fab7553f1a14a6b72	no	2
Warnings:					
Information:					
2	Oath or Declaration filed	2235US02_ExecutedDeclaration_EFS.PDF	403166 84ea22122d5ffcb5b42ce241f27815ca21f9fc9f	no	6
Warnings:					
Information:					
3	Fee Worksheet (PTO-875)	fee-info.pdf	29940 44f5881417e288c67b9a929482dc23755136334b	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			483653		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Electronic Patent Application Fee Transmittal

Application Number:	12644948			
Filing Date:	22-Dec-2009			
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES			
First Named Inventor/Applicant Name:	Alan G. Carlton			
Filer:	Harry Vartanian/Karen Lynch			
Attorney Docket Number:	IPH-2-2235US02			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	1051	1	130	130
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				130

Please type a plus sign (+) inside this box → +

PTO/SB/01 (Modified)

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)	Attorney Docket Number IPH-2-2235US02	
	First Named Inventor Carlton et al.	
	COMPLETE IF KNOWN	
	Application Number	12/644,948
	Filing Date	December 22, 2009
	Group Art Unit	2617
☐ Declaration Submitted with Initial Filing OR ☒ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)		Examiner Name Not Yet Known

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DATA TRANSFER BETWEEN WIRELESS DEVICES

the specification of which (Title of the Invention)

☐ is attached hereto
OR
☒ was filed on (MM/DD/YYYY) 12/22/2009 as United States Application Number or PCT International Application Number 12/644,948 and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	☐ Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.
61/140,126	12/23/2008	

[Page 1 of 3]

Burden Hour Statement: This form is estimated to take 0.4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. 1450, Alexandria, VA 22313-1450.

Please type a plus sign (+) inside this box → ☐Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.**DECLARATION — Utility or Design Patent Application**

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: ☒ Customer Number **24374** → ☐ Registered practitioner(s) name/registration number listed below

Place Customer
Number Bar Code
Label here

Name	Registration Number	Name	Registration Number
Namely, the Attorneys of Volpe and Koenig, P.C.			

☐ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

Direct all correspondence to: ☒ Customer Number **24374** OR ☐ or Bar Code Label

Name	VOLPE AND KOENIG, P.C. DEPT ICC				
Address					
Address					
City		State		ZIP	
Country		Telephone		Fax	

Authorization To Permit Access To Application by Participating Offices

☒ If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified patent application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the above-identified patent application is filed to have access to the above-identified patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the above-identified patent application with respect to: 1) the above-identified patent application-as-filed, 2) any foreign application to which the above-identified patent application claims priority under 35 USC 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified patent application, and 3) any U.S. application-as-filed from which benefit is sought in the above-identified patent application.

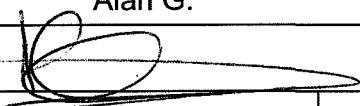
In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing the Authorization to Permit Access to Application by Participating Offices.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Please type a plus sign (+) inside this box → 

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATIONPage 3 of 3

Name of Sole or First Inventor:		☐ A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])		Family Name or Surname	
Alan G.		Carlton	
Inventor's Signature 		Date <u>25 February 2010</u>	
Residence: City	Mineola	State	NY
Country	US	Citizenship	GB
Mailing Address 12 Wisteria Avenue			
Mailing Address			
City	Mineola	State	NY
ZIP	11501	Country	US
Name of Additional Joint Inventor, if any:		☐ A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])		Family Name or Surname	
Alexander		Reznik	
Inventor's Signature		Date	
Residence: City	Titusville	State	NJ
Country	US	Citizenship	US
Mailing Address 1212 River Road			
Mailing Address			
City	Titusville	State	NJ
ZIP	08560	Country	US
Name of Additional Joint Inventor, if any:		☐ A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])		Family Name or Surname	
Inventor's Signature		Date	
Residence: City		State	
Country		Citizenship	
Mailing Address			
Mailing Address			
City		State	
ZIP		Country	

Burden Hour Statement: This form is estimated to take 21 minutes to complete. Time will vary depending upon the needs of the individual case.

Please type a plus sign (+) inside this box → ☐

PTO/SB/01 (Modified)

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)	Attorney Docket Number	IPH-2-2235US02		
	First Named Inventor	Carlton et al.		
	COMPLETE IF KNOWN			
	Application Number	12/644,948		
	Filing Date	December 22, 2009		
	Group Art Unit	2617		
☐ Declaration Submitted with Initial Filing	OR	☒ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)	Examiner Name	Not Yet Known

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DATA TRANSFER BETWEEN WIRELESS DEVICES

the specification of which
☐ is attached hereto
OR
☒ was filed on (MM/DD/YYYY) **12/22/2009** as United States Application Number or PCT International Application Number **12/644,948** and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	
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[Page 1 of 3]

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CONFIRMATION NO. 7345

UPDATED FILING RECEIPT



24374
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UNITED PLAZA, SUITE 1600
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PHILADELPHIA, PA 19103

Date Mailed: 03/22/2010

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Applicant(s)

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Title

DATA TRANSFER BETWEEN WIRELESS DEVICES

Preliminary Class

455

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Warnings:					
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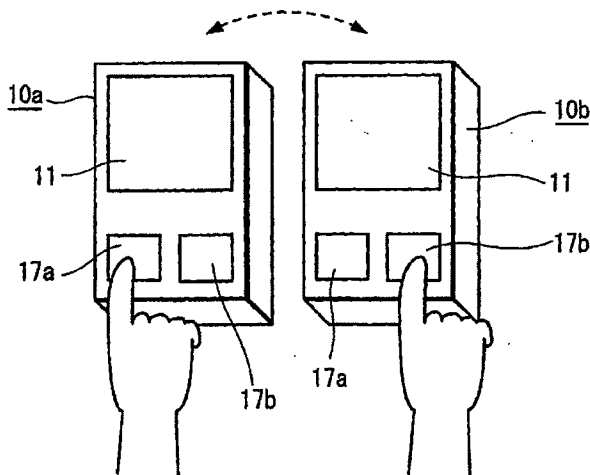
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(54) **COMMUNICATION METHOD, COMMUNICATION SYSTEM, AND COMMUNICATION DEVICE**

(57) In the case where close range wireless communication is performed among a plurality of communication devices, when a predetermined connection operation is performed in a first communication device 10a, an inquiry message is wirelessly transmitted in order to discover a device to be connected by the wireless communication after restricting a transmissible distance to

a close range; when a predetermined standby operation is performed in a second communication device 10b, the inquiry message is received and a response message to the received inquiry message is wirelessly transmitted; and when the response message is received, the first communication device 10a performs the connection processing with respect to the second communication device 10b.

FIG. 4



Description

TECHNICAL FIELD

[0001] The present invention relates to a communication method suitable to be applied to a communication method of performing comparatively close range wireless communication and to a communication system in which the communication method is performed as well as a communication device which is applicable to the communication system.

BACKGROUND ART

[0002] In recent years, a communication method called Bluetooth® communication has attracted an attention as a close range wireless communication method up to approximately 100m at maximum and various kinds of supporting device have been developed.

[0003] A close range wireless communication system such as the Bluetooth® communication which uses a wireless signal of a comparatively high frequency wave has an advantage such as no directivity and high transmissivity in comparison to an infrared data communication method which uses an infrared signal, and is expected that devices supporting the system increase in the future.

[0004] In a communication system to which the infrared data communication method is applied, in order to establish a connection for the communication it has been necessary to specify a device to establish communication with a light emitting portion of a device and a light receiving portion of another device, which are mutually a connection target, opposing to each other. Further, it has been necessary to maintain a position at a time of the connection during the communication due to its directivity. On the other hand, in the communication system using a high frequency signal such as the Bluetooth® communication, such restriction on the position becomes not necessary.

[0005] When the Bluetooth® communication is used, an inquiry message is transmitted as a broadcast message from a device which intends to start communication (hereinafter, referred to as a device A) in order to discover devices which exist in the neighborhood thereof. Then, a device which has received the inquiry message from the device A sends back a response message to the device A in response to that inquiry message. By receiving the response messages sequentially from respective devices which exist in the neighborhood, the device A can discover a plurality of communicable devices which exist in the neighborhood. In accordance with information of those response messages, the device A selects and specifies a device to which the connection is tried, and connection processing with respect to the device is performed. On this occasion, when the response messages are received from a plurality of devices, conventionally those are displayed in a form of

list so that a user can make a selection.

[0006] In the Bluetooth® communication, not only a communication path is established, but also what kind of application and service is implemented in the communication path is defined clearly as a profile. As the profile, there are a serial port profile to perform serial communication, a personal area networking profile to realize a personal area network and the like. A service discovery protocol (hereinafter, referred to as a SDP) is defined as a procedure to determine those profiles and a service which is actually implemented.

[0007] The device A transmits to a device to be connected (hereinafter, referred to as a device B) an inquiry message querying what kind of service is provided by the device B in accordance with the SDP, the device B receives the inquiry message from the device A and then transmits to the device A information regarding a service provided by the device B as a response message to the inquiry. If the device B provides a desired service, the device A having received the response message requests the communication for the service, so that the desired service can be started between the device A and the device B.

[0008] As described above, a basic communication procedure in the Bluetooth® communication is that first the device A performs transmission of an inquiry message in order to discover a device which exists in the neighborhood and also performs reception of a response message thereto; selects a desired device from devices which have responded; further, makes an inquiry to the device whether the desired service is available; and furthermore, requests the communication for that service.

[0009] The Bluetooth® standard is managed by Bluetooth SIG Inc. and specifications describing the details are published by Bluetooth SIG Inc..

[0010] Meanwhile, in a close range wireless communication system such as the Bluetooth® communication, an inquiry message to discover a device which exists in the neighborhood is targeted at all devices which exist within a communicable range (for example, from 10m to 100m). Accordingly, when many communicable devices exist in the neighborhood, enormous number of response messages are to be received. Conventionally, such an operation procedure of showing information regarding a device included in those response messages in a display or the like is required so that a user can select the desired device; however, when many devices exist in the neighborhood, the user must spend a huge amount of time for the selection operation and its usability becomes deteriorated, which has been a problem. Further, in order to judge whether the device is really a target device to connect or not, information such as an ID which is provided by the device needs to be identified, and therefore, there has been a possibility for the user to make an excessive operation.

[0011] In order to solve the above problem, a method of efficiently performing a procedure to discover a de-

vice to be connected by altering a reaching range of an inquiry message has been proposed in Japanese Published Patent Application No. 2001-144781, for example. According to the method, it is possible to efficiently specify the device to be connected by restricting a searching range of devices to a close range, for example, so that the number of devices to be discovered is limited.

[0012] However, when many devices exist within the close range, the same problem as before still occurs, and therefore, such a procedure of selecting a specific device from a list by the user is required, for example. This problem still remains when considering that each device existing around us will be supported by a network in the future. Further, in this method, an attention is paid to easily discovering a device to be connected, and a subsequent operation such as a selecting procedure of a service to be started cannot be simplified.

[0013] The present invention is made in view of such circumstances, and aims to perform easily and securely a communication service between devices when performing wireless communication which is represented by the Bluetooth® communication.

DISCLOSURE OF THE INVENTION

[0014] A first aspect of the present invention is a communication method in which at least first and second communication devices are provided and wireless communication is performed by a predetermined communication system between the respective communication devices, wherein when a predetermined connection operation is performed in the first communication device, an inquiry message to discover a device to be connected by the wireless communication is wirelessly transmitted with limiting a transmissible distance to a close range; when a predetermined standby operation is performed by the second communication device, the inquiry message is received and a response message is wirelessly transmitted in response to the received inquiry message; and when the response message is received by the first communication device, connection processing is performed with respect to the second communication device. Accordingly, since a target device can be specified by bringing devices to be connected close to each other and by depressing buttons for connection on both sides or the like, the communication between the specific devices can be established easily and securely.

[0015] A second aspect of the present invention is the communication method according to the first aspect of the present invention, wherein processing to restrict the transmissible distance to a close range is the processing to set transmission power in a communication processing means to a limited value which is smaller than the transmission power at the time of normal wireless communication. Accordingly, the transmissible distance can be restricted to a close range due to the limitation of the

transmission power.

[0016] A third aspect of the present invention is the communication method according to the first aspect of the present invention, wherein the wireless transmission of the inquiry message by the predetermined connection operation and/or the reception of the inquiry message by the predetermined standby operation are performed while operation means provided in respective communication devices are continuously operated. Accordingly, the transmission or the reception of the inquiry message can be performed excellently in the continuous operation.

[0017] A fourth aspect of the present invention is the communication method according to the first aspect of the present invention, wherein after the connection processing is completed, data transfer processing is performed in accordance with a program which is being executed in the first communication device or in the second communication device. Accordingly, the data transfer processing can be performed at excellent timing.

[0018] A fifth aspect of the present invention is the communication method according to the first aspect of the present invention, wherein the second communication device is made to have a lower reception sensitivity to the inquiry message so that only the inquiry message wirelessly transmitted from a close range can be received. Accordingly, only the inquiry message wirelessly transmitted from the close range can easily be received.

[0019] A sixth aspect of the present invention is the communication method according to the first aspect of the present invention, wherein the connection operation in the first communication device and the standby operation in the second communication device are made to be a common operation, and when the common operation is performed, transmission processing of the inquiry message and reception processing of the inquiry message are made to be performed alternately. Accordingly, both the transmission processing of the inquiry message and the reception processing of the inquiry message can be performed in a single operation.

[0020] A seventh aspect of the present invention is the communication method according to the first aspect of the present invention, wherein the connection operation in the first communication device is a limited inquiry message which is distinguishable from a type of the inquiry message and the second communication device is made to await the limited inquiry message. Accordingly, transmission processing of the limited inquiry message can be performed.

[0021] An eighth aspect of the present invention is the communication method according to the first aspect of the present invention, wherein the connection operation in the first communication device is made to select a general inquiry message or an arbitrary limited inquiry message which should be transmitted, and the second communication device is made to select the general inquiry message or the arbitrary limited inquiry message which should be awaited. Accordingly, both the trans-

mission of the general inquiry message and the transmission of the limited inquiry message can be performed.

[0022] A ninth aspect of the present invention is a communication system including at least a first communication device and a second communication device between which wireless communication is performed by a predetermined communication method, wherein the first communication device includes: a communication processing means to perform transmission and reception of a wireless signal, a connection operation means, and a control means to make an inquiry message transmitted from the communication processing means in a state where the transmissible distance is restricted to the close range when the connection operation means is operated and to perform connection processing with respect to a transmission source of the response message when the response message to the inquiry message is received; and the second communication device includes: a communication processing means to perform transmission and reception of a wireless signal, a standby operation means, and a control means to make the inquiry message received by the communication processing means when the standby operation means is operated and to make a response message to the received inquiry message wirelessly transmitted by the communication processing means. Accordingly, since a target device can be specified by bringing devices to be connected close to each other and by depressing buttons for connection on both sides or the like, the communication between the specific devices can be established easily and securely.

[0023] A tenth aspect of the present invention is the communication system according to the ninth aspect of the present invention, wherein processing in the first communication device to restrict the transmissible distance to a close range is the processing to set transmission power in the communication processing means to a limited value which is smaller than the transmission power at the time of normal wireless communication. Accordingly, the transmissible distance can be restricted to the close range due to the limitation of the transmission power.

[0024] An eleventh aspect of the present invention is the communication system according to the ninth aspect of the present invention, wherein while the connection operation means of the first communication device is continuously operated, the control means of the first communication device makes the inquiry message transmitted; and while the standby operation means of the second communication device is continuously operated, the control means of the second communication device makes the inquiry message received. Accordingly, the transmission or the reception of the inquiry message can be performed excellently in the continuous operation.

[0025] A twelfth aspect of the present invention is the communication system according to the ninth aspect of

the present invention, wherein when the connection processing by the control means of the first communication device is completed, data transfer processing is performed in accordance with a program which is being executed in the first or the second communication device. Accordingly, the data transfer processing can be performed at excellent timing.

[0026] A thirteenth aspect of the present invention is the communication system according to the ninth aspect of the present invention, wherein the communication processing means of the second communication device makes the reception sensitivity to the inquiry message lower so that only the inquiry message which is transmitted wirelessly from a close range can be received. Accordingly, only the inquiry message which is transmitted wirelessly from the close range can easily be received.

[0027] A fourteenth aspect of the present invention is the communication system according to the ninth aspect of the present invention, wherein the connection operation means of the first communication device and the standby operation means of the second communication device are made to be a common operation means, and when the common operation means is operated, the control means of respective communication devices perform control to make the transmission processing of the inquiry message and the reception processing of the inquiry message alternately performed by the communication processing means. Accordingly, both the transmission processing of the inquiry message and the reception processing of the inquiry message can be performed in a single operation.

[0028] A fifteenth aspect of the present invention is the communication system according to the ninth aspect of the present invention, wherein the inquiry message in the first communication device is a limited inquiry message which is distinguishable from a general inquiry message, and the second communication device is made to await the limited inquiry message. Accordingly, transmission processing of the limited inquiry message can be performed.

[0029] A sixteenth aspect of the present invention is the communication system according to the ninth aspect of the present invention, wherein the connection operation in the first communication device is made to select a general inquiry message or an arbitrary limited inquiry message which should be transmitted and the second communication device is made to select the general inquiry message or the arbitrary limited inquiry message which should be awaited. Accordingly, both the transmission of the general inquiry message and the transmission of the limited inquiry message can be performed.

[0030] A seventeenth aspect of the present invention is a communication device which performs wireless communication with another communication device by a predetermined communication method, including: a communication processing means to perform transmis-

sion and reception of a wireless signal, a connection operation means, and a control means to make an inquiry message transmitted from the communication processing means in a state where a transmissible distance is limited to a close range when the connection operation means is operated and to perform connection processing with respect to a transmission source of the response message when the response message to the inquiry message is received. Accordingly, the communication with a specific device can be established easily and securely.

[0031] An eighteenth aspect of the present invention is the communication device according to the seventeenth aspect of the present invention, wherein the processing to restrict the transmissible distance to a close range is the processing to set transmission power in the communication processing means to a limited value which is smaller than the transmission power at the time of normal wireless communication. Accordingly, the transmissible distance can be restricted to the close range due to the limitation of the transmission power.

[0032] A nineteenth aspect of the present invention is the communication device according to the seventeenth aspect of the present invention, wherein while the connection operation means is continuously operated, the control means performs processing to make the inquiry message transmitted. Accordingly, the transmission of the inquiry message can be performed excellently in the continuous operation.

[0033] A twentieth aspect of the present invention is the communication device according to the seventeenth aspect of the present invention, wherein when the connection processing is completed by the control means, data transfer processing is performed in accordance with a program which is being executed. Accordingly, the transfer processing of data can be performed at excellent timing.

[0034] A twenty-first aspect of the present invention is the communication device according to the seventeenth aspect of the present invention, further including a standby operation means, and when the standby operation means is operated, the control means makes the inquiry message received by the communication processing means and makes the response message to the received inquiry message wirelessly transmitted by the communication processing means. Accordingly, both the transmission processing of the inquiry message and the reception processing of the inquiry message can be performed in a single operation.

[0035] A twenty-second aspect of the present invention is the communication device according to the seventeenth aspect of the present invention, further including a standby operation means, and when the standby operation means is operated, the control means makes the inquiry message received by the communication processing means and makes the response message to the received inquiry message wirelessly transmitted by the communication processing means; the connec-

tion operation means and the standby operation means are made to be a common operation means; and when the common operation means is operated, the control means performs control to make the transmission processing of the inquiry message and the reception processing of the inquiry message alternately performed by the communication processing means. Accordingly, processing can be performed by operating the common operation means.

[0036] A twenty-third aspect of the present invention is the communication device according to the seventeenth aspect of the present invention, wherein the connection operation means includes a means to select a type of the inquiry message so that the inquiry message of a selected arbitrary type can be transmitted. Accordingly, the inquiry message of the selected type can be transmitted.

[0037] A twenty-fourth aspect of the present invention is a communication device which performs wireless communication with another communication device using a predetermined communication method, including: a communication processing means to perform transmission and reception of a wireless signal, a standby operation means, and a control means to make an inquiry message received by the communication processing means when the standby operation means is operated and to make a response message to the received inquiry message wirelessly transmitted by the communication processing means. Accordingly, the communication with a specific device can be established easily and securely.

[0038] A twenty-fifth aspect of the present invention is the communication device according to the twenty-fourth aspect of the present invention, wherein the control means performs processing to make the inquiry message received while the standby operation means is continuously operated. Accordingly, the reception of the inquiry message can be performed excellently in the continuous operation.

[0039] A twenty-sixth aspect of the present invention is the communication device according to the twenty-fourth aspect of the present invention, wherein the communication processing means makes the reception sensitivity to the inquiry message lower so that only the inquiry message wirelessly transmitted from the close range can be received. Accordingly, only the inquiry message transmitted from the close range can be received easily.

[0040] A twenty-seventh aspect of the present invention is the communication device according to the twenty-fourth aspect of the present invention, wherein the standby operation means includes a means to select the inquiry message which should be awaited so that the inquiry message of a selected arbitrary type can be received. Accordingly, the inquiry message of the selected type can be received.

BRIEF DESCRIPTION OF DRAWINGS

[0041]

FIG. 1 is a perspective view showing an example of an appearance of a communication device according to an embodiment of the present invention; FIG. 2 is a block diagram showing an example of a configuration of a communication device according to an embodiment of the present invention; FIG. 3 is a block diagram showing an example of a configuration of a wireless communication unit according to an embodiment of the present invention; FIG. 4 is an explanatory view showing an example of communication according to an embodiment of the present invention; FIG. 5 is an explanatory view showing an example of an inquiry (an example without limitation) according to an embodiment of the present invention; FIG. 6 is an explanatory view showing an example of an inquiry (an example with limitation) according to an embodiment of the present invention; FIG. 7 is a flow chart showing an example of processing when a connection button is operated according to an embodiment of the present invention; FIG. 8 is a flow chart showing an example of processing when a standby button is operated according to an embodiment of the present invention; FIG. 9 is a flow chart showing an example of processing after a connection is established according to an embodiment of the present invention; FIGS. 10A and 10B are timing charts showing an example of transmission according to an embodiment of the present invention; FIG. 11 is an explanatory view showing an example of a screen display in a terminal device (in an initial state) according to an embodiment of the present invention; FIG. 12 is an explanatory view showing an example of a screen display in the terminal device (at a time of transmitting video data) according to an embodiment of the present invention; FIG. 13 is an explanatory view showing an example of a screen display in the terminal device (at a time of receiving video data) according to an embodiment of the present invention; FIG. 14 is a perspective view showing an example of an appearance of a communication device according to another embodiment of the present invention (an example in which one button is used in common); FIGS. 15A and 15B are timing charts showing an example of transmission which is performed in the device of the example shown in FIG. 14; FIG. 16 is an explanatory view showing an example of communication according to further another embodiment of the present invention (in which a mobile

phone unit and a personal computer apparatus are used); and

FIGS. 17A to 17C are timing charts showing an example of transmission which is performed in the devices of the example shown in FIG. 16.

BEST MODE FOR CARRYING OUT THE INVENTION

[0042] Hereinafter, an embodiment of the present invention is explained referring to the attached drawings. In this embodiment, the present invention is applied to a handheld information terminal device to perform wireless communication according to the Bluetooth® communication which is one of wireless communication methods used in comparatively close range wireless communication.

[0043] FIG. 1 is a view showing an example of an external appearance of a handheld information terminal device according to this embodiment. A handheld information terminal device 10 of this embodiment is provided with a display panel 11 including a liquid crystal picture display means or the like in which characters and figures can be displayed on the display panel 11. The display panel 11 is included as a touch panel, so that input operation can be performed by touching with a finger or an input stylus. Further, a connection button 17a and a standby button 17b are arranged as operation buttons. Other operation buttons may be arranged as well.

[0044] The handheld information terminal device 10 is a device capable of performing the wireless communication according to the Bluetooth® communication which is one of wireless communication methods, and is configured to be capable of performing transmission data to and reception data from another device by the Bluetooth® wireless communication. The connection button 17a is a button to start connection of the wireless communication to another device which exists in the neighborhood of the handheld information terminal device 10, and the standby button 17b is a button to set a receivable state in accordance with a connection request for wireless communication to the handheld information terminal device 10 from another device.

[0045] FIG. 2 is a block diagram showing an internal configuration of the handheld information terminal device 10 of this embodiment. As heretofore explained, a touch panel input unit 12 is included at a position where the display 11 is arranged to be capable of performing a touch input by touching a surface or the like of the display 11 with the finger or the stylus. A controller 13 is formed of a central processing unit (CPU) or the like to control the whole handheld information terminal device 10 by performing various kinds of control processing in accordance with programs stored in a memory medium 23a loaded in a ROM 14 or in a memory 23. Further, in a RAM 15, the program used by the controller 13 or temporary data which is under processing is stored when it is necessary.

[0046] A memory medium 16a loaded in a memory 16

is formed of a magnetic or optical memory medium, or a semiconductor memory. In this case, a plurality of recording media may be included as the memory medium 16a. Further, the memory medium may be the one which is fixed to the memory 16 or the one which is freely detachable. Moreover, a program or data stored in the memory medium 16a can be received from another device connected through an arbitrary communication line, or the memory 16 utilizes, as its own memory medium 16a, a memory medium 16a of another device connected through the arbitrary communication line.

[0047] The display 11 includes, for example, a liquid crystal display panel and a drive circuit thereof to show to a user various kinds of information based on an instruction from the controller 13.

[0048] The touch panel input unit 12 is integrally formed with the display 11, and is made to recognize a position which is input from the user by sensing a pressure, for example. The controller 13 is made to interpret user's various kinds of operation and performs appropriate processing based on information displayed on the display 11 and user's input operation in the touch panel input unit 12.

[0049] A button input unit 17 is formed of the connection button 17a, the standby button 17b and the like as shown in FIG. 1, and the operation signal thereof is sent to the controller 13.

[0050] A wireless communication unit 20 is formed of a processing circuit to process the wireless communication according to the Bluetooth® communication standard, the control circuit thereof and the like, and an antenna 19 is connected thereto. Hereupon, a communicable range by the wireless communication unit 20 is predetermined by transmission power or the antenna 19 or the like, and in the case of the Bluetooth® communication standard applied to the wireless communication unit 20, the range will be approximately from 10m to 100m. In this embodiment, explanation will be made given that the wireless communication unit 20 has the communicable range of 10m; however, it is needless to say the range can also be any arbitrary distance.

[0051] The blocks from the controller 13 to the wireless communication unit 20 which are heretofore explained are connected to each other with a bus line 18 so that various kinds of data and operation signals can be transferred and the handheld information terminal device 10 can be controlled appropriately by the controller 13. Note that, when viewing from the wireless communication unit 20, a portion controlled by the controller 13 is hereinafter referred to as a host side in the explanation.

[0052] FIG. 3 is a block diagram showing an example of a configuration of the wireless communication unit 20. A controller 21 in the wireless communication unit 20 executes in a RAM 23 a control program stored in a ROM 22 to control the operation of the whole wireless communication unit 20. Temporary data or the like is also stored in the RAM 23. In addition, information re-

quired at a time of close range communication described later on is also stored in the control program stored in the RAM 23. Specifically, for example, a value of output power of a transmission amplifier that is set in a transceiver 27, which is required when close range wireless transmission is performed, is stored to make transmission power of a wireless transmission signal regulated according to the output power when the close range wireless communication is performed. Information required for this close range wireless communication may be stored in other memory media such as a flash memory 24.

[0053] In the flash memory 24, for example, a device address which is unique to a communication device of the Bluetooth® communication standard, a link key which is a common key to be utilized at a time of authentication performed between individual communication devices and the like are stored and are supplied to the controller 21 according to a necessity.

[0054] An input-output interface 25 is an interface to exchange data and a command with the host side, and is called a host controller interface in the Bluetooth® communication. The input-output interface 25 supplies the data and command, which are supplied through the bus line 18 shown in FIG. 2, to the controller 21 and a base-band controller 26; and, on the contrary, supplies the data, which is supplied from the controller 21 and the base-band controller 26, to the controller 13 through the bus line 18.

[0055] The base-band controller 26 provides the transceiver 27 with the data supplied from the input-output interface 25 to be wirelessly transmitted. Further, the signal supplied from the transceiver 27 is digitized to be supplied to the host side through the input-output interface 25. Hereupon, various kinds of control such as a link, a packet, a logical channel and security as well as processing such as error correction coding, multiplexing, randomization of data are also performed.

[0056] The transceiver 27 performs frequency hopping modulation and power control with respect to the digital data supplied from the base-band controller 26 to be wirelessly transmitted through the antenna 19. Further, with respect to the data received through the antenna 19, a correlation is taken by generating a frequency hopping signal, a jamming wave component is reduced using a filter, and FSK decoding is performed to supply the digital data to the base-band controller 26.

[0057] The blocks from the controller 21 to the base-band controller 26 in the wireless communication unit 20 are mutually connected by a bus line 28, so that various kinds of data and operation signal can be transferred and the wireless communication unit of the Bluetooth® communication standard can be controlled appropriately by the controller 21.

[0058] Next, an explanation is made with respect to communication processing which uses the handheld information terminal device 10 of this embodiment. In this embodiment, as shown in FIG. 4, two sets of handheld

information terminal devices 10a and 10b having similar configuration to the handheld information terminal device 10 are prepared; in a state where those two handheld information terminal devices 10a and 10b are brought very close to each other, the connection button 17a is depressed in the handheld information terminal device 10a of one side and the standby button 17b is depressed in the handheld information terminal device 10b of the other side; so that the wireless communication only between those closely positioned two handheld information terminal devices 10a and 10b is started to execute an appropriate service. In this case, even if there also exist other communication terminal devices of the Bluetooth® communication standard within a range capable of performing the wireless communication with the handheld information terminal device 10a, a communication terminal device other than the terminal device 10b in which the standby button 17b is operated can not be connected in the state where the connection button 17a is operated.

[0059] Next, an explanation is made with respect to an operation when the wireless communication is performed using the handheld information terminal device 10 of this embodiment. It is assumed that the handheld information terminal device 10 of this embodiment has a transmission output power capable of performing the wireless communication within a range of, for example, 10m at the time of wireless communication by the conventional Bluetooth® communication standard. FIG. 5 schematically shows an appearance when an inquiry message is sent in conventional transmission output power.

[0060] FIG. 5 shows a state in which there exist a plurality of terminal devices M1, M2, M3, M4, M5 and M6 which have the same configuration as the handheld information terminal device 10 or which have a different configuration of the Bluetooth® communication standard. Hereupon, it is assumed that at least the terminal device M1 and the terminal device M2 have the same configuration as the handheld information terminal device 10.

[0061] Here, it is assumed that the terminal device M1 is the handheld information terminal device which has sent an inquiry message with a conventional transmission output power; the terminal devices M2, M3 and M5 are in a standby state of being able to respond; and the terminal device M6 is not in a standby state.

[0062] The terminal device M1 is capable of sending an inquiry message within the range of 10m around the terminal device. When the inquiry message is sent, a device which exists within the range of a circle of 10m radius centered around the terminal device M1 and also which is in the standby state to be able to respond to an inquiry message from another terminal device transmits a response message to the terminal device M1 which has sent the inquiry message.

[0063] Hereupon, since it is unknown at which frequency channel and on what timing a device in the

standby state is awaiting, the terminal device M1 performs frequency hopping at appropriate timing and series so as to cover all frequency channels during a certain period of time. In the Bluetooth® communication, approximately 10 seconds are recommended as a necessary value to collect the ample number of responses from the neighborhood. Furthermore, a device in the standby state also performs appropriately the frequency hopping so that the inquiry message can be received. As a result, when the timing and frequency channel of the inquiry message coincide with the timing and frequency channel of a device in the standby state, the device in the standby state can receive the inquiry message and furthermore, can transmit a response message at the appropriate timing.

[0064] In the case of the example shown in FIG. 5, inquiry processing is continuously performed for approximately 10 seconds for example, so that the terminal device M1 receives the response messages from the devices which exist within the range of 10m radius centered around the terminal device M1 and also which are in the standby state to be capable of responding to the inquiry message, namely, which are terminal devices M2, M3 and M5. Here, the terminal device M6 does not respond since the device is not in a state of being capable of responding, and the terminal device M4 can not receive the inquiry message since the device is located beyond the reaching range of the message. As a result, the user conventionally needs to select one to be connected among those three devices based on information individually distinguished such as, for example, a device name designated arbitrarily to a device and an address exclusively provided for each device (a device address of the Bluetooth® communication). Subsequently, FIG. 6 schematically shows the case when only within a close range a limited inquiry message is sent. In the example of FIG. 6, it is also assumed that the terminal device M6 is not in the state of being capable of responding and the other terminal devices are in the state of being capable of responding.

[0065] The terminal device M1 is made to have narrower communicable range than a conventional one by making the transmission power reduced less than the conventional one or the like based on a particular instruction from the user (specifically, depressing the connection button 17a, for example) to be capable of transmitting a communication message only to a very close range. Hereupon, as shown in FIG. 6, it is assumed that the transmission power or the like is limited so that a message can only be transmitted within the range of a circle of approximately 15cm radius centered around the terminal device M1, for example. Here, it is assumed that only the terminal device M2 exists within the range of approximately 15cm radius centered around the terminal device M1. Note that, in the following description when it is described that the transmission distance or the like is limited to the close range, it means that the limitation is made to the range of approximately 15 cm.

In the case of performing the close range wireless transmission to reach only an extent to approximately 15cm radius, the transmission power is lowered by approximately 60 dB to 70 dB in comparison to the case of performing the wireless transmission to reach the extent of approximately 10m radius at the time of conventional communication.

[0066] Next, an explanation is made with respect to a limited inquiry message; here the limited inquiry message is an inquiry that is distinguishable from a general inquiry message which can be responded by all communication devices in a standby mode to be capable of responding to an inquiry message and that is limitedly used according to a specific purpose; and it is assumed that only a device which is in a state of being able to await the limited inquiry message responds to the limited inquiry message. It should be noted that the limited inquiry message is not necessarily only one kind but a plurality of kinds may be provided therefor.

[0067] In the Bluetooth® communication, an inquiry message is distinguished by including a code called IAC (Inquiry Access Code) which indicates a type of inquiry. Among those codes, it is specified that GIAC (General IAC) is a code to which all devices capable of responding can respond to the inquiry and DIAC (Dedicated IAC) is a code (a plurality of codes) to which only a device under a specific condition can respond to the inquiry. The DIAC is the code used by a communication device which performs an inquiry and a standby according to a specific purpose and, for example, LIAC (Limited IAC) among the DIAC is a code to which only a device capable of awaiting the inquiry code (LIAC) only during a certain limited period of time (recommended not to exceed 30 seconds) can respond. In other words, the device can be set to be capable of responding to the limited inquiry only during the certain limited short period of time. In the following explanation of the Bluetooth® communication, an inquiry of the GIAC may be the general inquiry and an inquiry of the LIAC may be the limited inquiry. In addition, it is needless to say, the limited inquiry can be the inquiry of an arbitrary DIAC other than the LIAC.

[0068] In this embodiment, when a connection button 12 is depressed in the terminal device M1 (equivalent to the terminal device 10a shown in FIG. 4), the limited inquiry message is sent only within the close range. Further, when a standby button 13 is depressed in the terminal device M2 (equivalent to the terminal device 10b shown in FIG. 4), the terminal device M2 is made to await in a state of being capable of receiving the limited inquiry message and of responding thereto only during a certain period of time. Therefore, when the connection button 17a is depressed in the terminal device M1 and at the same time the standby button 17b is depressed in the terminal device M2, a device capable of responding to the limited inquiry message of the terminal device M1 is a device existing within the range of approximately 15cm and awaiting to be capable of responding to the limited inquiry message, namely, that is only the terminal

device M2.

[0069] Hereupon, the terminal device M3, which has responded to the inquiry message from the terminal device M1 at the time of conventional communication as in the example of FIG. 5, can not receive the inquiry message since it is positioned distantly. The terminal device M5 is capable of receiving the inquiry message since it is positioned near by; however, it is unable to respond since it is not made to respond to the limited inquiry message. As a result, the user can specify uniquely the terminal device M2 which is the device to be connected to the terminal device M1, and there is no need to perform the operation to select the desired device out of a plurality of devices, which has been necessary at the time of performing the communication as shown in FIG. 5.

[0070] In this embodiment as described above, the selection of the device to connect can be made automatically by disposing two terminal devices very close to each other and by simultaneously depressing both the connection button and the standby button. Furthermore, since the device to be connected can be specified, after the connection is established it is possible to automatically select an appropriate service to be executed according to a state of the terminal device.

[0071] Next, processing in a terminal device on a transmitting side of an inquiry message and processing in a terminal device on a responding side to the inquiry message are explained referring to flow charts.

[0072] FIG. 7 is a flow chart showing a processing procedure in the terminal device (corresponding to the terminal device M1 in FIG. 6) on the transmitting side of the inquiry message, and FIG. 8 is a flow chart showing a processing procedure in the terminal device (corresponding to the terminal device M2 in FIG. 6) on the responding side to the inquiry message. Further, FIG. 9 is a flow chart showing a processing procedure of a connection on the side of the terminal device which has transmitted the inquiry message.

[0073] First, the processing procedure on the side of the terminal device which transmits the inquiry message is explained referring to FIG. 7; a user starts the inquiry processing by depressing the connection button 17a of the terminal device 1 (Step S11).

[0074] The controller 13 which has detected that the connection button 17a has been depressed sends to the wireless communication unit 20 a command to set appropriate transmission power to make the message transmitted only to the close range. The wireless communication unit 20 performs the setting to adjust the transmission power in the transceiver 27 based on information relating to the transmission power which is stored in advance in the ROM 22, the flash memory 24 or the like. After the setting is completed, the fact is responded to the controller 13 through the input-output interface 25 (Step S12).

[0075] Subsequently, the controller 13 sends to the wireless communication unit 20 a command to transmit

a limited inquiry message (Step S13). In this command, the maximum number of devices to be discovered by the inquiry message and a period of time in which the inquiry message is continuously transmitted can be provided as parameters. In this embodiment, approximately 10 seconds is set as the time to be capable of collecting the ample number of responses from neighboring devices and one is set as the maximum number of device to be discovered.

[0076] The wireless communication unit 20 generates a limited inquiry message in the base-band controller 26 in accordance with the command issued from the host side through the input-output interface 25, and transmits the limited inquiry message through the transceiver 27 and the antenna 19 (Step S14). In addition, the transmission power in the transceiver 27 at this time is set to be controlled based on information related to the transmission power which is stored in the ROM 22, the flash memory 23 or the like, and therefore, the limited inquiry message is transmitted only to the close range.

[0077] Then, the explanation is made with respect to processing on the side of the terminal device which responds to the reception of the inquiry message; as shown in the flow chart of FIG. 8, the standby processing for the limited inquiry message starts by depressing the standby button 17b of the terminal device (Step S21). The controller 13 which has detected that the standby button 17b has been depressed sends to the wireless communication unit 20 a command to respond to the limited inquiry message. The wireless communication unit 20 awaits an inquiry message from another device at a predetermined periodical interval and at a certain frequency (Step S22).

[0078] If an inquiry message from another device is received (Step S23), the wireless communication unit 20 transmits to the device a response message to the inquiry (Step S24). Further, at that time, the fact may be indicated to the user in the display 11 of the terminal device or the like to let the user push up the standby button 17a.

[0079] Subsequently, if the standby button 17b is pushed up, the controller 13 instructs the wireless communication unit 20 to suspend the standby processing, and the wireless communication unit 20 suspends the standby processing (Step S25) to finish the standby processing for the limited inquiry message. Furthermore, if a certain predetermined time has already passed, the wireless communication unit 20 suspends the standby processing (Step S26) to finish the standby processing for the limited inquiry message.

[0080] If the processing is not suspended at the steps S25 and S26, the wireless communication unit 20 changes the frequency for standby (Step S27) and subsequently repeats the standby processing of the limited inquiry message. As described above, on the side of the terminal device in which the standby button 17b is operated, the standby button is being depressed, and also, the terminal is made to be capable of responding to the

limited inquiry message during the certain predetermined period of time.

[0081] The explanation is returned to the flow chart in FIG. 7; on the side of the terminal device in which the connection button 17a is operated, after the limited inquiry message is transmitted to the close range, the terminal device awaits an response message to the limited inquiry message from another device (Step S15). If a target terminal device is in a state of step S23 in the flow chart of FIG. 8 and if the device is set to receive the limited inquiry message at the same timing and at the same frequency, the wireless communication unit 20 of the target terminal device transmits the response message to the limited inquiry message through the antenna 19 (Step S24) and the wireless communication unit 20 on the side of the terminal device which has transmitted the inquiry message can receive the response message through the antenna 19.

[0082] The response message received by the terminal device includes a specific ID (a device address in the Bluetooth® communication) capable of uniquely identifying the terminal device, which is obtained and is supplied to the host side through the input-output interface 25 (Step S16). Also, in this case, since the device which can be inquired is limited to one device, the wireless communication unit 20 ends the inquiry processing at this point of time. Moreover, at that time, the fact that the response to the inquiry has been received may be indicated to the user in the display 11 to let the user push up the connection button 17a. In the case where a response message cannot be received from another device, first the controller 13 instructs the wireless communication unit 20 to suspend the inquiry processing when the connection button 17a is being pushed up, and then the wireless communication unit 20 suspends the inquiry processing (Step S18) to end the transmission processing of the inquiry message. Further, if the certain predetermined time has passed, the wireless communication unit 20 suspends the inquiry processing (Step S19) to end the transmission processing of the inquiry message.

[0083] If the processing is not suspended at the steps S18 and S19, the wireless communication unit 20 changes the frequency at the time of transmitting the message (Step S20), and subsequently the transmission processing of the limited inquiry message is repeated.

[0084] At the step S16, the controller 13 stores the specific ID of the terminal device included in the response message into the RAM 15, and subsequently sends a command to the wireless communication unit 20 to return to the normal state from the state in which the command has been given to the wireless communication unit 20 at the step S12 to set to transmit only to the close range. The wireless communication unit 20 performs the setting such that the transmission power thereafter returns to the normal state (in other words, to be capable of performing the wireless communication

in the transmission distance of 10m) based on the information relating to the transmission power, which is stored in advance in the ROM 22, the flash memory 24 or the like. After the setting is completed, the fact is responded to the controller 13 through the input-output interface 25 (Step S17).

[0085] With the above described processing in two terminal devices which are disposed close to each other, the terminal device of the other side can be specified uniquely from the terminal device of one side by depressing mutually the connection button 17a and the standby button 17b.

[0086] Further, since the terminal device of the other side can be specified uniquely from the terminal device of one side, subsequently a connection from the terminal device which has transmitted the inquiry message to the terminal device which has sent back the response message, and an execution of a service can be performed.

[0087] FIG. 9 is a flow chart showing processing procedure until the establishment of the connection and further the execution of the service, following the processing of the step S17 in the flow chart of FIG. 7. Hereupon, the terminal device on the side which has transmitted the inquiry message is called a terminal device 1 and the terminal device on the side which has sent back the response message is called a terminal device 2.

[0088] Here, it is assumed that the terminal device on the side which has transmitted the inquiry message (terminal device 1) is executing a video display program and the video display program has a function of transmitting video data to another device by the wireless communication. FIG. 11 is an example of a display on the screen of the display 11 in the terminal device 1, and it is assumed that the processing in the terminal device 1 shown in the flow charts of FIGS. 7 and 9 are being performed in the state where the display shown in FIG. 11 is performed.

[0089] At the step S16 of the flow chart in FIG. 7, the terminal device 1 stores in the RAM 15 the specific ID of the terminal device 2 to be connected. The controller 13 performs the connection processing with respect to the device address which is the specific ID of the terminal device 2 and which is temporarily stored in the RAM 15 of the wireless communication unit 20 (Step S31). In this connection processing, there is a case in which connection authentication processing is required for the Bluetooth® communication depending on settings of respective devices, and this connection authentication is performed by inputting identification information called a passkey.

[0090] When the connection between the terminal device 1 and the terminal device 2 is established, the terminal device 1 searches in accordance with a predetermined protocol (called a service discovery protocol) whether the terminal device 2 provides the desired service. This is performed by transmitting a service inquiry message including a specific ID indicating a specific

service (service UUID) to the terminal device 2 and by transmitting a response message to the inquiry message from the terminal device 2 (step S32). In this embodiment, since the video display program is under execution, the ID of the service which can be used for video transfer is searched. The control information is stored in the ROM 14, the memory 16, the memory medium 16a or the RAM 15 together with application programs such as the video display program.

[0091] On the other hand, the terminal device 2 is made to await so as to be able to respond to a specific service. For example, while the video display program is being executed similarly to the terminal device 1, the terminal device may be controlled to be in a state in which the service that can be used for the video transfer is awaited or to be in a state in which all services continuously available are awaited. Further, similarly to the state of awaiting the inquiry message in FIG. 8, the terminal device 2 may be controlled to await such that an appropriate service corresponding to a program currently executed can be performed only during the standby button 17b being depressed. Such control information is also stored in the ROM 14, the memory 16, the memory medium 16a or the RAM 15 together with the application programs such as the video display program. Then, when it is found at the step S33 of the flow chart in FIG. 9 that the terminal device 2 is able to provide the desired service, the terminal device 1 requests the terminal device 2 to connect to the desired service (step S34). In this connection processing, there is a case in which the connection authentication processing is required for the Bluetooth® communication depending on settings of the respective devices. This connection authentication is conventionally performed by inputting the identification information called the passkey and by inquiring the user of connection permission confirmation. Further, when it is found that the terminal device 2 does not provide the desired service at the step S33 of the flow chart in FIG. 9, the processing of performing the connection and the service shall be ended without performing further processing.

[0092] When the service connection is established, the terminal device 1 performs an appropriate service procedure in accordance with a status of program currently executed (step S35). In this embodiment, since the wireless communication is started while a certain video file is being displayed as shown in the example of a display of FIG. 11, the video file is transmitted to the terminal device 2. As shown in FIG. 11, when it is possible to perform certain processing by the wireless communication, a message such as the one shown in a lower part of the display panel of FIG. 11 (for example, "Bluetooth® transmission is available") may be indicated so that the user easily understand. Such control information is also stored in the ROM 14, the memory 16, the memory medium 16a or the RAM 15 together with application programs such as the video display program.

[0093] When the service is executed, specifically, when the transmission of the video data is started, the content and result of the executed service, which is in this case the fact that the video data has been transmitted to the terminal device 2, is as shown for example in FIG. 12 indicated accordingly to the user on the screen formed of the display 11 in the terminal device 1. Furthermore, as shown in FIG. 13, for example, on the screen formed of the display 11 in the terminal device 2 the fact that the video data is received from the terminal device 1 is indicated to the user accordingly. Moreover, on the screen formed of the display 11 in the terminal device 2, the received video data may be displayed immediately.

[0094] After the desired service is executed (step S36), the controller 13 instructs the wireless communication unit 20 to disconnect the communication when the service is of a type in which the wireless communication is not required to be maintained and continued thereafter (step S37). On the contrary, when it is such service that needs to maintain the wireless communication, the service shall be continued without being disconnected. As an example of the former, there is a case of this embodiment in which the wireless communication is used for the video transfer, and as an example of the latter, there is a case such as dial-up communication or IP network communication which is a service providing a communication path. Such control information is also stored in the ROM 14, the memory 16, the memory medium 16a or the RAM 15 together with application programs such as the video display program.

[0095] As described above, with the above processing between two terminal devices brought close to each other, in which the connection button 17a and the standby button 17b is respectively depressed, the limited inquiry and the response thereto can be performed in the close range; only the terminal device of the other side can be specified uniquely from the terminal device of one side; further, the connection of the wireless communication is automatically established in accordance with the executing state of the program and the standby state for the service at the respective terminal devices; and the desired service can be executed. For example, when the desired service is the video transfer, the video is transferred from the terminal device of one side to the terminal device of the other side and after the transfer is completed, the disconnection processing may be performed from the terminal device of one side to the terminal device of the other side.

[0096] FIGS. 10A and 10B are diagrams showing an example of a transmission state from starting the wireless communication until disconnecting the communication using the connection button and the standby button in two terminal devices M1 and M2 which are disposed close to each other. As shown in FIG. 10A, when the connection button 17a of the terminal device M1 is depressed, transmission *a* of a limited inquiry message in a close range (short range) is performed. Then, since

the standby button 17b of the terminal device M2 is being depressed as shown in FIG. 10B, a standby for receiving the limited inquiry message is performed and transmission *b* of a response message is performed.

[0097] Subsequently, users operating respective terminal devices perform an operation to stop depressing the connection button 17a of the terminal device M1 and an operation to stop depressing the standby button 17b of the terminal device M2 to enter connection processing for establishing the connection. Hereupon, transmission *c* from the terminal device M1 and transmission *d* from the terminal device M2 are performed alternately, and confirmation of an ID of the destination terminal device, an inquiry of a service and the like are performed to complete the connection.

[0098] After the connection is completed between two terminal devices M1 and M2, transmission *e* of the video data from the terminal device M1 is performed; reception processing of the video data wirelessly transmitted is performed in the terminal device M2; and when the data is received properly, transmission *f* of a confirmation response packet is performed. Then, when the transmission of the video data is completed, the process enters disconnection processing of the established connection, and with transmission *g* of a disconnection request from the terminal device M1 and transmission *h* of a response to the disconnection request from the terminal device M2, the wireless connection between two terminal devices M1 and M2 is disconnected to finish the wireless communication processing.

[0099] In addition, although the connection button 17a and the standby button 17b are respectively used in the processing which has been explained so far in order to instruct the terminal device of one side to perform the connection and the terminal device of the other side to perform the standby, a button displayed on the screen of the display 11 functioning also as a touch panel may be used to be touched, for example. Moreover, it is also possible to perform a similar operation by an operation of other operation means.

[0100] Further, as the operation of the connection button 17a and the standby button 17b, although the control is performed to transmit the inquiry message only during the button 17a being depressed, for example, with respect to the connection button 17a, it is possible to make the inquiry message transmitted only during a certain period of time after the connection button 17a is depressed and is released immediately, for example, or it is also possible to sequentially perform the processing of the inquiry, the connection and the service execution only during the connection button 17a being depressed, which indicates that the wireless communication is suspended immediately after the connection button 17a is released.

[0101] Although, as to the standby button 17b, the control is also performed similarly to respond to the inquiry message only during the button being depressed, it is possible to respond to the inquiry message only dur-

ing a certain period of time after the standby button 17b is depressed and is released immediately, for example, or it is also possible to sequentially perform the response to the inquiry and the standby for the service only during the standby button 17b being depressed, which indicates that the Bluetooth® communication is suspended immediately after the standby button 17b is released.

[0102] Moreover, in the handheld information terminal device which has so far been explained, two buttons of the connection button 17a and the standby button 17b are provided to make the connection button operated on the side of the terminal device which performs the inquiry and to make the standby button operated on the side of the terminal device which performs the standby; however, it is also possible to use one button in common as the connection button and the standby button, so that a operation can be performed in common on the side of the terminal device which performs the inquiry and on the side of the terminal device which performs the standby.

[0103] Specifically, as shown in FIG. 14 for example, as a handheld information terminal device 10' for performing the communication in the close range, only a connection button 17c is provided and only the connection button 17c is depressed both on the side of the terminal device which performs the inquiry and on the side of the terminal device which performs the standby. As processing at the time when the connection button 17c is depressed, transmission of a limited inquiry message which is restricted to the close range and the standby for the inquiry message are performed alternately in the respective terminal devices and a period of performing the transmission of the inquiry message and a period of performing the standby for the inquiry message are randomly set, so that when processing is performed for a certain period of time, the inquiry message transmitted from the terminal device of one side can be received by the terminal device of the other side to be able to enter the connection processing.

[0104] FIGS. 15A and 15B are diagrams showing an example of the transmission of the above case. Hereupon, it is assumed that two terminal devices M1 and M2 are respectively formed as the handheld information terminal device 10' including only the connection button 17c for close range communication and the connection button 17c is depressed almost simultaneously. With this depression, the transmission and the standby of the inquiry message are set alternately at a random cycle in the respective terminal devices M1 and M2. Here, when a certain period of time has passed after the start of the depression, an inquiry message *i* which is transmitted from the terminal device M1 is received by the terminal device M2 and a response message *j* to the inquiry is sent back to the terminal device M1. At a stage when the transmission of the response message *j* is completed, the depression of the connection buttons 17c in the respective terminal devices M1 and M2 is

stopped to enter transmission *k* and *l* for connection processing; and thereafter, there is two way transmission *m* and *n* of a predetermined service such as the video data transfer and after the transmission is completed, disconnection processing (not shown in the figures) is performed.

[0105] Thus, since the connection processing restricted to the close range can be performed by the operation of only one connection button which is provided in respective terminal devices, the user operating each of the terminal devices M1 and M2 is only required to operate the same button when operating either of the terminal devices, and therefore, the operation becomes simple to the extent.

[0106] Further, such configuration is also possible, in which an input means with which the user can individually designate a plurality of limited inquiry messages and a standby for the messages is provided. FIG. 16 shows an example of a configuration of that case. A mobile phone unit 301 is provided with a button group 302 capable of performing a numerical input to perform a limited inquiry message which corresponds to the numerical input and the standby therefor. Similarly, a computer apparatus 303 is provided with a numerical key group 304 as a part of a keyboard capable of performing the numerical input to perform a limited inquiry message which corresponds to that numerical input and the standby therefor.

[0107] FIGS. 17A to 17C are time charts showing a connection procedure when those mobile phone unit and personal computer apparatus are used. Hereupon, the terminal device M1 is the mobile phone unit 301, the terminal device M2 is the personal computer apparatus 303, and the terminal device M3 is another computer apparatus which is not shown in the figure. The terminal devices M1, M2 and M3 are made to repeat the inquiry and the standby at a random cycle in accordance with the sequence shown in the embodiment explained above.

[0108] Specifically, an operation to input a specific key *l* is performed using the button group 302 in the terminal device M1, so that, a procedure, which is the procedure of a limited inquiry corresponding to the key 1 and a standby therefor, is performed (FIG. 17A). Also in the terminal device M2, the key 1 is similarly inputted to perform the similar procedure (FIG. 17B). Further, in the terminal device M3, a key 2 is inputted to perform the procedure of a limited inquiry corresponding to the key 2 and a standby therefor (FIG. 17C). Hereupon, since the terminal devices M1 and M2 perform the same limited inquiry, similarly to the case explained in the above embodiment, the connection is established between the terminal devices M1 and M2 and a service is executed. On the other hand, since the terminal device M3 performs the limited inquiry of the different number, the connection cannot be established with the terminal devices M1 and M2.

[0109] Accordingly, it becomes possible to perform

the specific limited inquiry in devices mutually desired to connect, for example, by inputting the same numerical key, and when it is wished to mutually connect the specific devices under circumstances where a plurality of devices exist in a certain range, the devices can be connected easily.

[0110] Further, in the above described handheld information terminal device in order to make the wireless communication restricted to the close range such as 15cm, the processing of limiting the transmission output power on the transmitting side is performed; however another processing may be used to make the wireless communication restricted to the close range. For example, without changing the transmission output power the receiving sensitivity in the handheld information terminal device on the receiving side may be lowered at the time of a standby so as to make the wireless communication restricted to the close range. As an alternative, both the limitation of the transmission output power on the transmitting side and the change of the receiving sensitivity on the receiving side may be performed.

[0111] Further, in the configuration which has been explained so far, the present invention is applied to a communication device of a handheld information terminal device, for example; however, it is needless to say the application is also possible to a communication device having other configurations. For example, a close range wireless communication unit such as that of the Bluetooth® communication may be incorporated in (or, externally attached to) a mobile phone unit, a digital camera, a digital video camera, a television receiver, a portable music player, a headphone and the like to perform the similar processing.

[0112] Further, although an example to which the Bluetooth® communication is applied as the wireless communication method has been explained, other wireless communication method can also be employed.

[0113] Furthermore, in the above described embodiment, although an example is explained in which a communication apparatus such as a handheld information terminal device is formed as a device exclusively used for communication, it is also possible that a card or the like, in which a circuit for data communication is incorporated, is attached to a data processing apparatus such as a personal computer apparatus for example, and a program to perform the processing explained in the above described flow charts is installed in the computer apparatus so that a system to perform the similar processing is configured.

INDUSTRIAL APPLICABILITY

[0114] According to the present invention, since a communication target device can be specified by bringing the devices to be connected close to each other and by depressing buttons for the connection on both sides or the like, the communication between the specific devices can be established easily and securely.

[0115] Further, since the communication target device can securely be specified, predetermined processing can be performed immediately in accordance with a state of a program which is being executed in the device of one side. Accordingly, in a state where a video is displayed in the device of one side for example, with depressing the button the transmission of the video or the like can be performed automatically with respect to the device which exists in the neighborhood and in which the button has been depressed similarly. Accordingly, a user can execute a specific application and service easily.

[0116] Furthermore, when the device to be connected is personal belongings, the effectiveness can be most obtained. For example, when it is desired to connect one's own mobile phone unit and personal computer apparatus to perform dial-up communication, a user holds the mobile phone unit by the right hand and brings it close to the personal computer apparatus, and almost simultaneously the button of the mobile phone unit is depressed by the right hand and the button of the personal computer apparatus is depressed by the left hand to start the communication securely between the mobile phone unit and the personal computer apparatus, so that the operability is greatly improved.

Claims

1. A communication method in which at least first and second communication devices are provided and wireless communication is performed between the respective communication devices in accordance with a predetermined communication method, wherein

when a predetermined connection operation is performed in said first communication device, an inquiry message to discover a device to be connected by the wireless communication is wirelessly transmitted after restricting a transmissible distance to a close range;

when a predetermined standby operation is performed in said second communication device, said inquiry message is received and an response message to the received inquiry message is wirelessly transmitted; and

said first communication device performs connection processing with respect to said second communication device, when the response message is received.

2. The communication method according to claim 1, wherein

the processing to restrict said transmissible distance to the close range is processing to set transmission power to a limited value compared to the transmission power at the time of normal wireless communication.

3. The communication method according to claim 1,
wherein
wireless transmission of the inquiry message
by a predetermined connection operation and/or re-
ception of the inquiry message by a predetermined
standby operation is performed while operation
means provided in the respective communication
devices are continuously operated. 5
4. The communication method according to claim 1,
wherein
after said connection processing is per-
formed, data transfer processing is performed in ac-
cordance with a program which is being executed
in the first or the second communication device. 10
5. The communication method according to claim 1,
wherein
said second communication device lowers re-
ception sensitivity to the inquiry message, so that
only the inquiry message wirelessly transmitted
from the close range can be received. 15
6. The communication method according to claim 1,
wherein
the connection operation in said first commu-
nication device and the standby operation in said
second communication device are made to be a
common operation, and when the common opera-
tion is performed, transmission processing of the in-
quiry message and reception processing of the in-
quiry message are alternately performed. 20
7. The communication method according to claim 1,
wherein
the connection operation in said first commu-
nication device is a limited inquiry message which
is distinguishable from a type of the inquiry mes-
sage and said second communication device is
made to await said limited inquiry message. 25
8. The communication method according to claim 1,
wherein
the connection operation in said first commu-
nication device is to select a general inquiry mes-
sage or an arbitrary limited inquiry message, which
should be transmitted, and said second communi-
cation device is to select the general inquiry mes-
sage or the arbitrary limited inquiry message, which
should be awaited. 30
9. A communication system in which at least first and
second communication devices are provided and
wireless communication is performed between re-
spective communication devices by a predeter-
mined communication method, wherein
said first communication device comprises: 35

communication processing means to perform
transmission and reception of a wireless signal
connection operation means, and
control means to make an inquiry message
transmitted from said communication process-
ing means in a state in which a transmissible
distance is restricted to a close range when said
connection operation means is operated and to
perform connection processing with respect to
a transmission source of the response mes-
sage when the response message to the in-
quiry message is received; and
said second communication device comprises:

communication processing means to per-
form transmission and reception of a wire-
less signal,
standby operation means, and
control means to make said inquiry mes-
sage received by said communication
processing means when said standby op-
eration means is operated and to make the
response message to the received inquiry
message wirelessly transmitted by said
communication processing means.

10. The communication system according to claim 9,
wherein
the processing to restrict the transmissible
distance to the close range in said first communi-
cation device is processing to set transmission power
in said communication processing means to a lim-
ited value compared to the transmission power at
the time of normal wireless communication. 40
11. The communication system according to claim 9,
wherein
while the connection operation means of said
first communication device is continuously operat-
ed, the control means of said first communica-
tion device makes the inquiry message transmitted; and
while the standby operation means of said
second communication device is continuously op-
erated, the control means of said second commu-
nication device makes the inquiry message re-
ceived. 45
12. The communication system according to claim 9,
wherein
when the connection processing is completed
by the control means of said first communica-
tion device, data transfer processing is performed in ac-
cordance with a program which is being executed
in the first or second communication device. 50
13. The communication system according to claim 9,
wherein
the communication processing means of said 55

second communication device lowers the reception sensitivity to the inquiry message so that only the inquiry message wirelessly transmitted from the close range can be received.

14. The communication system according to claim 9, wherein

the connection operation means of said first communication device and the standby operation means of said second communication device are made to be a common operation means, and

when the common operation means is operated, the control means of the respective communication devices perform control to make both the transmission processing of the inquiry message and the reception processing of the inquiry message performed alternately by the communication processing means.

15. the communication system according to claim 9, wherein

the inquiry message in said first communication device is a limited inquiry message which is distinguishable from a general inquiry message and said second communication device is made to await said limited inquiry message.

16. the communication system according to claim 9, wherein

the connection operation in said first communication device is to select a general inquiry message or an arbitrary limited inquiry message, which should be transmitted and said second communication device is to select the general inquiry message or the arbitrary limited inquiry message, which should be awaited.

17. A communication device which performs wireless communication with another communication device in accordance with a predetermined communication method, comprising:

communication processing means to perform transmission and reception of a wireless signal; connection operation means; and control means to make an inquiry message transmitted from said communication processing means in a state in which a transmissible distance is restricted to a close range when said connection operation means is operated and to perform connection processing with respect to a transmission source of the response message when the response message to the inquiry message is received.

18. The communication device according to claim 17, wherein

the processing to restrict the transmissible

distance to the close range is processing to set transmission power in the communication processing means to a limited value compared to the transmission power at the time of normal wireless communication.

19. The communication device according to claim 17, wherein

while said connection operation means is continuously operated, said control means performs processing to make the inquiry message transmitted.

20. The communication device according to claim 17, wherein

when the connection processing is completed by said control means, data transfer processing is performed in accordance with a program which is being executed.

21. The communication device according to claim 17, further comprising:

standby operation means, wherein

when said standby operation means is operated, said control means makes the inquiry message received by said communication processing means and makes the response message to the received inquiry message wirelessly transmitted by said communication processing means.

22. The communication device according to claim 17, further comprising:

standby operation means, wherein

when said standby operation means is operated, said control means makes the inquiry message received by said communication processing means and makes the response message to the received inquiry message wirelessly transmitted by said communication processing means; and

said connection operation means and standby operation means are made to be a common operation means, and

when the common operation means is operated, said control means performs control to make both the transmission processing of the inquiry message and the reception processing of the inquiry message alternately performed by the communication processing means.

23. The communication device according to claim 17, wherein

said connection operation means includes means to select a type of the inquiry message, so that the selected inquiry message of an arbitrary

type can be transmitted.

24. A communication device which performs wireless communication with another communication device by a predetermined transmission method, comprising: 5

communication processing means to perform transmission and reception of a wireless signal; standby operation means; and control means to make an inquiry message received by said communication processing means when said standby operation means is operated and to make a response message to the received inquiry message wirelessly transmitted by said communication processing means. 10 15

25. The communication device according to claim 24, wherein 20

while said standby operation means is continuously operated, said control means performs processing to make the inquiry message received.

26. The communication device according to claim 24, wherein 25

said communication processing means lowers the reception sensitivity to the inquiry message so that only the inquiry message wirelessly transmitted from the close range can be received. 30

27. The communication device according to claim 24, wherein 35

said standby operation means includes means to select the inquiry message which should be awaited so that the inquiry message of a selected arbitrary type can be received.

Amended claims under Art. 19.1 PCT 40

1. A communication method in which at least first and second communication devices are provided and wireless communication is performed between the respective communication devices in accordance with a predetermined communication method, wherein 45

when a predetermined connection operation is performed in said first communication device, an inquiry message to discover a device to be connected by the wireless communication is wirelessly transmitted after restricting a transmissible distance to a close range; 50

when a predetermined standby operation is performed in said second communication device, said inquiry message is received and an response message to the received inquiry message is wirelessly transmitted; and 55

said first communication device performs connection processing with respect to said second communication device, when the response message is received.

2. The communication method according to claim 1, wherein

the processing to restrict said transmissible distance to the close range is processing to set transmission power to a limited value compared to the transmission power at the time of normal wireless communication.

3. The communication method according to claim 1, wherein

wireless transmission of the inquiry message by a predetermined connection operation and/or reception of the inquiry message by a predetermined standby operation is performed while operation means provided in the respective communication devices are continuously operated.

4. The communication method according to claim 1, wherein

after said connection processing is performed, data transfer processing is performed in accordance with a program which is being executed in the first or the second communication device.

5. The communication method according to claim 1, wherein

said second communication device lowers reception sensitivity to the inquiry message, so that only the inquiry message wirelessly transmitted from the close range can be received.

6. The communication method according to claim 1, wherein

the connection operation in said first communication device and the standby operation in said second communication device are made to be a common operation, and when the common operation is performed, transmission processing of the inquiry message and reception processing of the inquiry message are alternately performed.

7. The communication method according to claim 1, wherein

the connection operation in said first communication device is a limited inquiry message which is distinguishable from a type of the inquiry message and said second communication device is made to await said limited inquiry message.

8. The communication method according to claim 1, wherein

the connection operation in said first communication device is to select a general inquiry mes-

sage or an arbitrary limited inquiry message, which should be transmitted, and said second communication device is to select the general inquiry message or the arbitrary limited inquiry message, which should be awaited.

9. A communication system in which at least first and second communication devices are provided and wireless communication is performed between respective communication devices by a predetermined communication method, wherein

said first communication device comprises:

communication processing means to perform transmission and reception of a wireless signal connection operation means, and control means to make an inquiry message transmitted from said communication processing means in a state in which a transmissible distance is restricted to a close range when said connection operation means is operated and to perform connection processing with respect to a transmission source of the inquiry response message when the response message to the inquiry message is received; and said second communication device comprises:

communication processing means to perform transmission and reception of a wireless signal, standby operation means, and control means to make said inquiry message received by said communication processing means when said standby operation means is operated and to make the response message to the received inquiry message wirelessly transmitted by said communication processing means.

10. The communication system according to claim 9, wherein

the processing to restrict the transmissible distance to the close range in said first communication device is processing to set transmission power in said communication processing means to a limited value compared to the transmission power at the time of normal wireless communication.

11. The communication system according to claim 9, wherein

while the connection operation means of said first communication device is continuously operated, the control means of said first communication device makes the inquiry message transmitted; and while the standby operation means of said second communication device is continuously operated, the control means of said second communication device makes the inquiry message re-

ceived.

12. The communication system according to claim 9, wherein

when the connection processing is completed by the control means of said first communication device, data transfer processing is performed in accordance with a program which is being executed in the first or second communication device.

13. The communication system according to claim 9, wherein

the communication processing means of said second communication device lowers the reception sensitivity to the inquiry message so that only the inquiry message wirelessly transmitted from the close range can be received.

14. The communication system according to claim 9, wherein

the connection operation means of said first communication device and the standby operation means of said second communication device are made to be a common operation means, and

when the common operation means is operated, the control means of the respective communication devices perform control to make both the transmission processing of the inquiry message and the reception processing of the inquiry message performed alternately by the communication processing means.

15. the communication system according to claim 9, wherein

the inquiry message in said first communication device is a limited inquiry message which is distinguishable from a general inquiry message and said second communication device is made to await said limited inquiry message.

16. the communication system according to claim 9, wherein

the connection operation in said first communication device is to select a general inquiry message or an arbitrary limited inquiry message, which should be transmitted and said second communication device is to select the general inquiry message or the arbitrary limited inquiry message, which should be awaited.

17. (Amended) A communication device which performs wireless communication with another communication device in accordance with a predetermined communication method, comprising:

communication processing means to perform transmission and reception of a wireless signal, connection operation means,

standby operation means, and
 control means to make an inquiry message
 transmitted from said communication process-
 ing means in a state in which a transmissible
 distance is restricted to a close range when said
 connection operation means is operated and to
 perform connection processing with respect to
 a transmission source of the response mes-
 sage when the response message to the in-
 quiry message is received, wherein
 when said standby operation means is operat-
 ed, said control means makes the inquiry mes-
 sage received and makes the response mes-
 sage to the inquiry message transmitted by said
 communication processing means;
 said connection operation means and standby
 operation means are made to be a common op-
 eration means; and
 when the common operation means is operat-
 ed, said control means performs control to
 make both the transmission processing of the
 inquiry message and the reception processing
 of the inquiry message alternately performed
 by the communication processing means.

18. The communication device according to claim
 17, wherein

the processing to restrict the transmissible
 distance to the close range is processing to set
 transmission power in the communication process-
 ing means to a limited value compared to the trans-
 mission power at the time of normal wireless com-
 munication.

19. The communication device according to claim
 17, wherein

while said connection operation means is
 continuously operated, said control means per-
 forms processing to make the inquiry message
 transmitted.

20. The communication device according to claim
 17, wherein

when the connection processing is completed
 by said control means, data transfer processing is
 performed in accordance with a program which is
 being executed.

21. The communication device according to claim
 17, further comprising:

standby operation means, wherein
 when said standby operation means is operat-
 ed, said control means makes the inquiry mes-
 sage received by said communication process-
 ing means and makes the response message
 to the received inquiry message wirelessly
 transmitted by said communication processing

means.

22. (Deleted)

23. The communication device according to claim
 17, wherein

said connection operation means includes
 means to select a type of the inquiry message, so
 that the selected inquiry message of an arbitrary
 type can be transmitted.

24. (Deleted)

25. (Amended) The communication device accord-
 ing to claim 17, wherein

while said standby operation means is contin-
 uously operated, said control means performs
 processing to make the inquiry message received.

26. (Amended) The communication device accord-
 ing to claim 17, wherein

said communication processing means low-
 ers the reception sensitivity to the inquiry message
 so that only the inquiry message wirelessly trans-
 mitted from the close range can be received.

27. (Amended) The communication device accord-
 ing to claim 17, wherein

said standby operation means includes
 means to select the inquiry message which should
 be awaited so that the inquiry message of a select-
 ed arbitrary type can be received.

Statement under Art. 19.1 PCT

1. This claim remains unchanged.
2. This claim remains unchanged.
3. This claim remains unchanged.
4. This claim remains unchanged.
5. This claim remains unchanged.
6. This claim remains unchanged.
7. This claim remains unchanged.
8. This claim remains unchanged.
9. This claim remains unchanged.
10. This claim remains unchanged.
11. This claim remains unchanged.
12. This claim remains unchanged.
13. This claim remains unchanged.
14. This claim remains unchanged.
15. This claim remains unchanged.
16. This claim remains unchanged.
17. This claim replaces the claim at the time of ap-
 plication.
18. This claim remains unchanged.
19. This claim remains unchanged.
20. This claim remains unchanged.
21. This claim remains unchanged.

22. This claim is deleted.

23. This claim remains unchanged.

24. This claim is deleted.

25. This claim replaces the claim at the time of application.

5

26. This claim replaces the claim at the time of application.

27. This claim replaces the claim at the time of application.

With an amendment to claim 17, it is clarified that "a single button is used in common as the connection button and the standby button", which is described in line 17 of page 46 through line 15 of page 48 in the specification. Using the operation button in common enables cost and workspace to be reduced and also enables wireless communication to be set without difficulty even in a small-sized handheld device, so that operability is improved.

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The grounds for the amendment in accordance with Article 19 are description that "a single button is used in common as the connection button and the standby button", which is described in line 17 of page 46 through line 15 of page 48 in the specification, and based on the description claim 17 is amended. In the amendments to claims 25, 26 and 27, the claim referred to is changed into claim 17 due to the deletion of claim 24.

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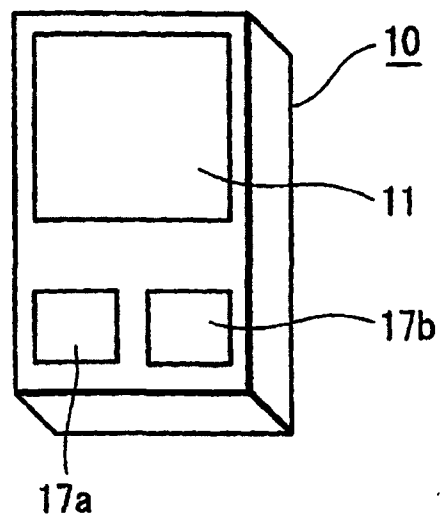
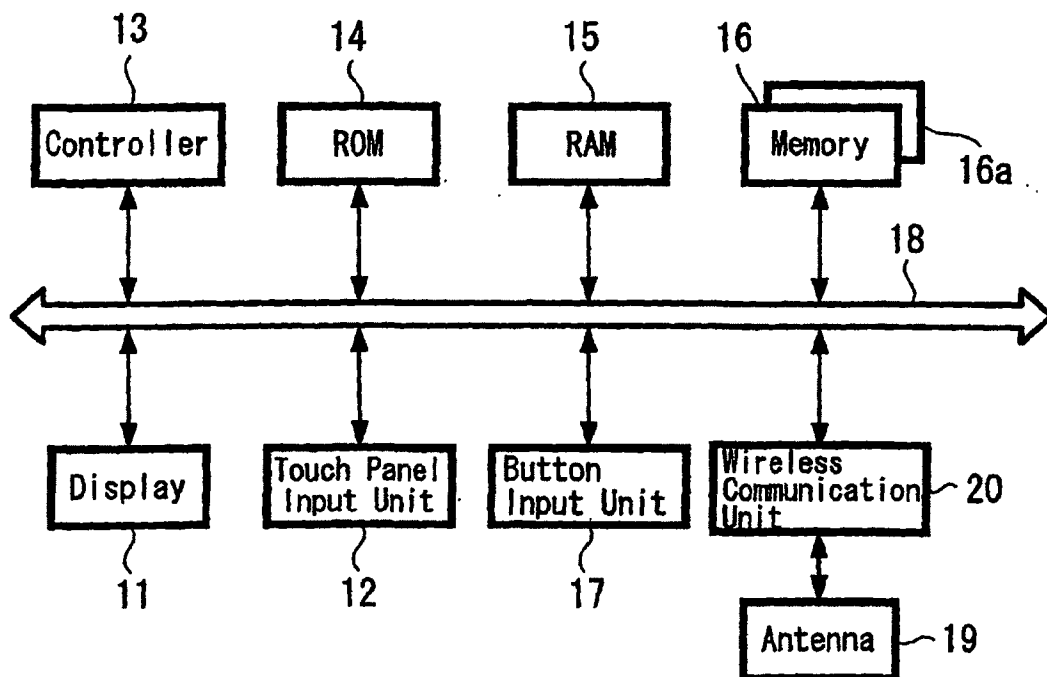
FIG. 1**FIG. 2**

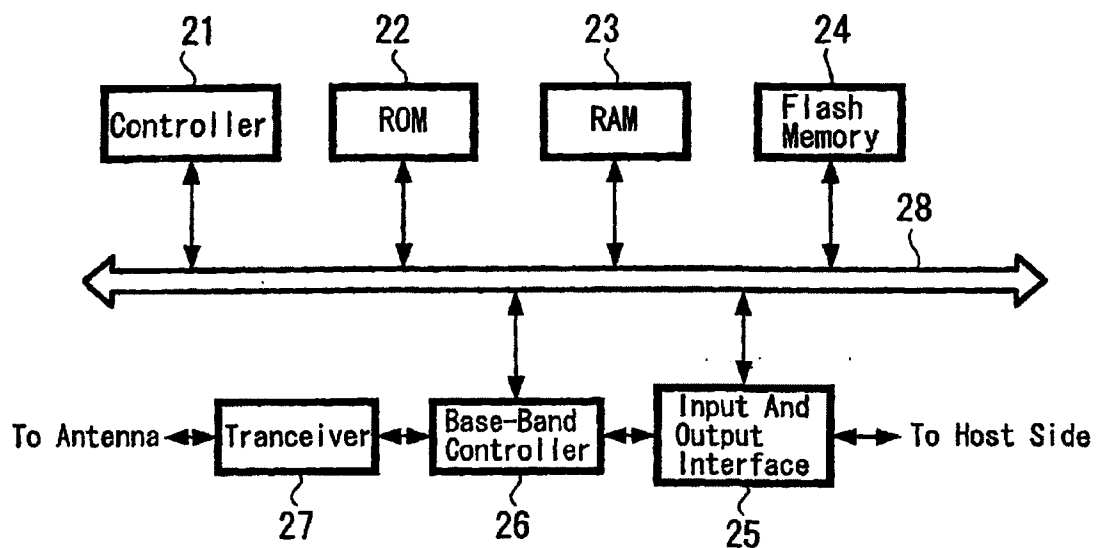
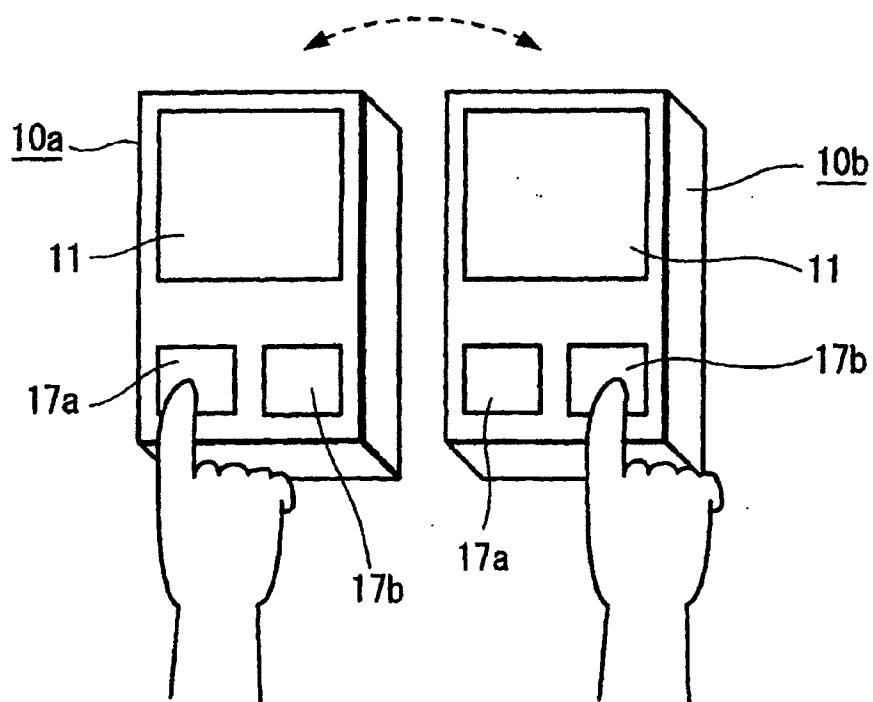
FIG. 3**FIG. 4**

FIG. 5

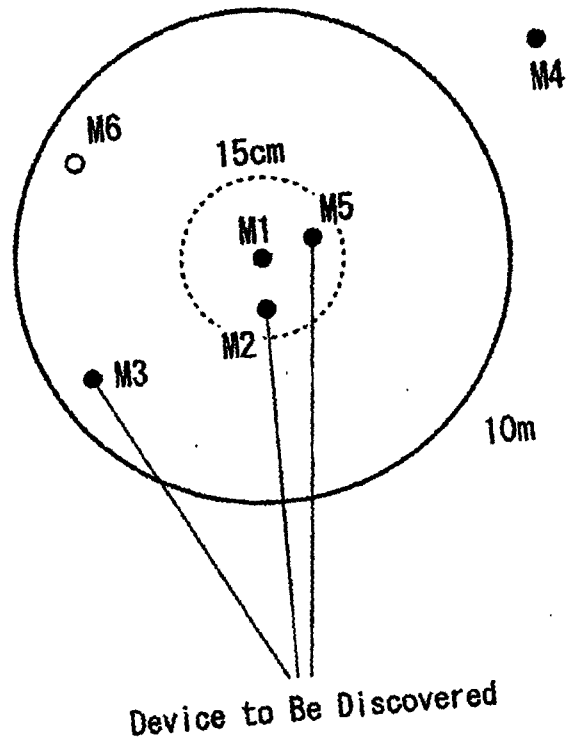


FIG. 6

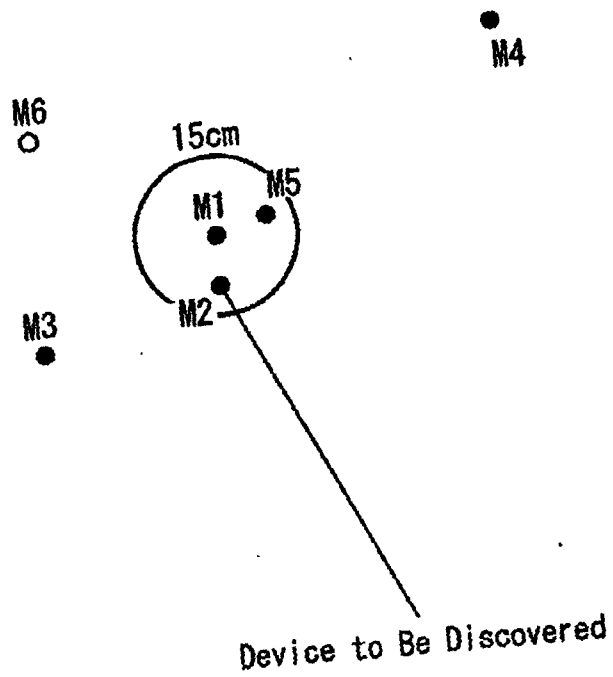


FIG. 7

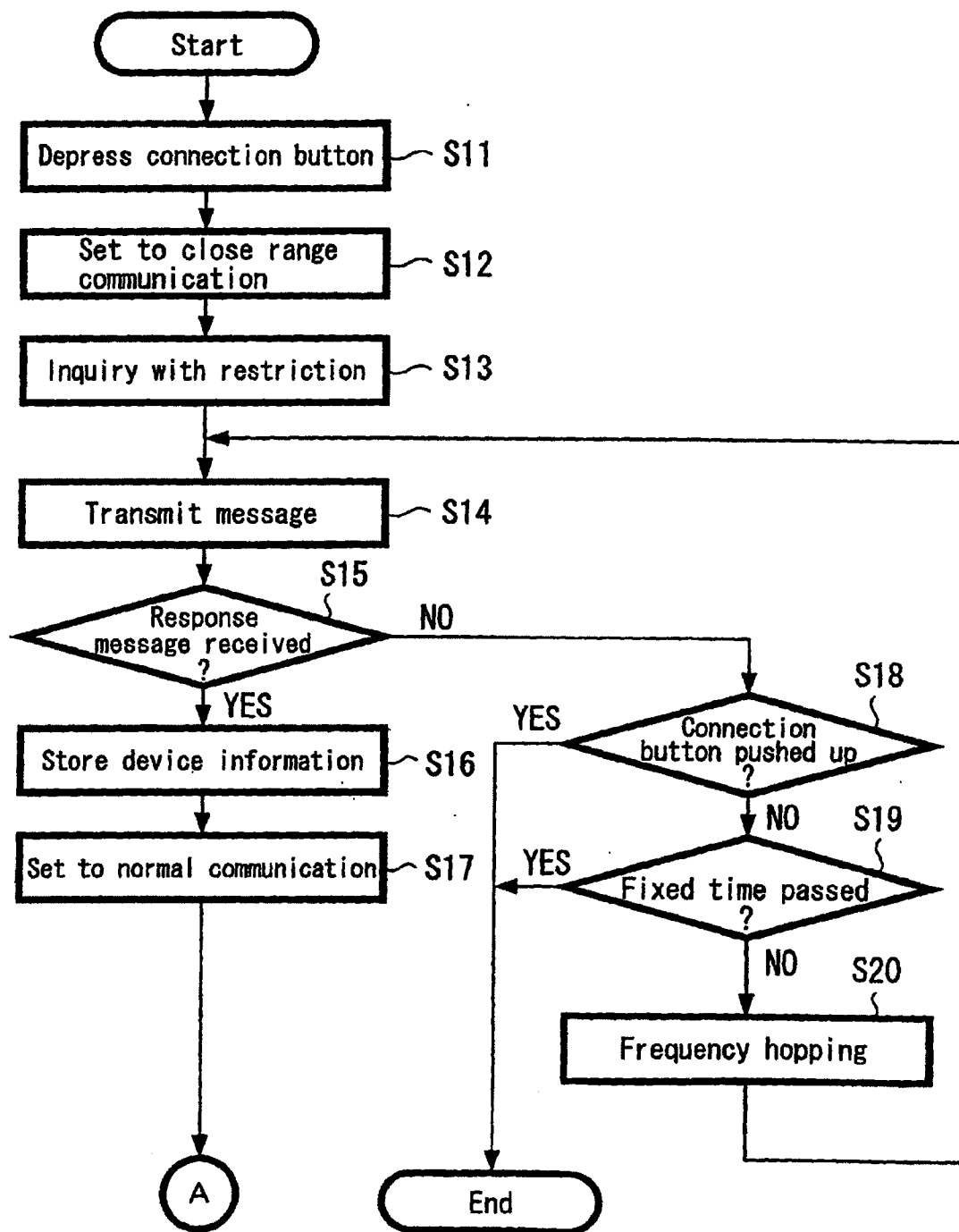


FIG. 8

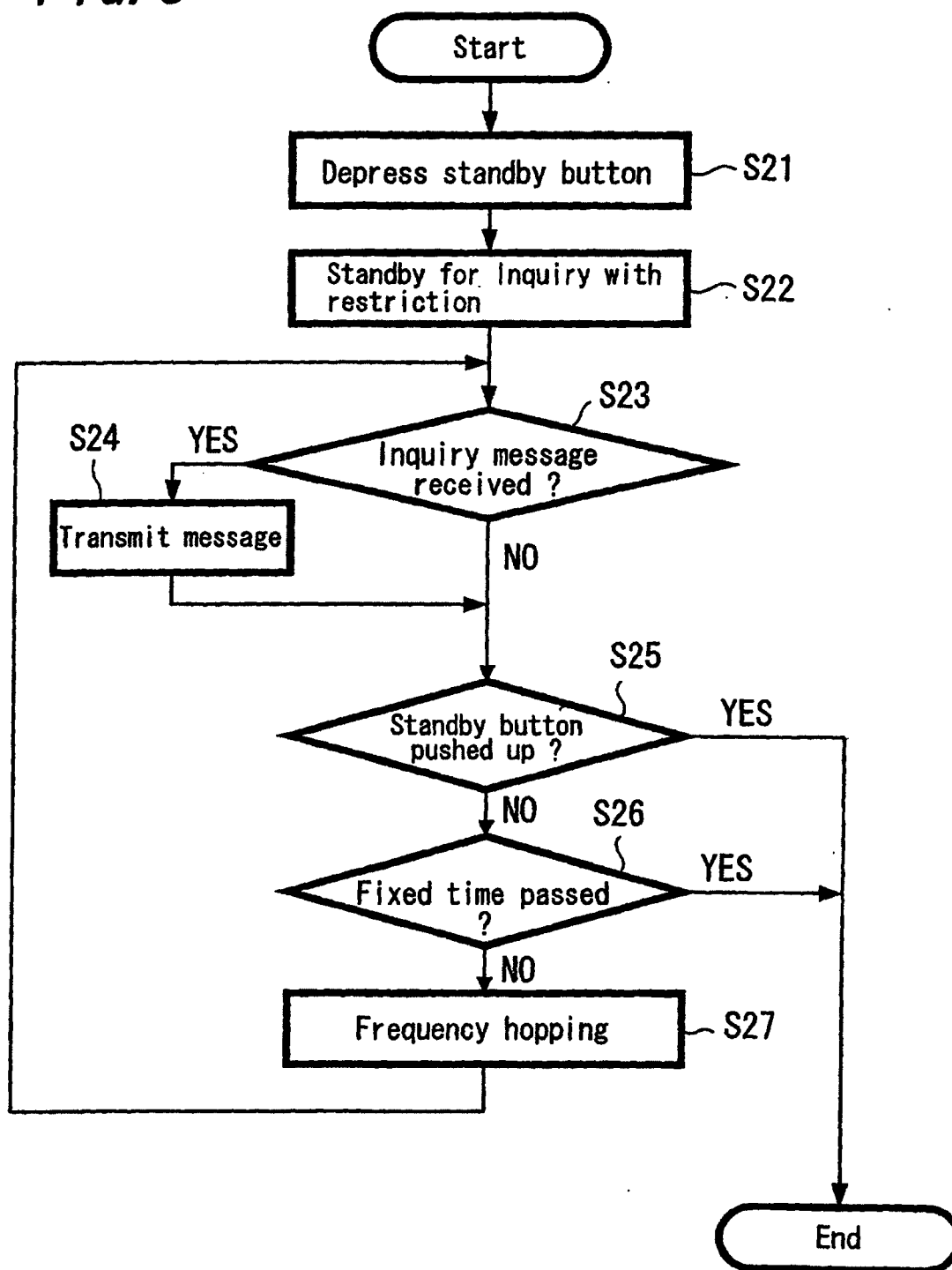
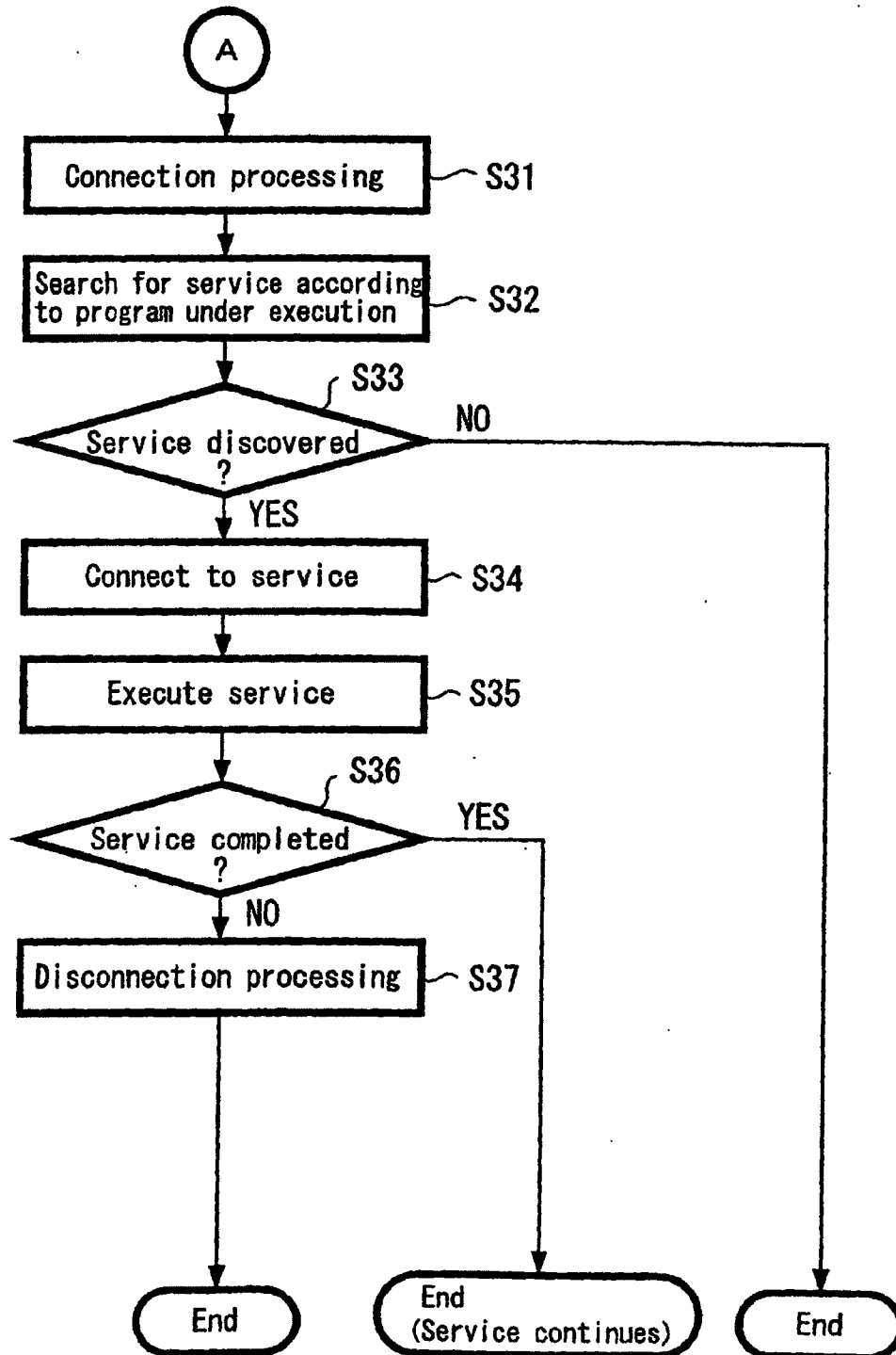


FIG. 9

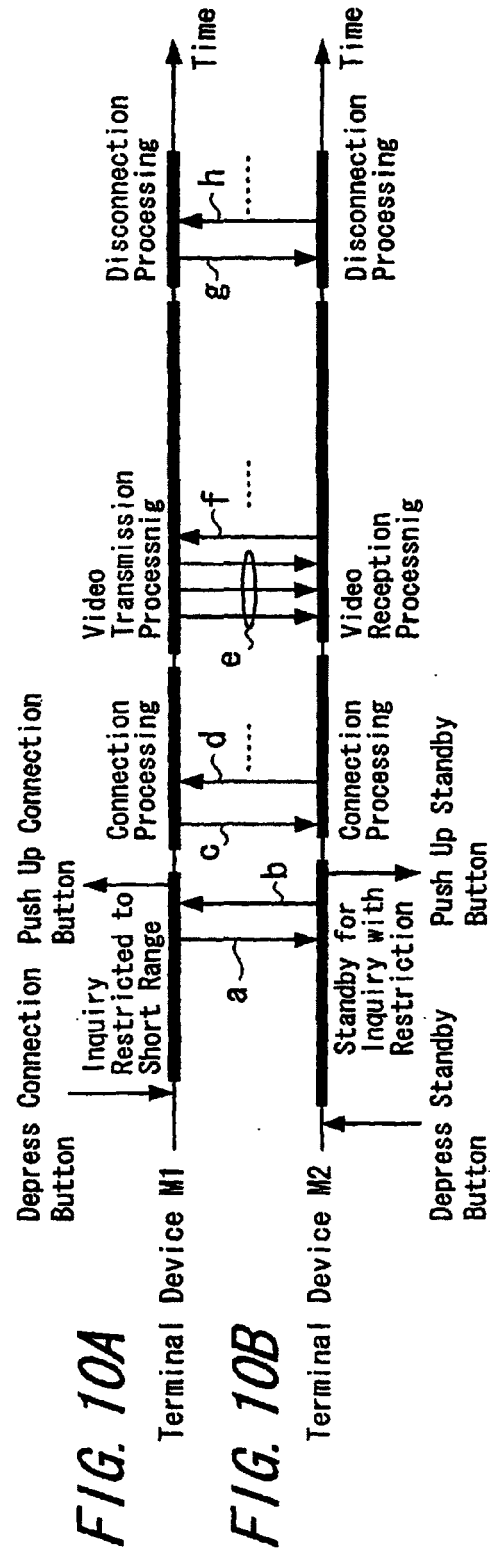


FIG. 11

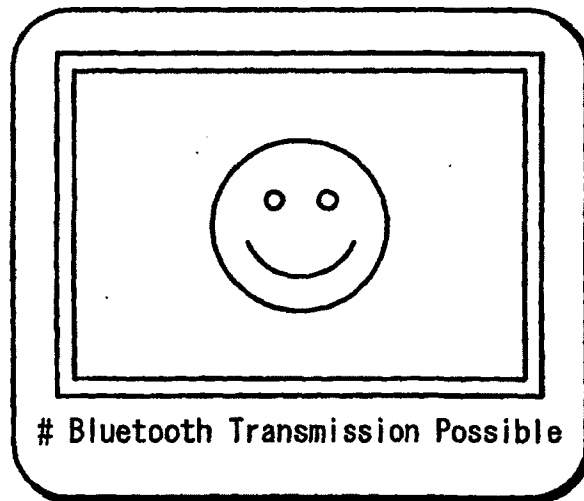


FIG. 12

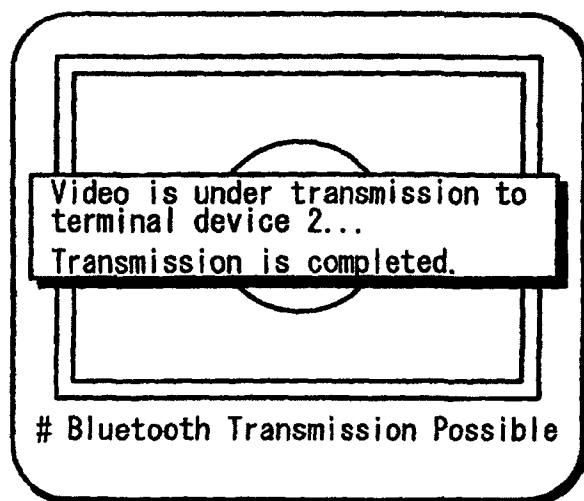


FIG. 13

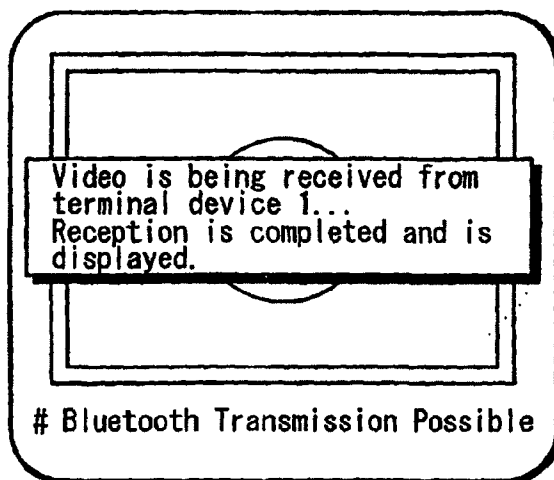
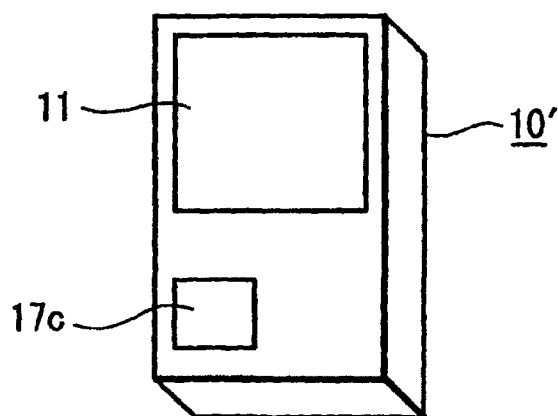
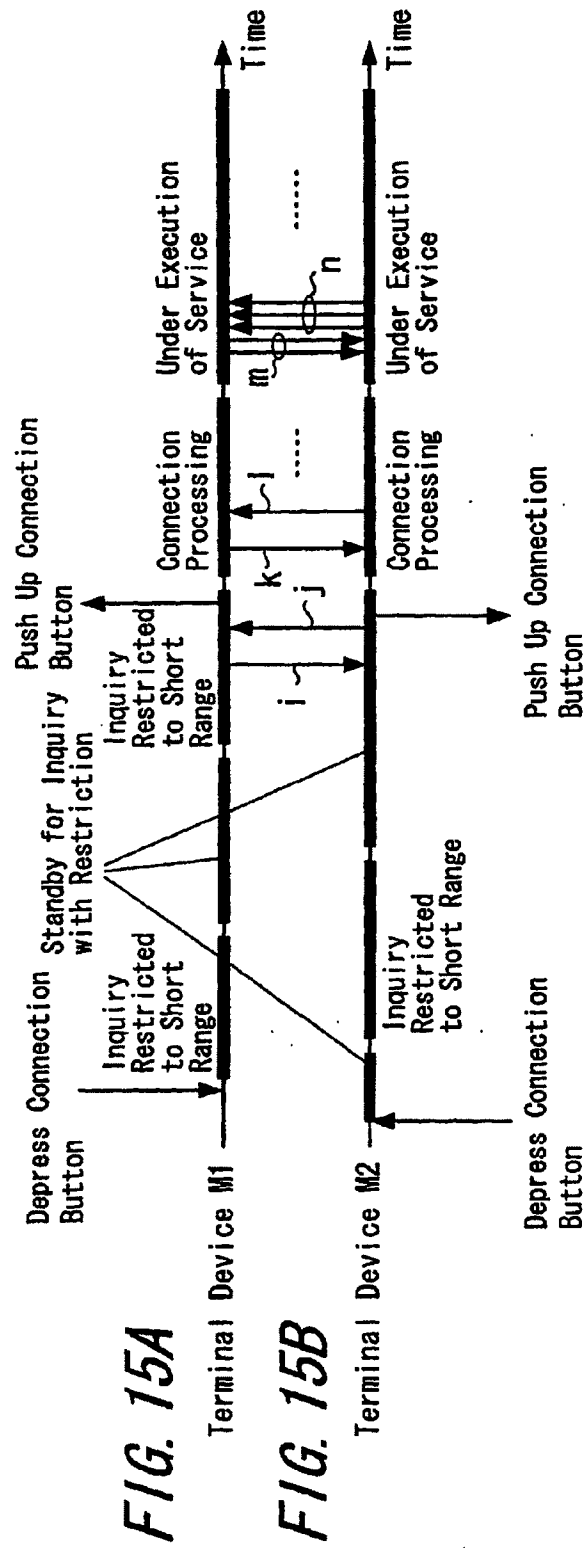
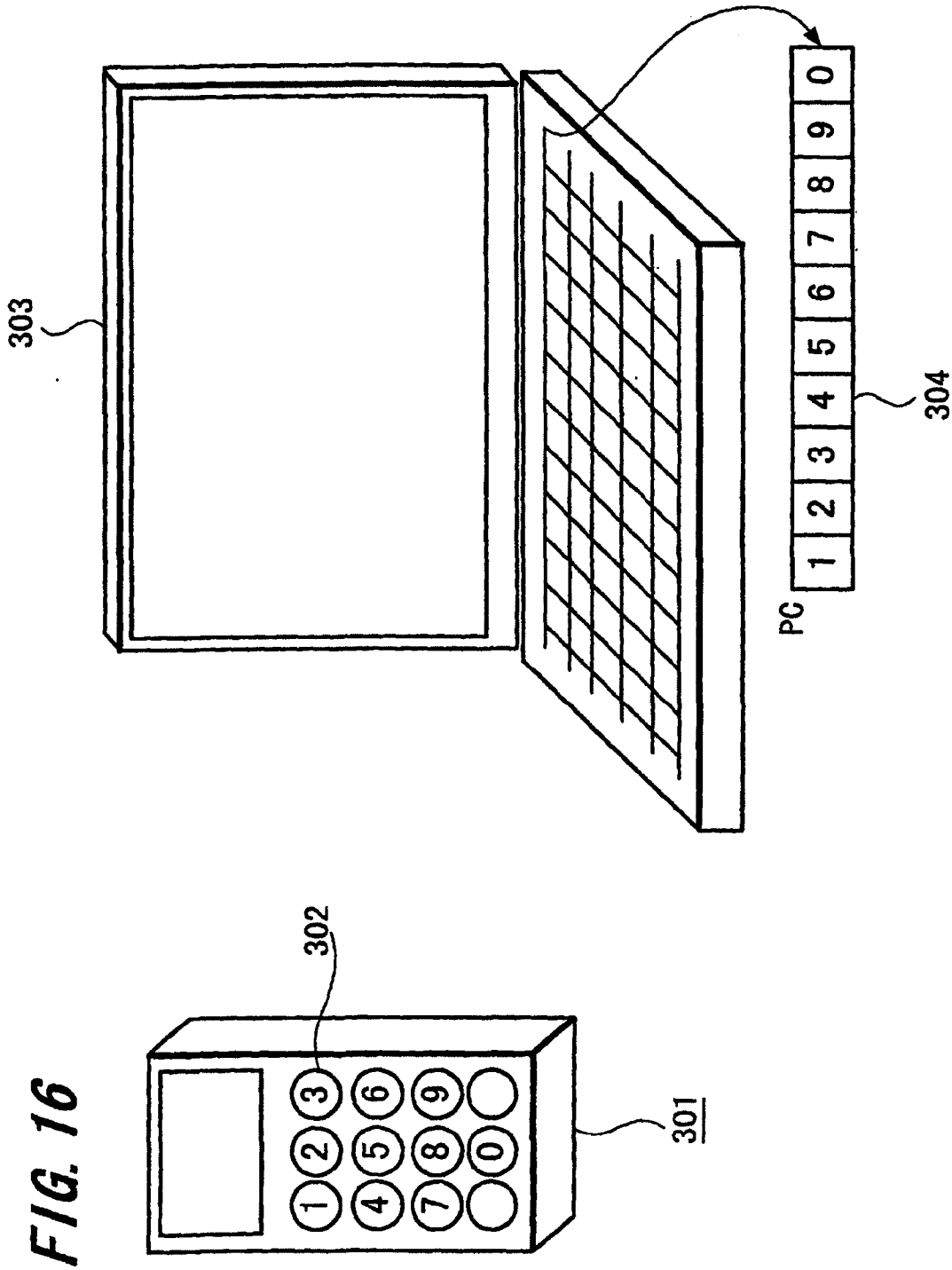


FIG. 14







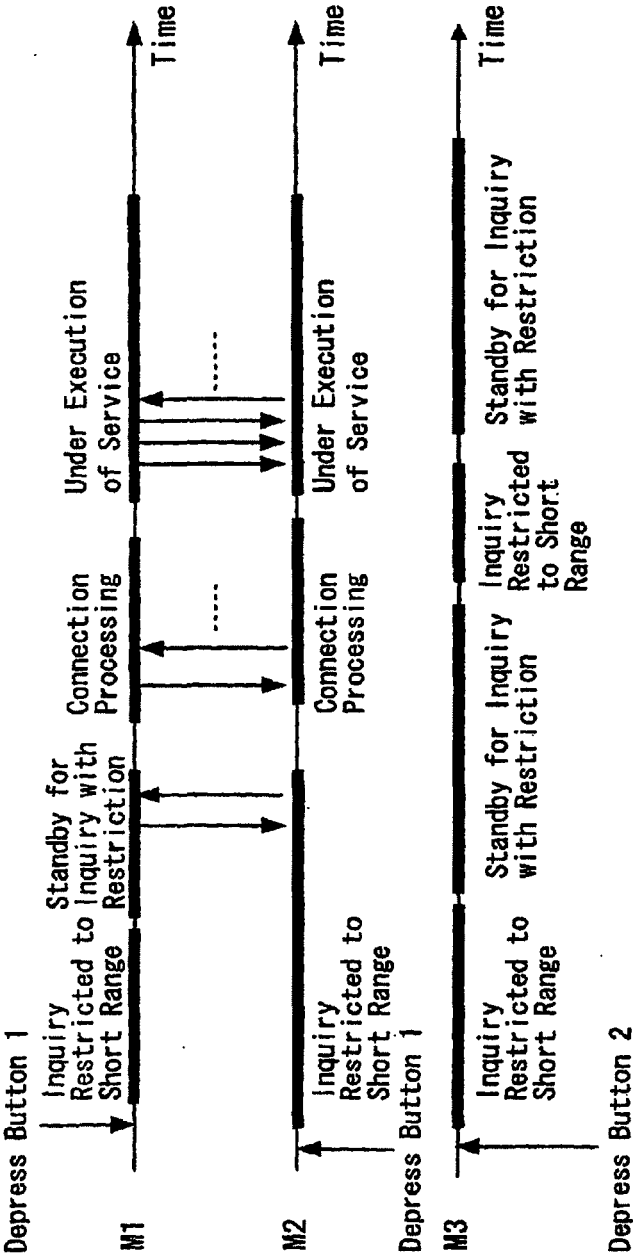


FIG. 17A

FIG. 17B

FIG. 17C

DESCRIPTION OF REFERENCE NUMERALS

10, 10', 10a, 10b . . .	HANDHELD INFORMATION TERMINAL DEVICE
11 . . .	DISPLAY
12 . . .	TOUCH PANEL INPUT UNIT
13 . . .	CONTROLLER
14 . . .	ROM
15 . . .	RAM
16 . . .	MEMORY
16a . . .	MEMORY MEDIUM
17 . . .	BUTTON INPUT UNIT
17a . . .	CONNECTION BUTTON
17b . . .	STANDBY BUTTON
17c . . .	CONNECTION BUTTON
18 . . .	BUS LINE
19 . . .	ANTENNA
20 . . .	WIRELESS COMMUNICATION UNIT
21 . . .	CONTROLLER
22 . . .	ROM
23 . . .	RAM
24 . . .	FLASH MEMORY
25 . . .	INPUT-OUTPUT INTERFACE
26 . . .	BASE-BAND CONTROL UNIT
27 . . .	TRANSCEIVER
301 . . .	MOBILE PHONE UNIT
302 . . .	BUTTON GROUP
303 . . .	PERSONAL COMPUTER APPARATUS
304 . . .	NUMERICAL KEY GROUP

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/07135

A. CLASSIFICATION OF SUBJECT MATTER Int.Cl ⁷ H04B1/40, H04B7/26 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) Int.Cl ⁷ H04B1/38-1/58, H04B7/24-7/26, H04Q7/00-7/38, H04L12/44 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2003 Kokai Jitsuyo Shinan Koho 1971-2003 Jitsuyo Shinan Toroku Koho 1996-2003 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP 2001-144781 A (Toshiba Corp.), 25 May, 2001 (25.05.01), (Family: none)	17-21, 23-27 1-16, 22
P, X	JP 2003-218733 A (Alps Electric Co., Ltd.), 31 July, 2003 (31.07.03), Par. Nos. [0017] to [0022], [0030] to [0040]; Figs. 1, 2 (Family: none)	17-21, 23
P, X	JP 2003-218785 A (Sony Corp.), 31 July, 2003 (31.07.03), (Family: none)	17-21, 23
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 11 September, 2003 (11.09.03)		Date of mailing of the international search report 07 October, 2003 (07.10.03)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.		Authorized officer Telephone No.

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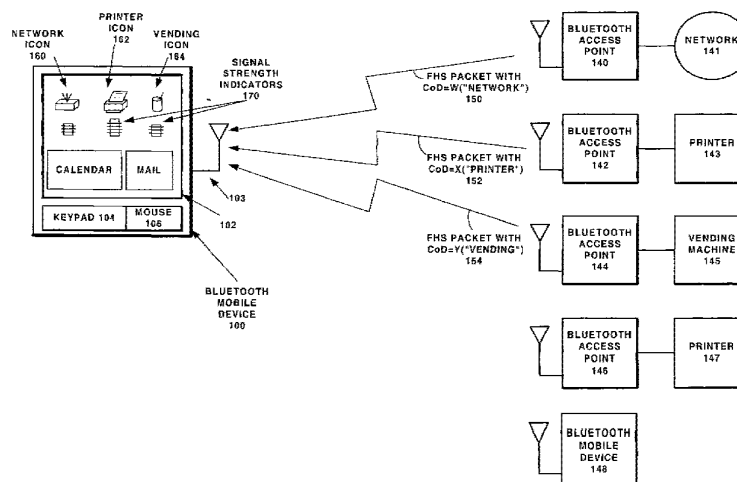
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) Title: SERVICE/DEVICE INDICATION WITH GRAPHICAL INTERFACE



(57) Abstract: The method disclosed gives the user rapid notice of those Bluetooth devices (142) within communication range, and yet it selectively blocks any notice about Bluetooth devices that the user wishes to ignore. Bluetooth server devices (143) can indicate to the user's Bluetooth client device (100) the service the server device has available by sending service/device icon information to Bluetooth client device. This information can be a value in the class-of-device (CoD) field of a frequency hop synchronization (FHS) packet that it sends during the process of exchanging inquiry and paging packets with the Bluetooth client device. If the server device has begun by transmitting an inquiry packet, then the CoD value will be sent in its paging packet. If the server device is responding to an inquiry, then its CoD value will be in its inquiry response packet.



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SERVICE/DEVICE INDICATION WITH GRAPHICAL INTERFACE

This international application claims priority to U.S. Serial Number 10/101,688, filed
5 March 21, 2002, entitled, "SERVICE/DEVICE INDICATION WITH GRAPHICAL
INTERFACE", and which is incorporated entirely herein by reference.

FIELD OF THE INVENTION:

The invention disclosed broadly relates to ubiquitous computing and more
10 particularly relates to improvements in short range RF technology.

BACKGROUND OF THE INVENTION:

Bluetooth is a short-range radio network, originally intended as a cable replacement.
It can be used to create ad hoc networks of up to eight devices operating together. The
15 Bluetooth Special Interest Group, Specification Of The Bluetooth System, Volumes 1 and 2,
Core and Profiles: Version 1.1, February 22, 2001, describes the principles of Bluetooth
device operation and communication protocols. The devices operate in the 2.4 GHz radio
band reserved for general use by Industrial, Scientific, and Medical (ISM) applications.
Bluetooth devices are designed to find other Bluetooth devices within their ten-meter radio
20 communications range and to discover what services they offer.

A connection between two Bluetooth devices is initiated by an inquiring device
sending out an inquiry message searching for other devices in its vicinity. Any other
Bluetooth device that is listening by means of conducting an inquiry scan, will recognize the
inquiry message and respond. The inquiry response is a frequency hop synchronization
25 (FHS) packet containing all of the information required by the inquiring device to address the
responding device. This information includes clock value of the sender (i.e., the responding
device), the sender's correct device access code, and the class-of-device (CoD) field. The
FHS packet contains more information than is mentioned here. The access code includes the
lower address part (LAP) and the upper address part (UAP) of the sender's Bluetooth Device

Address (BD_ADDR), a unique, 48-bit IEEE address that is electronically engraved into each Bluetooth device.

The class-of-device (CoD) field of the FHS packet indicates which device class the sender belongs to, such as printer access point, network access point, PDA, cellular telephone, and the like. The class-of-device (CoD) field is a 24 bit field divided into three subfields and a two-bit format field. The high order eleven bit subfield is reserved for indicating general service classes such as information, telephony, audio, object transfer, capturing, rendering, networking, and positioning. The middle five bit subfield comprises the major device class, which can indicate up to 32 different device types. The low order six bit subfield consists is the minor device class, which can indicate up to 64 different variations of each device type. The lowest order two bits are the format field for identifying the format type of the CoD field.

The inquiring device (after it sends a paging packet) will become the master and the responding device will become the slave in the eventual piconet, if a connection is established. To establish a connection, the inquiring device must enter the page state. The paging device uses the information provided in the inquiry response packet, to prepare and send a paging message to the responding device. The paging device uses the estimated clock CLKE and access code of the responding device (i.e., the eventual slave device) to temporarily synchronize with it. Since the paging device intends to be the master, it includes an assignment of an active member address (AM_ADDR) in the paging message. The paging message sent by the paging device is also a frequency hop synchronization (FHS) packet containing all of the information required by the responding device to directly reply to the paging device. This information includes clock value of the sender (i.e., the paging device) and the paging device's correct device access code. The responding device must be in the page scan state to allow the paging device to connect with it. Once in the page scan state, the responding device will receive the paging packet that provides the clock timing and access code of the paging device. The responding device responds with a page acknowledgment packet. This enables the two devices to form a connection and both devices transition into the connection state. The paging device that has initiated the connection assumes the role of

a master device and the responding device assumes the role of a slave device in a new ad hoc network piconet, using the CLK clock timing and access code of the master device.

Each piconet has one master device and up to seven active slave devices. All communication is directed between the master device and each respective slave device. The master initiates an exchange of data and the slave responds to the master. When two slave devices are to communicate with each other, they must do so through the master device. The master device maintains the piconet's network clock and controls when each slave device can communicate with the master device. Members of the ad hoc network piconet join and leave as they move into and out of the range of the master device. Piconets support distributed activities, such as multi-user gateways to the Internet or to a content server, wherein one device serves as the access point and is connected to an infrastructure network or content server. A user's device that joins a multi-user gateway piconet, does so to enable its user to access the infrastructure network or content server.

To form ad hoc connections, a Bluetooth device has to have the ability to rapidly discover target Bluetooth devices to which the user wishes to connect. In many cases the target device is known, e.g. a headset, and thus the procedure for connection establishment is straightforward. However, in certain cases it is not possible to have information about the target device. Additional problems are created by a crowded environment where many Bluetooth devices are present, which respond to the user device's inquiries.

What is needed a way to rapidly give the user notice of those Bluetooth devices within communication range, and yet not inundate the user with information about those Bluetooth devices that he/she wishes to ignore.

SUMMARY OF THE INVENTION

The invention disclosed gives the user notice of those Bluetooth devices within communication range, and yet it selectively blocks any notice about Bluetooth devices that the user wishes to ignore. In accordance with the invention, Bluetooth server devices can indicate to the user's Bluetooth client device the service that the server device has available by sending service/device icon information to Bluetooth client device. This information can

be a value in the class-of-device (CoD) field of a frequency hop synchronization (FHS) packet that it sends during the process of exchanging inquiry and paging packets with the Bluetooth client device. If the server device has begun by transmitting an inquiry packet, then the CoD value will be sent in its paging packet. If the server device is responding to an inquiry, then its CoD value will be in its inquiry response packet.

The service/device icon is a small, graphic bitmap that is displayed on the screen of the client device, having an appearance that serves to describe the service that the server device has to offer. Alternately, the icon can also serve to identify characteristics of the user of the server device, such as business-related or personal characteristics. In either case, the icon bitmap must reside in the client device in order to be displayed on its screen. For conventional services, such as an access point for an Internet gateway or an access point for a printer, standard icon bitmaps can be stored in an icon cache in all Bluetooth client devices. Optionally, new icon bitmaps and their corresponding CoD values can be downloaded from an Internet service provider, such as Nokia Club, to be stored in the icon cache of the client device in association with their CoD values. This can be, for example, a new graphical design of an icon for an existing, assigned CoD value, such as that for a printer. The service/device icon is typically a 16 by 16 pel bitmap. A black and white icon can be stored in a 32-byte memory partition of the receiver's icon cache. An eight bit per pel color icon can be stored in a 256-byte memory partition of the receiver's icon cache. Audible tones can be played when the icon is initially displayed. The tone string can be downloaded from the Internet service provider at the same time as is the icon bitmap and stored in the icon cache of the client device in association with the CoD value.

When the icon is initially displayed on the screen of the client device, a partition is opened in a detected icon buffer to store the status of the icon. A time stamp value is recorded at the start of the display, in association with the received CoD value. Periodically, the time stamp value is compared with the time of day clock of the client device. When the time stamp is older than a threshold value called the lease-time (30 seconds, for example), the icon is removed from the screen and its partition is closed in the detected icon buffer. During the period that the icon remains actively displayed on the screen, if additional FHS packets

are received from the same server device containing the same CoD value, the time stamp value is updated to the current time of day value. This enables retaining the display of an icon for a server device that remains in the vicinity of the client device. As soon as the client device moves out of communications range of the server device and no more FHS packets are received, then after the expiration of the lease-time, the icon is removed from the screen.

If the client device has initiated a connection with the server device to carry out SDP searching or other operations, the client device assumes a temporary master role in its new piconet. Most server devices are programmed to request a master/slave role switch if the client device has initiated the connection. Once the client changes to a slave role, it can only remain in its piconet, either as an active slave or a parked slave. (It is possible for the slave to switch between several piconets, when timing information is known.) Thus, the client device is programmed to terminate such connections after completing any necessary SDP searching or other operations. In order to continue displaying icons of server devices within communications range, the client device continues to operate in the inquiry and page scanning modes, detecting the FHS paging packets and FHS inquiry response packets from server devices in its vicinity. When the FHS packets from a given server device are no longer received, then the lease-time interval is started in preparation to remove the corresponding icon from the display.

The detected icon buffer also stores the Bluetooth device address BD_ADDR of the server device, in association with the received CoD value. The i th icon in the detected icon buffer has a device address BD_ADDR $_i$ and a CoD value CoD $_i$. The detected icon buffer also stores coordinates, such as the (x,y) coordinates, of the displayed position of the icon with respect to the origin of coordinates on the screen, in association with the received CoD value. The i th icon on the screen has a position (x $_i$,y $_i$) associated in the detected icon buffer with the its CoD value CoD $_i$. Other origins for coordinates can be used, such as the center of the screen. Also, other coordinate systems can be used, such as polar coordinates. A cursor is also displayed on the screen, whose position is represented by coordinates, such as the (X,Y) coordinates with respect to the origin of coordinates on the screen. A pointing device, such as a mouse or a track ball controls the displayed position (X,Y) of the cursor on the screen.

When the user presses the mouse button, the (X,Y) coordinates of the cursor are compared with the (x,y) coordinates of each icon in the detected icon buffer. If the cursor coordinates (X,Y) are within range of the *i*th icon coordinates (*x_i*,*y_i*), then the *i*th icon is selected. The client device can be programmed to access the device address BD_ADDR_{*i*} to complete the connection with the corresponding server device and exchange further messages with it. The further messages can include the client device sending an SDP request to the server device to find out information about other files or services, followed by accessing a file from the server device.

Where the server device has initiated the connection by sending inquiry and paging packets to the client device, the server device may use the Bluetooth object push profile (OPP) to push an unsolicited file, such as a business card, to the client device. The client device is programmed to store the unsolicited file in a unsolicited file buffer, associated with the CoD and the BD_ADDR of the sending server device. The detected icon buffer opens a partition for the server device and stores an indication that there is an associated file in the unsolicited file buffer. When the user presses the mouse button, the (X,Y) coordinates of the cursor are compared with the (x,y) coordinates of each icon in the detected icon buffer. If the cursor coordinates (X,Y) are within range of the *i*th icon coordinates (*x_i*,*y_i*), then the *i*th icon is selected. The client device can be programmed to check if there is an associated file in the unsolicited file buffer. If there is, that file is accessed and displayed on the screen. This feature enables the server device to send more informative messages to the client device, along with the CoD of the icon bitmap.

The detected icon buffer also stores a server rank value, in association with the received CoD value. The first server device of a given CoD type to be entered into the detected icon buffer will be assigned the a server rank value of "1". Two different server devices having different device addresses BD_ADDR, can offer the same service and will transmit the same CoD value. The client device is programmed to identify this circumstance. The second server device of the same CoD type to be entered into the detected icon buffer will be assigned the a server rank value of "2", and so on. Instead of placing two identical icon bitmaps on the screen, the first displayed icon will have appended to it a numeral

indicating how many of that type of server device are in the vicinity. The displayed icon is referred to as a multi-icon.

The detected icon buffer also stores a received signal strength indication (RSSI) for each respective server device listed in the detected icon buffer. Where there are two or more
 5 server devices in the detected icon buffer having a given CoD type, the client device is programmed to rank them by their RSSI values. The server rank values of those servers having the same type CoD value are reassigned, in accordance with the RSSI for each server device. The server device with the strongest RSSI will be reassigned a server rank value of “1”, and weaker server devices will be assigned consecutively greater values. When the
 10 cursor coordinates (X,Y) are within range of the multi-icon’s coordinates (xi,yi), then the multi-icon is selected. The client device can be programmed to access the device address BD_ADDRi of the server device with the strongest RSSI to complete the connection with the corresponding server device and exchange further messages with it. As individual server devices move out of communication range of the client device, the respective partition in the
 15 detected icon buffer is cleared, and the server rank values are reassigned, as needed.

The RSSI value can be displayed beneath each icon shown on the screen, thereby allowing the user to select server devices having better link quality. Alternately, “color bars” can be presented to represent RSSI values , such as green = good RSSI, yellow = still acceptable, and red = data transmission is not possible. Any kind of indication of RSSI
 20 reading is possible (e.g. actual value, number of bars, color etc)

The user can enter CoD values for types of server devices or services to be ignored, such as advertisement broadcasting server devices and certain types of vending machine server devices. These prohibited CoD values are stored in a blocking filter buffer in the client device. When a CoD value is received in an FHS packet, it is compared with the
 25 prohibited CoD values and if there is a match, no entry is made in the detected icon buffer, thereby ignoring the prohibited server devices.

There are up to eleven bits available in the CoD field for assignment as service descriptions, yielding up to 2048 different possible services that can be represented. Some

subset, for example the six bits of the CoD minor device class sub-field, can be used to assign up to 64 service description values.

When the icon serves to identify characteristics of the user of the server device, such as business-related or personal characteristics, the device can be optionally programmed to accept manual changes to the CoD field. The user of the sending device has the ability to select the icon to be sent. Optionally, the server device can be manually reset by its user to indicate in its class-of-device (CoD) field of its FHS packet, that particular types of service/device icon information are available, such as dating/match-making information.

The client device can also be programmed to search for specified class-of-device (CoD) values received from a server device. The client device can match the CoD values received in FHS packets, with an entry in a search list in the client device. For example, the client device can be programmed by its user to search for that particular class-of-device (CoD) value among those CoDs received. When a match is found, the client device is programmed to display the icon bitmap and sound an alarm tone.

In the current Bluetooth specification, an inquiry result is reported over the Host Computer Interface (HCI) only after the inquiry period is over, which is 10.24 seconds. During that period, it may be possible that the client device will move out of the range of the server device. In another aspect of the invention, the receipt of FHS packets is a result event that is reported over the HCI as soon as each new FHS packet arrives. The HCI is programmed to write the received CoD value of the FHS packet in a memory register at the time that the packet arrives. The Host can then read the register and process the CoD value to display the corresponding icon, as described above.

The client device can be programmed by its user to recognize selected class-of-device (CoD) values and either ignore them or display the corresponding icon bitmap.

In an alternate embodiment of the invention, the service/device icon information can be sent after a connection has been made with the client device, as part of a Service Discovery Protocol (SDP) response packet. The client device can search for interesting services using the Service Discovery Protocol (SDP). When interesting services are found, their service records are accessed by the client device. Icons are included in the service

records as an IconURL parameter. Icons can be loaded using hypertext transfer protocol (http). If there is no icon included in the service record of an interesting service, a default icon for its type may be displayed, as identified by the CoD value of the sending device.

The process of retrieving the icon bitmap in the Service Discovery Protocol (SDP) of the alternate embodiment, starts by examining the public browse root of the SDP service registry in the server device. It then follows the hierarchy out to service classes which are the branches of the tree, and from there to the leaf nodes, where individual services are described in service records. To get specific information about the icon bitmap, the client device and the server device exchange messages carried in SDP packets. There are two types of SDP packets, the SDP Service Search Attribute Request packet and the SDP Service Search Attribute Response packet. The SDP Request packet carries the SDP Service Search Attribute Request, which includes a service search pattern and an attribute ID list. The service search pattern is the description of the desired service records containing the icon bitmap information in the server device. The server device specifically searches its registry of for the attribute containing information about the icon bitmap. The server device responds with the service handle of the icon bitmap or a pointer to the icon bitmap. The service handle identifies the service record containing the icon bitmap. Optionally, the service record contains a pointer to the icon bitmap. When the client device receives the icon bitmap, it is displayed on the screen. Optionally, it can also be stored in the client's icon cache.

DESCRIPTION OF THE FIGURES

Figure 1A shows a wireless network diagram of the Bluetooth mobile client device and five server devices, with the mobile device being within Bluetooth communication range of a network access point, a first printer access point, and a vending machine access point, according to an embodiment of the present invention.

Figure 1B shows the same wireless network as Figure 1A, but with the mobile client device having moved out of the range of the network access point and into range with a second printer access point.

Figure 1C shows the same wireless network as Figures 1A and 1B, but with the mobile client device having further moved out of the range of both the network access point and the first printer access point, and into range with a second mobile device.

Figure 2 shows the memory layout of the mobile client device, according to an embodiment of the present invention.

Figures 3A, 3B, and 3C show the flow diagram of the operation of the mobile client device, according to an embodiment of the present invention.

DISCUSSION OF THE PREFERRED EMBODIMENT

In the following description of the preferred embodiment, reference is made to the accompanying drawings, which form a part hereof, and in which is shown by way of illustration various embodiments in which the invention may be practiced. It is to be understood that other embodiments may be utilized and structural and functional modifications may be made without departing from the scope of the present invention.

The invention disclosed gives the user notice of those Bluetooth devices within communication range, and yet it selectively blocks any notice about Bluetooth devices that the user wishes to ignore. Figure 1A shows a wireless network diagram of six Bluetooth devices: the user's mobile, client device 100, four access point devices connected to their respective servers, and another mobile device. Access point 140 is connected to the network 141. Access point 142 is connected to the printer 143. Access point 144 is connected to the vending machine 145. Access point 146 is connected to the second printer 147. The second mobile device 148 can be a Bluetooth equipped cellular telephone. In the first location of the mobile device 100 shown in Figure 1A, the user's mobile device 100 is within the Bluetooth communication range of the network access point 140, the first printer access point 142, and the vending machine access point 144.

The four Bluetooth access point devices 140, 142, 144 and 146 and the Bluetooth mobile device 148 of Figure 1A are collectively referred to here as "server devices", for convenience. In accordance with the invention, the server devices can indicate to the user's Bluetooth client device the type of service that the server device has available by sending

service/device icon information to Bluetooth client device. This information can be a value in the class-of-device (CoD) field of a frequency hop synchronization (FHS) packet that it sends during the process of exchanging inquiry and paging packets with the Bluetooth client device. If the server device has begun by transmitting an inquiry packet, then the CoD value will be sent in its paging packet. If the server device is responding to an inquiry, then its CoD value will be in its inquiry response packet. The network access point 140 sends the FHS packet 150 to the user's mobile device 100, with a CoD value of "W" indicating by convention that the access point 140 is connected to a network 141. The first printer access point 142 sends the FHS packet 152 to the user's mobile device 100, with a CoD value of "X" indicating by convention that the access point 142 is connected to a printer 143. The vending machine access point 144 sends the FHS packet 154 to the user's mobile device 100, with a CoD value of "Y" indicating by convention that the access point 144 is connected to a vending machine 145.

The user's Bluetooth mobile device 100 of Figure 1A includes an antenna 103, keypad 104, mouse or pointer device 106, and a display screen 102. The display screen 102 presents calendar functions, mail functions, and other user applications to the user. In accordance with the invention, when the user's device 100 receives the FHS packet 150 with a CoD value = "W", a corresponding network icon 160 is displayed on the screen 102. When the user's device 100 receives the FHS packet 152 with a CoD value = "X", a corresponding printer icon 162 is displayed on the screen 102. When the user's device 100 receives the FHS packet 154 with a CoD value = "Y", a corresponding vending icon 164 is displayed on the screen 102. Signal strength indicators 170 can also be displayed on the screen 102 next to the icons 160, 162, and 164, indicating the relative signal strength of the respective FHS packets 150, 152, and 154.

The service/device icons 160, 162, and 164 in Figure 1A are each a small, graphic bitmap that is displayed on the screen 102 of the client device 100, having an appearance that serves to describe the service that the respective server device 141, 143, and 145 has to offer. Alternately, an icon can also serve to identify characteristics of the user of the server device, such as business-related or personal characteristics. In either case, the icon bitmap 160, 162,

or 164 must reside in the client device 100 in order to be displayed on its screen 102. For conventional services, such as an access point 140 for an Internet gateway or an access point 142 for a printer 143, standard icon bitmaps can be stored in an icon cache 244 in all Bluetooth client devices 100, as shown in Figure 2.

5 Figure 2 illustrates the memory and components of the user's mobile wireless device 100, according to an embodiment of the present invention. The user's device can be a Bluetooth equipped cellular telephone, for example. The memory 202 is connected by the bus 204 to the Bluetooth radio 206, the keypad 104, the central processor 210, the display screen 102, and the cellular telephone radio 208. The memory 202 stores programs that are
10 sequences of executable instructions which, when executed in the central processor 210, carry out the methods of the invention. The memory 202 includes the Bluetooth transport group 214 that includes the link controller 216, the link manager 218, and the logical link control and adaptation layer 220.

 The memory 202 of Figure 2 also includes the host controller interface (HCI) 217. In
15 systems where the higher layers are run on a host device's processor and the lower layers on a Bluetooth device, the host controller interface (HCI) 217 provides a standard interface between the higher and lower layers. The host controller interface (HCI) 217 provides event packets used by the lower Bluetooth layers 216, 218, and 220 to inform the higher layers of the host's application group 235 of changes in the lower layers. In accordance with one
20 aspect of the invention, a received CoD register 219 is included in the memory 202, which is associated with the host controller interface (HCI) 217. In the current Bluetooth specification, the receipt of an FHS packet is reported as a result over the Host Computer Interface (HCI) only after the inquiry period is over, which is 10.24 seconds. During that period, it may be possible that the client device will move out of the range of the server device. In accordance
25 with the invention, the receipt of an FHS packet is reported as a result event over the host controller interface (HCI) 217 as soon as new FHS packet arrives. The host controller interface (HCI) 217 is programmed to write the received CoD value of the FHS packet in the received CoD register 219 at the time that the FHS packet arrives. The higher layers of the

host's application group 235 can then immediately read the register 219 and process the CoD value to display the corresponding icon, as described above.

The memory 202 of Figure 2 also includes the GSM protocol group 215 to provide telephony functions for the cellular telephone circuits. The memory 202 also includes the Bluetooth middleware protocol group 224 that includes the RFCOMM, PPP, IP, UDP, and SDP program modules.

The memory 202 of Figure 2 also includes the application group 235. The application group 235 includes application programs 225 and various memory partitions. The application programs 225 can include GUI applications, wireless application protocol (WAP) programs, and various user applications such as calendar and email programs. The application programs 225 also include programs to carry out the operations of an embodiment of the present invention, as represented by the flow diagrams of Figures 3A, 3B, and 3C.

The application group 235 includes a screen buffer 240 showing the relative display positions of the icon bitmaps 160, 162, and 164 on the display screen 102. The network icon 160 has the coordinates X1,Y1. The printer icon 160 has the coordinates X2,Y2. The vending icon 164 has the coordinates X3,Y3. The application group 235 includes a cursor coordinate buffer 242 with the current values of the cursor coordinates Xc,Yc on the display screen 102. The application group 235 includes a response table buffer 246 listing the sending device address BD_ADDR of each FHS packet received.

The application group 235 includes an icon cache 244 storing the icon bitmaps 160, 162, and 164. These bit maps may have been optionally installed by the manufacturer, they may be optionally downloaded from a network service provider such as Nokia Club, or they may be optionally received from server devices such as 140, 142, etc. Icon bitmaps can be stored in the icon cache 244 of the client device 100 in association with their CoD values. New icon bit maps can be, for example, a new graphical design of an icon for an existing, assigned CoD value, such as that for a printer. The service/device icon is typically a 16 by 16 pel bitmap. A black and white icon can be stored in a 32-byte memory partition of the receiver's icon cache 244. An eight bit per pel color icon can be stored in a 256-byte memory partition of the receiver's icon cache 244. Audible tones can be played when the icon is

initially displayed. The tone string can be downloaded from the Internet service provider at the same time as is the icon bitmap and stored in the icon cache 244 of the client device 100 in association with the CoD value.

The application group 235 includes a blocking filter table buffer 248 listing those
5 CoD values that the user has selected to be ignored. The application group 235 includes a search table buffer 250 listing those CoD values that the user has selected to be searched.

The application group 235 includes a detected icon buffer 252, which is shown in greater detail in Tables A, B, and C. Tables A, B, and C show the contents of the detected icon buffer 252 for the user's device 100 located at the three respective locations in Figures

10 1A, 1B, and 1C. Tables A, B, and C have the following fields:

- [1] the name of the icon's server device (network, printer, vending, etc.);
- [2] the (X,Y) coordinates of the displayed location of the icon;
- [3] the CoD value for the icon's server;
- [4] the BD_ADDR of the icon's server;
- 15 [5] the time stamp for the icon;
- [6] the server rank for the icon (e.g., 1 = first printer, 2 = second printer);
- [7] the binary yes/no if there is a filter block for the icon;
- [8] the address of any associated server push (OPP) file stored for the icon; and
- [9] the RSSI strength of the FHS packet for the icon's server device.

Table A – Detected Icon Buffer 252 (First Location shown in Figure 1A)

Name	Screen Location	CoD Value	BD_ADDR Address	Time Stamp	Server Rank	Filter Block	Associate File	RSSI Strength
Network AP 140	X1,Y1	W	BD_ADDR1	T1	1	No	Address1	RSSI1
Printer AP 142	X2,Y2	X	BD_ADDR2	T2	1	No	Address2	RSSI2
Vending AP 144	X3,Y3	Y	BD_ADDR3	T3	1	No	Address3	RSSI3

Table B – Detected Icon Buffer 252 (Second Location shown in Figure 1B)

Name	Screen Location	CoD Value	BD_ADDR Address	Time Stamp	Server Rank	Filter Block	Associate File	RSSI Strength
Printer AP 142	X2,Y2	X	BD_ADDR2	T2	1	No	Address2	RSSI2
Vending AP 144	X3,Y3	Y	BD_ADDR3	T3	1	No	Address3	RSSI3
Printer AP 146	X2,Y2	X	BD_ADDR5	T4	2	No	Address4	RSSI4

5 Table C – Detected Icon Buffer 252 (Third Location shown in Figure 1C)

Name	Screen Location	CoD Value	BD_ADDR Address	Time Stamp	Server Rank	Filter Block	Associate File	RSSI Strength
Vending AP 144	X3,Y3	Y	BD_ADDR3	T3	1	No	Address3	RSSI3
Printer AP 146	X2,Y2	X	BD_ADDR5	T4	1	No	Address4	RSSI4
Mobile Device 148	X1,Y1	Z	BD_ADDR5	T5	1	No	Address5	RSSI5

When the icon 160, for example, is initially displayed on the screen 102 of the client device 100, a partition is opened in a detected icon buffer 252 shown in Table A, to store the status of the icon. Table A illustrates the detected icon buffer 252 for the first location of the

user's mobile device 100 shown in Figure 1A. A time stamp value is recorded at the start of the display, in association with the received CoD value. Periodically, the time stamp value is compared with the time of day clock of the client device. When the time stamp is older than a threshold value called the lease-time (30 seconds, for example), the icon is removed from the screen 102 of the device 100 and its partition is closed in the detected icon buffer 252. During the period that the icon remains actively displayed on the screen 102 of the device 100, if additional FHS packets 150 are received from the same server access point device 140 containing the same CoD value, the time stamp value is updated in the buffer 252 to the current time of day value. This enables retaining the display of an icon for a server device 140 that remains in the vicinity of the client device 100. As soon as the client device 100 moves out of Bluetooth communications range of the server device 140 and no more FHS packets 150 are received, then after the expiration of the lease-time, the icon 160 is removed from the screen 102 of the user's device 100. Optionally, if the icon is annoying, the user can manually remove the icon from the display at an earlier time, if desired.

If the client device 100 has initiated a connection with the server device 140, for example, to carry out SDP searching or other operations, the client device 100 assumes a temporary master role in its new piconet. Most server devices 140, for example, are programmed to request a master/slave role switch if the client device 100 has initiated the connection. Once the client 100 changes to a slave role, it can only remain in its piconet, either as an active slave or a parked slave. (It is possible for the slave to switch between several piconets, when timing information is known.) Thus, the client device 100 is programmed to terminate such connections after completing any necessary SDP searching or other operations. In order to continue displaying icons of server devices 140, for example, within communications range, the client device 100 continues to operate in the inquiry and page scanning modes, detecting the FHS paging packets 150 and FHS inquiry response packets 150 from server devices 140, for example, in its vicinity. When the FHS packets 150 from a given server device 140, for example, are no longer received, then the lease-time interval is started in preparation to remove the corresponding icon 160 from the display screen 102 of the device 100.

Figure 1B shows the same wireless network as Figure 1A, but with the mobile client device having moved out of the range of the network access point and into range with a second printer access point. Table B illustrates the detected icon buffer 252 for the second location of the user's mobile device 100 shown in Figure 1B. Table B shows that the server partition for the network access point 140 is removed from the detected icon buffer 252 since the user's device 100 has moved out of range of the access point 140 and no longer receives FHS packets 150. Correspondingly, the screen 102 of the user's device 100 in Figure 1B shows that the icon 160 has been removed. Table B also shows that a new server partition for the second printer access point 146 is added to the detected icon buffer 252 since the user's device 100 has moved into range of the access point 146 and is now receiving FHS packets 156.

The detected icon buffer 252 also stores the Bluetooth device address BD_ADDR of the server device 140, for example, in association with the received CoD value "W". The i th icon in the detected icon buffer 252 has a device address BD_ADDR_i and a CoD value CoD_i . The detected icon buffer 252 also stores the (x,y) coordinates of the displayed position of the icon with respect to the origin of coordinates on the screen 102, in association with the received CoD value. The i th icon on the screen 102 has a position (x_i,y_i) associated in the detected icon buffer 252 with the its CoD value CoD_i . A cursor is also displayed on the screen 102, whose position is represented by (X_c,Y_c) coordinates with respect to the origin of coordinates on the screen 102. A pointing device, such as a mouse or a track ball 106 controls the displayed position (X_c,Y_c) of the cursor on the screen 102. When the user presses the mouse button, the (X_c,Y_c) coordinates of the cursor are compared with the (x,y) coordinates of each icon in the detected icon buffer 252. If the cursor coordinates (X_c,Y_c) are within range of the i th icon coordinates (x_i,y_i) , then the i th icon is selected. The client device 100 can be programmed to access the device address BD_ADDR_i to complete the connection with the corresponding server device 140, for example, and exchange further messages with it. The further messages can include the client device 100 sending an SDP request to the server device 140, for example, to find out information about other files or services, followed by accessing a file from the server device 140.

Where the server device 140, for example, has initiated the connection by sending inquiry and paging packets 150 to the client device 100, the server device 140 may use the Bluetooth object push profile (OPP) to push an unsolicited file, such as a business card, to the client device 100. The client device 100 is programmed to store the unsolicited file in a
5 unsolicited file buffer in the memory 202 of Figure 2, associated with the CoD and the BD_ADDR of the sending server device 140, for example,. The detected icon buffer 252 opens a partition for the server device 140 and stores an indication that there is an associated file in the unsolicited file buffer. When the user presses the mouse button 106, the (X,Y) coordinates of the cursor are compared with the (x,y) coordinates of each icon in the detected
10 icon buffer 252. If the cursor coordinates (X,Y) are within range of the ith icon coordinates (xi,yi), then the ith icon is selected. The client device 100 can be programmed to check if there is an associated file in the unsolicited file buffer. If there is, that file is accessed and displayed on the screen 102 of device 100. This feature enables the server device 140, for example, to send more informative messages to the client device 100, along with the CoD of
15 the icon bitmap 160.

The detected icon buffer 252 also stores a server rank value, in association with the received CoD value. The first server device such as the printer access point 142 having a given CoD type to be entered into the detected icon buffer 252, will be assigned the a server rank value of "1". Two different server devices, such as printer access points 142 and 146,
20 having different device addresses BD_ADDR, can offer the same printer service and will transmit the same CoD value. The client device 100 is programmed to identify this circumstance. The second server device 146 of the same CoD type to be entered into the detected icon buffer 252 will be assigned a server rank value of "2", and so on. Instead of placing two identical icon bitmaps on the screen 102 of the user's device 100, the first
25 displayed icon 162 will have appended to it a numeral indicating how many of that type of server device are in the vicinity. The displayed icon 162 in Figure 1B is referred to as a multi-icon and has the numeral "2" appended to it.

The detected icon buffer 252 also stores a received signal strength indication (RSSI) for each respective server device 140, 142, 144, etc. listed in the detected icon buffer 252.

Where there are two or more server devices 142 and 146 in the detected icon buffer 252, having a given CoD type, the client device 100 is programmed to rank them by their RSSI values. The server rank values of those servers 142 and 146 having the same type CoD value are reassigned, in accordance with the RSSI for each server device. The server device 142 with the strongest RSSI will be reassigned a server rank value of "1", and weaker server devices 146 will be assigned consecutively greater values. When the cursor coordinates (X,Y) are within range of the multi-icon's coordinates (xi,yi), then the multi-icon is selected. The client device 100 can be programmed to access the device address BD_ADDRi of the server device 142 with the strongest RSSI to complete the connection with the corresponding server device 142 and exchange further messages with it. As individual server devices move out of communication range of the client device 100, the respective partition in the detected icon buffer 252 is cleared, and the server rank values are reassigned, as needed.

The RSSI value can be displayed as a signal strength indicator 170 beneath each icon 160, 162, and 164 shown on the screen 102 in Figure 1A, thereby allowing the user to select server devices having better link quality. Alternately, "color bars" can be presented to represent RSSI values, such as green = good RSSI, yellow = still acceptable, and red = data transmission is not possible.

The user can enter CoD values for types of server devices to be ignored, such as advertisement broadcasting server devices and certain types of vending machine server devices. These prohibited CoD values are stored in a blocking filter buffer 248 in the client device 100 of Figure 2. When a CoD value is received in an FHS packet, it is compared with the prohibited CoD values in the blocking filter buffer 248 and if there is a match, no entry is made in the detected icon buffer 252, thereby ignoring the prohibited server devices.

There are up to eleven bits available in the CoD field for assignment as service descriptions, yielding up to 2048 different possible services that can be represented. Some subset, for example the six bits of the CoD minor device class sub-field, can be used to assign up to 64 service description values.

When the icon serves to identify characteristics of the user of the server device, such as business-related or personal characteristics, the user of the sending device has the ability to

select the icon to be sent. The server device can be manually reset by its user to indicate in its class-of-device (CoD) field of its FHS packet, that particular types of service/device icon information are available, such as a CoD value of "Z" representing "dating/match-making" information. Figure 1C shows the same wireless network as Figures 1A and 1B, but with the mobile client device 100 having further moved out of the range of both the network access point 140 and the first printer access point 142, and into range with a second mobile device 148. The second mobile device 148 can be a Bluetooth equipped cellular telephone that has been selectively programmed by its user to transmit a CoD value of "Z" in its FHS packets 158 indicating a "dating/match-making" status for its user. In this example, the icon 168 shown in Figure 1C, is a standard icon that is stored in the icon cache 244 of the client device 100 of Figure 2. Table C illustrates the detected icon buffer 252 for the third location of the user's mobile device 100 shown in Figure 1C. Table C shows that the server partition for the printer access point 142 is removed from the detected icon buffer 252 since the user's device 100 has moved out of range of the access point 142 and no longer receives FHS packets 152. Correspondingly, the screen 102 of the user's device 100 in Figure 1C shows that the icon 162 no longer indicates that there are two printers being detected. Table C also shows that a new server partition for the mobile device 148 is added to the detected icon buffer 252, since the user's device 100 has moved into range of the mobile device 148 and is now receiving FHS packets 158.

The client device 100 can also be programmed to search for specified class-of-device (CoD) values received from a sending device 148, for example. The client device 100 can match the CoD values received in FHS packets 158, with an entry in a search list in the search table buffer 250 of the client device 100. For example, the client device 100 can be programmed by its user to search for that particular class-of-device (CoD) value "Z" for "dating/match-making" among those CoDs received in FHS packets. When a match is found, the client device 100 is programmed to display the icon bitmap 168 and sound an alarm tone.

In an alternate embodiment of the invention, the service/device icon information can be sent after a connection has been made with the client device 100, as part of a Service Discovery Protocol (SDP) response packet. The client device 100 can search for interesting

services using the Service Discovery Protocol (SDP). When interesting services are found, their service records are accessed by the client device 100. Icons can be included in the service records as an IconURL parameter. Icons can be loaded using the hypertext transfer protocol (http). If there is no icon included in the service record of an interesting service, a
5 default icon for its type may be displayed, as identified by the CoD value of the sending device 140, for example.

The process of retrieving the icon bitmap in the Service Discovery Protocol (SDP) of the alternate embodiment, starts by examining the public browse root of the SDP service registry in the server device 140, for example. It then follows the hierarchy out to service
10 classes which are the branches of the tree, and from there to the leaf nodes, where individual services are described in service records. To get specific information about the icon bitmap, the client device 100 and the server device 140, for example, exchange messages carried in SDP packets. There are two types of SDP packets, the SDP Service Search Attribute Request packet and the SDP Service Search Attribute Response packet. The SDP Request packet
15 carries the SDP Service Search Attribute Request, which includes a service search pattern and an attribute ID list. The service search pattern is the description of the desired service records containing the icon bitmap information in the server device. The server device specifically searches its registry of for the attribute containing information about the icon bitmap. The server device responds with the service handle of the icon bitmap or a pointer to
20 the icon bitmap. The service handle identifies the service record containing the icon bitmap. Optionally, the service record contains a pointer to the icon bitmap. When the client device 100 receives the icon bitmap, it is displayed on the screen 102. Optionally, it can also be stored in the client's icon cache 244.

The application programs 225 of Figure 2 include programs in the user's device 100 to
25 carry out the operations of an embodiment of the present invention, as represented by the flow diagrams of Figures 3A, 3B, and 3C. The entry point "A" of the program of Figure 3A starts with step 302, to check the receive buffer in the user's device 100 for any FHS packets, such as packet 150 from the network access point 140 of Figure 1A. The receipt of an FHS packet is reported as a result event over the host controller interface (HCI) 217 as soon as

new FHS packet arrives. The host controller interface (HCI) 217 is programmed to write the received CoD value of the FHS packet in the received CoD register 219 at the time that the FHS packet arrives. The higher layers of the host's application group 235 can then immediately read the register 219 and process the CoD value to display the corresponding icon. Step 304 determines if an FHS packet has been received. If it has not been received, then the program flows to a loop including steps 306, 308, and 310 to age the timestamp values in the detected icon buffer 252. Step 306 checks the age of each server partition in the detected icon buffer 252. Step 308 determines if the difference between the time of day (TOD) and the timestamp is greater than the lease-time (e.g., 30 seconds) and if it is, then it removes the icon from the screen and clears the server partition in the detected icon buffer 252. Step 310 updates all the remaining timestamps to the current time-of-day (TOD).

If step 304 of Figure 3A determines that an FHS packet has been received, then the program flows to step 312 to measure the RSSI strength and the time-of-day of the receipt of the FHS packet. The program then flows to step 314 to determine if the FHS packet has a new BD_ADDR sending device address. If it does not have a new device address, then the program flows to step 326 in Figure 3B. Step 326 updates the timestamp in detected icon buffer 252. Step 328 updates the RSSI in the detected icon buffer 252. Step 330 displays the updated RSSI indicator 170. Step 332 revises the server rank for servers with the same cod, based on the updated RSSI. The program then flows to the entry point "A" in Figure 3A.

If step 314 in Figure 3A determines that the FHS packet does not have a new BD_ADDR sending device address, then the program flows to step 316 in Figure 3B. Step 316 opens a new server partition in detected icon buffer 252 and stores the BD_ADDR; CoD; timestamp; and RSSI for the received FHS packet. Step 318 checks the blocking filter table 248 to determine if the CoD is has been selected by the user as prohibited and therefore to be blocked. Step 320 determines if the CoD is blocked. If it is, the program flows to step 322 to store the blocked indication in the detected icon buffer 252 and then to return to the entry point "A" in Figure 3A. No corresponding icon is displayed on the screen 102 and the sending server device is effectively ignored.

If step 320 determines that the CoD is not blocked, then the program flows to step 324. Step 324 determines if an associated file (e.g. a push file) has been received from the same sending server device. If it has, then the program stores the associated file in memory 202 and stores the associated file's address in the detected icon buffer 252. The program then
5 flows to step 335 of Figure 3C. Step 335 determines if the CoD is the same as that for another server currently represented in the detected icon buffer 252. If the CoD is new and not the same as another in the detected icon buffer 252, then the program flows to step 336. Step 336 accesses an icon from the icon cache 244 corresponding to the CoD. Step 338 displays the icon on the screen 102 at the X,Y coordinate. Step 340 stores the X,Y
10 coordinate in the detected icon buffer 252. Step 342 displays the RSSI indicator 170 indicating the strength of the received FHS packet. The program then returns to the entry point "A" in Figure 3A.

If step 335 of Figure 3C determines that the CoD is not new, but is the same as that for another server currently represented in the detected icon buffer 252, then the program
15 flows to step 344. Step 344 displays the multi-icon count near existing icon, such as the value "2" displayed near the printer icon 162 in Figure 1B. Then step 345 determines if the RSSI is less than that for another server currently represented in the detected icon buffer 252. If the RSSI is not less, but is the greatest, then the program flows to step 346. Step 346 assigns the highest server rank of "1" to the received FHS packet. Then step 348 revises the
20 server ranks of the other servers having the same CoD, based on the RSSI. Step 350 stores the X,Y coordinate of the icon in the detected icon buffer 252. Step 352 displays the RSSI indicator 170 indicating the strength of the received FHS packet. The program then returns to the entry point "A" in Figure 3A.

If step 345 of Figure 3C determines that the RSSI is less than that for another server
25 currently represented in the detected icon buffer 252, then the program flows to step 354. Step 354 assigns a lower server rank greater than "1" to the received FHS packet. Step 356 stores the X,Y coordinate of other icon in detected icon buffer 252, corresponding to the other server currently represented having the same CoD. The program then returns to the entry point "A" in Figure 3A.

The resulting invention rapidly gives the user notice of those Bluetooth devices within communication range, and yet does not inundate the user with information about those Bluetooth devices that he/she wishes to ignore.

5 Although a specific embodiment of the invention has been disclosed, those having skill in the art will understand that changes can be made to that specific embodiment without departing from the spirit and the scope of the invention.

CLAIMS

What is claimed is:

1. A method to indicate a service available from a Bluetooth server device, comprising:

5 receiving at a Bluetooth client device, icon information from a Bluetooth server device characterizing the server device;

displaying at the client device an icon corresponding to the icon information while within communications range of the server device; and

10 removing the display of the icon after a predetermined time interval following leaving the communications range of the server device.

2. The method of claim 1, wherein said receiving step further comprises: receiving the icon information as a value in a class-of-device (CoD) field of a frequency hop synchronization (FHS) packet from the server device.

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3. The method of claim 2, wherein said receiving step further comprises: receiving from the server device, the CoD value in a paging packet.

4. The method of claim 2, wherein said receiving step further comprises: 20 receiving from the server device, the CoD value in an inquiry response packet.

5. The method of claim 1, wherein said receiving step further comprises: receiving the icon information as a value in a Service Discovery Protocol (SDP) response packet.

25

6. The method of claim 1, wherein said displaying step further comprises: displaying a graphic bitmap on a screen of the client device, having an appearance that serves to describe a service that the server device has to offer.

7. The method of claim 1, wherein said displaying step further comprises:
displaying a graphic bitmap on a screen of the client device, having an appearance
that serves to identify characteristics of a user of the server device.

5 8. The method of claim 1, which further comprises:
storing the icon in the client device.

9. The method of claim 8, which further comprises:
downloading new icons from a network service provider and storing them in
10 association with their icon information.

10. The method of claim 9, which further comprises:
downloading from a network service provider, representations of audible tones to be
played when an icon is displayed, and storing the representations of audible tones in
15 association with the icon information.

11. The method of claim 1, wherein said receiving step further comprises:
receiving the icon information as a value in a class-of-device (CoD) field of a
frequency hop synchronization (FHS) packet from the server device;
20 reporting the CoD value over a host controller interface (HCI) when the FHS packet is
received; and
processing the CoD value to display the corresponding icon.

12. The method of claim 1, wherein said receiving step further comprises:
25 receiving the icon information using an SDP Service Search Request packet sent to
the server device.

13. The method of claim 1, wherein said displaying step further comprises:
selectively not displaying the icon based on user-defined prohibited values of the icon
information.

5 14. The method of claim 1, which further comprises:
storing the icon information in a detected icon buffer.

15. The method of claim 14, wherein said storing the icon information further
comprises:
10 storing a time stamp value at the start of the display of the icon;
periodically comparing the time stamp value with a time of day clock of the client
device; and
removing the display of the icon when the time stamp is older than a threshold lease-
time value.

15 16. The method of claim 15, wherein said storing the icon information further
comprises:
updating the time stamp value when additional signals are received from the server
device; and
20 retaining the display of the icon for the server device as long as it remains in
communication range of the client device.

17. The method of claim 1, wherein said storing the icon information further
comprises:
25 enabling the user to selectively block the icon from display.

18. The method of claim 14, wherein said storing the icon information further
comprises:
storing a Bluetooth device address BD_ADDR of the server device;

storing (x,y) coordinates of a displayed position of the icon with respect to an origin of coordinates on the screen;

representing a position of a cursor displayed on the screen by (X,Y) coordinates with respect to the origin of coordinates on the screen;

5 comparing the (X,Y) coordinates of the cursor with the (x,y) coordinates of an icon;

determining that the cursor coordinates (X,Y) are within range of an icon's coordinates to select the icon; and

accessing the device address BD_ADDR corresponding to the selected icon to communicate with the server device.

10

19. The method of claim 18, which further comprises:

sending an SDP request to the server device to determine information about associated files; and

accessing the associated file from the server device.

15

20. The method of claim 1, which further comprises:

receiving an unsolicited file from the server device;

storing the unsolicited file;

storing (x,y) coordinates of a displayed position of the icon with respect to an origin

20 of coordinates on the screen;

representing a position of a cursor displayed on the screen by (X,Y) coordinates with respect to the origin of coordinates on the screen;

comparing the (X,Y) coordinates of the cursor with the (x,y) coordinates of an icon;

determining that the cursor coordinates (X,Y) are within range of an icon's

25 coordinates to select the icon; and

accessing the unsolicited file corresponding to the selected icon to display information from the file on the screen.

21. The method of claim 14, wherein said storing the icon information further comprises:

storing a first server rank value for a first server device of a given type icon information;

5 identifying a second server device having a different device address and said given type of icon information;

storing a second server rank value for the second server device; and

displaying a single icon on the screen representing the first and second server devices.

10 22. The method of claim 21, which further comprises:

displaying in association with the single icon, the number of server devices detected having the given type icon information.

23. The method of claim 21, which further comprises:

15 displaying in association with the single icon, a received signal strength indication (RSSI) of one of the server devices detected having the given type icon information.

24. The method of claim 21, which further comprises:

20 displaying in association with the single icon, a received signal strength indication (RSSI) of one of the server devices detected having the given type icon information and having the strongest RSSI.

25. The method of claim 1, which further comprises:

storing a received signal strength indication (RSSI) for each server device detected;

25 ranking the detected server devices by the respective RSSI values; and

displaying a value representing the RSSI value for corresponding icons displayed on the screen.

26. The method of claim 1, which further comprises:
storing prohibited icon information values;
comparing received icon information values with the prohibited icon information
values; and
5 ignoring server devices having the prohibited icon information values.

27. The method of claim 1, wherein said receiving step further comprises:
receiving the icon information as a value in a minor device class sub-field of a class-
of-device (CoD) field of a frequency hop synchronization (FHS) packet from the server
10 device.

28. The method of claim 1, which further comprises:
storing specified icon information values to be searched;
comparing received icon information values with the specified icon information
15 values;
displaying an icon bitmap when a match is found between a received icon information
value and a specified icon information value.

29. The method of claim 28, which further comprises:
20 sounding an alarm tone when a match is found.

30. The method of claim 28, which further comprises:
sending a message to the server device when a match is found between a received
icon information value and a specified icon information value.

25 31. An apparatus to indicate a service available from a Bluetooth server device,
comprising:
a receiver in a Bluetooth client device, for receiving icon information from a
Bluetooth server device characterizing the server device;

a display in the Bluetooth client device, for displaying an icon corresponding to the icon information while within communications range of the server device; and

a processor in the Bluetooth client device, for removing the display of the icon after a predetermined time interval following leaving the communications range of the server device.

32. The apparatus of claim 31, wherein said icon information is a value in a class-of-device (CoD) field of a frequency hop synchronization (FHS) packet from the server device.

33. The apparatus of claim 32, wherein said icon information is a CoD value in a paging packet.

34. The apparatus of claim 32, wherein said icon information is a CoD value in an inquiry response packet.

35. The apparatus of claim 31, wherein said icon information is a value in a Service Discovery Protocol (SDP) response packet.

36. The apparatus of claim 31, wherein said icon is a graphic bitmap having an appearance that serves to describe a service that the server device has to offer.

37. The apparatus of claim 31, wherein said icon is a graphic bitmap having an appearance that serves to identify characteristics of a user of the server device.

38. The apparatus of claim 31, which further comprises:
a buffer storing the icon in the client device.

39. The apparatus of claim 38, which further comprises:
said buffer storing new icons received by the receiver from a network service provider.

5 40. The apparatus of claim 38, which further comprises:
said buffer storing representations of audible tones to be played when an icon is displayed.

41. A computer program product to indicate a service available from a Bluetooth
10 server device, comprising:
a computer readable medium;
program code in said computer readable medium for receiving at a Bluetooth client device, icon information from a Bluetooth server device characterizing the server device;
program code in said computer readable medium for displaying at the client device an
15 icon corresponding to the icon information while within communications range of the server device; and
program code in said computer readable medium for removing the display of the icon after a predetermined time interval following leaving the communications range of the server device.

20 42. The computer program product of claim 41, wherein said icon information is a value in a class-of-device (CoD) field of a frequency hop synchronization (FHS) packet from the server device.

25 43. The computer program product of claim 42, wherein said icon information is a CoD value in a paging packet.

44. The computer program product of claim 42, wherein said icon information is a CoD value in an inquiry response packet.

45. The computer program product of claim 41, wherein said icon information is a value in a Service Discovery Protocol (SDP) response packet.

46. The computer program product of claim 41, wherein said icon is a graphic
5 bitmap having an appearance that serves to describe a service that the server device has to offer.

47. The computer program product of claim 41, wherein said icon is a graphic
10 bitmap having an appearance that serves to identify characteristics of a user of the server device.

48. The computer program product of claim 41, which further comprises:
program code in said computer readable medium for storing the icon in the client
15 device.

49. The computer program product of claim 48, which further comprises:
program code in said computer readable medium for downloading new icons from a
network service provider and storing them in association with their icon information.

20 50. The computer program product of claim 48, which further comprises:
program code in said computer readable medium for downloading from a network
service provider, representations of audible tones to be played when an icon is displayed, and
storing the representations of audible tones in association with the icon information.

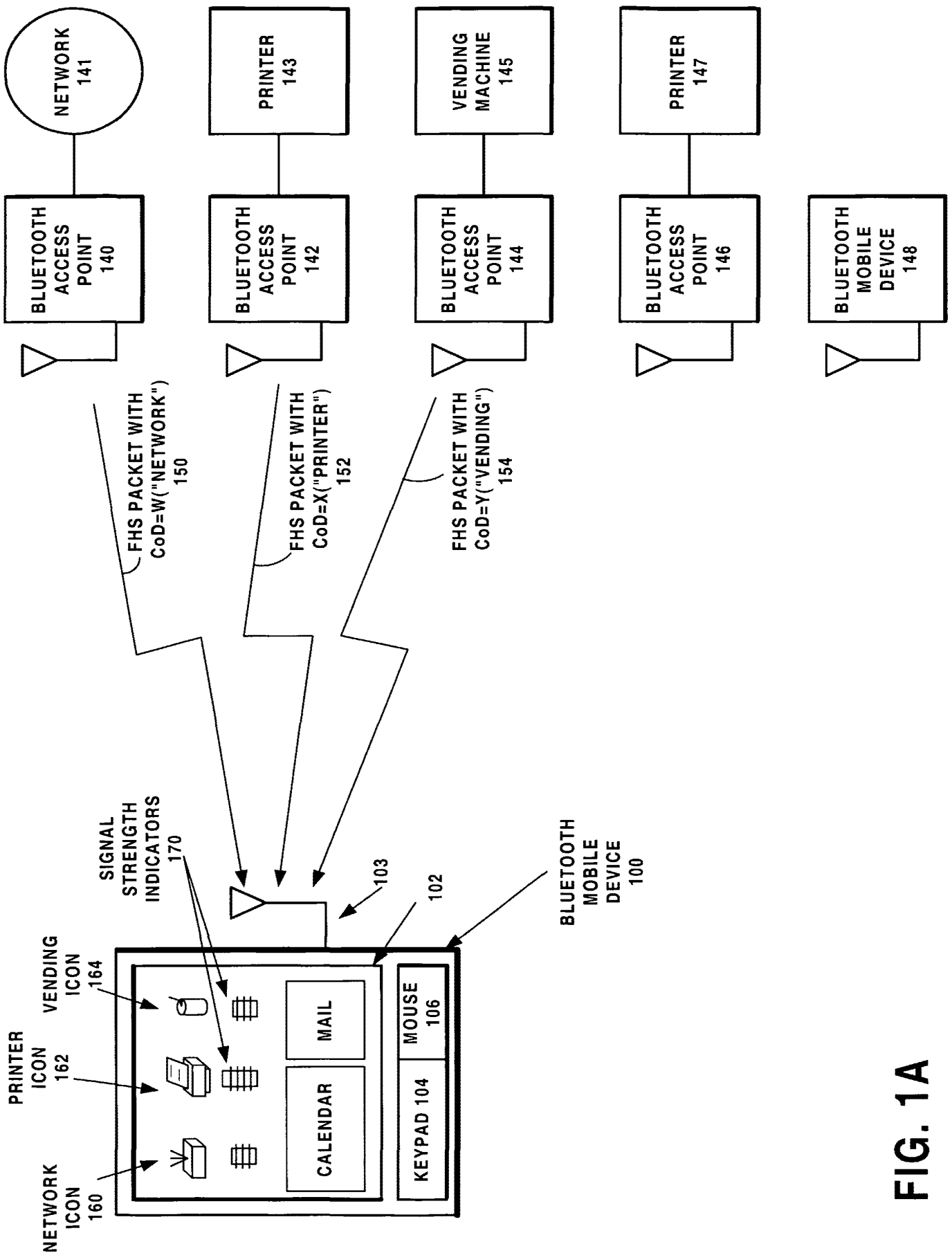


FIG. 1A

2/7

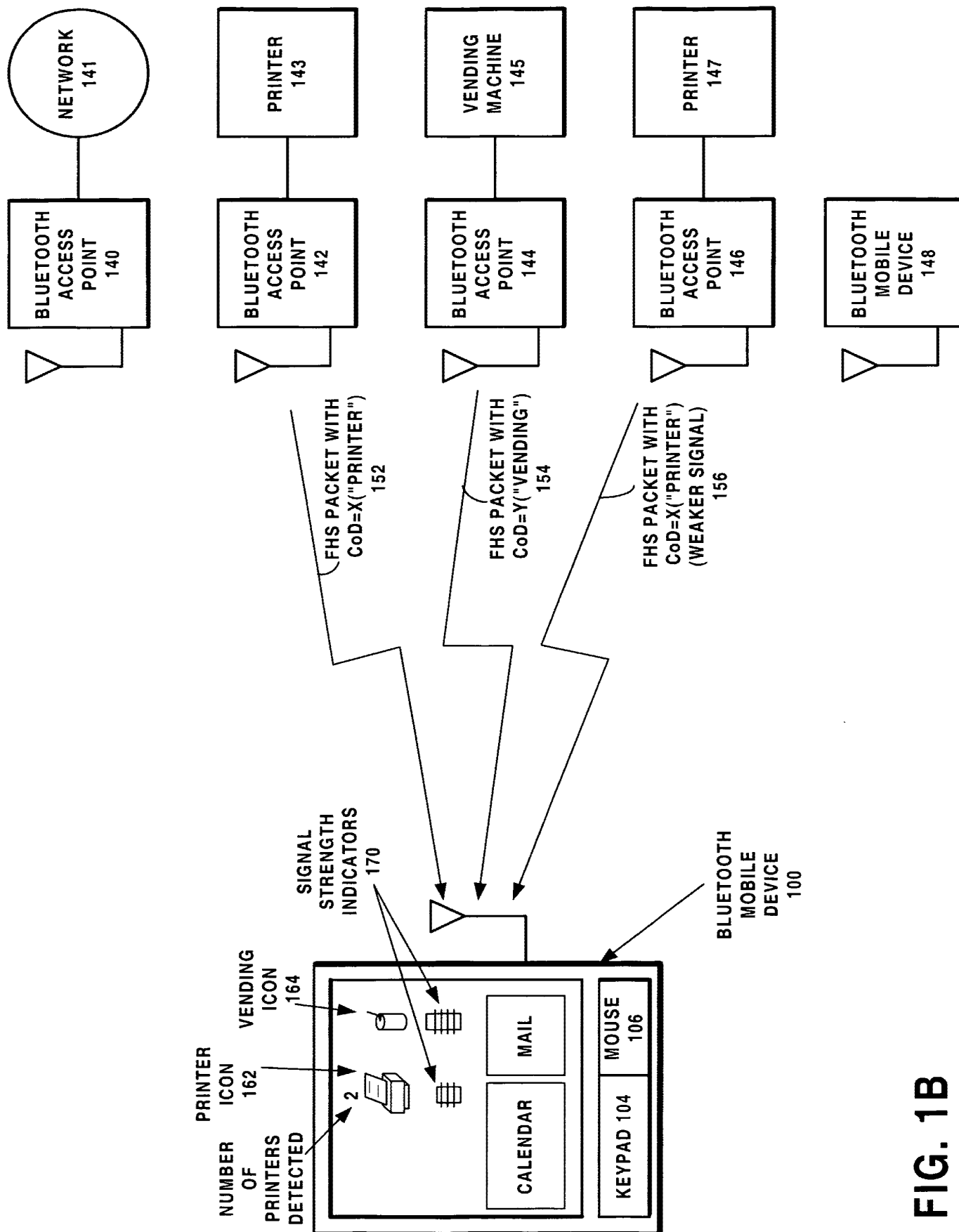
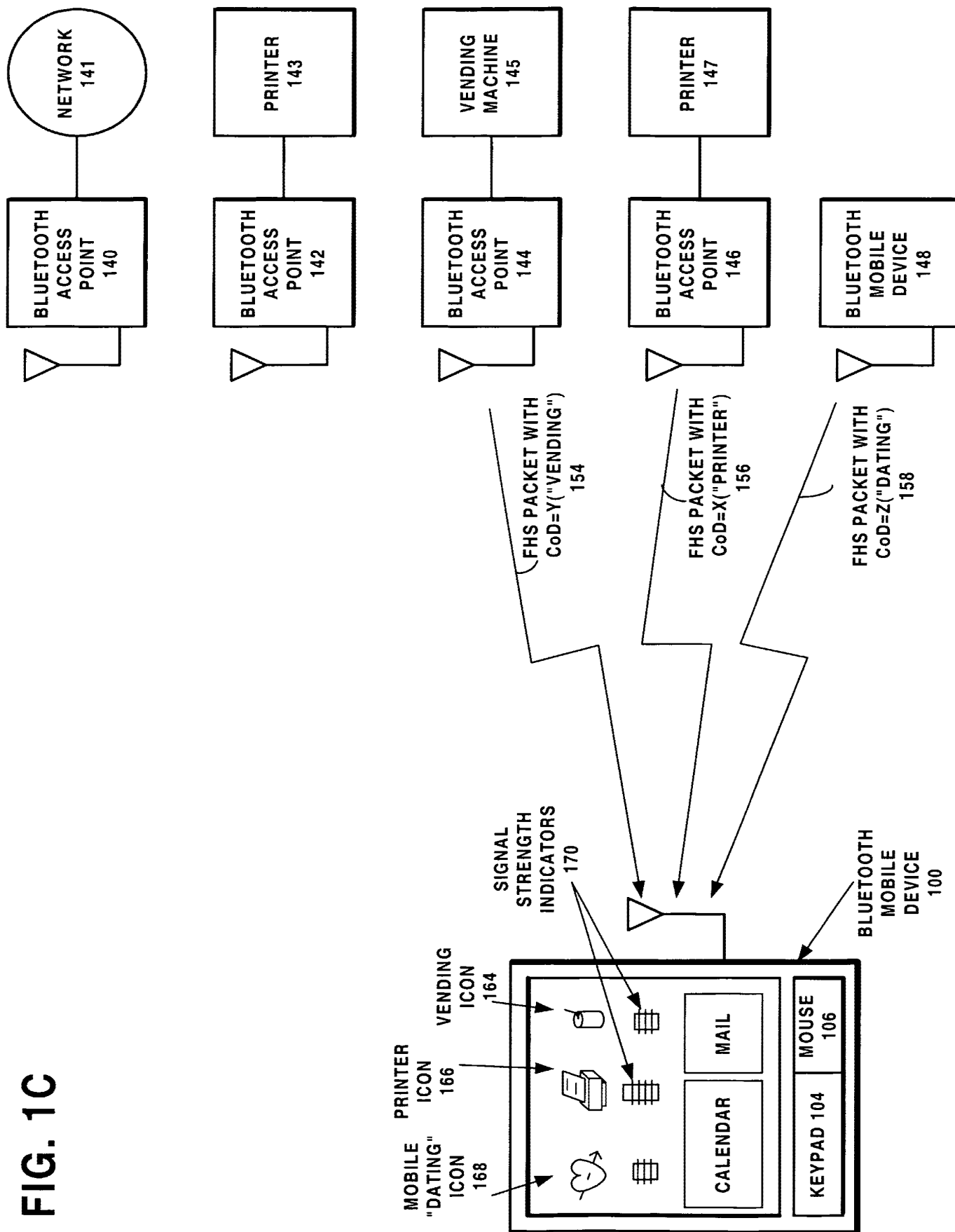


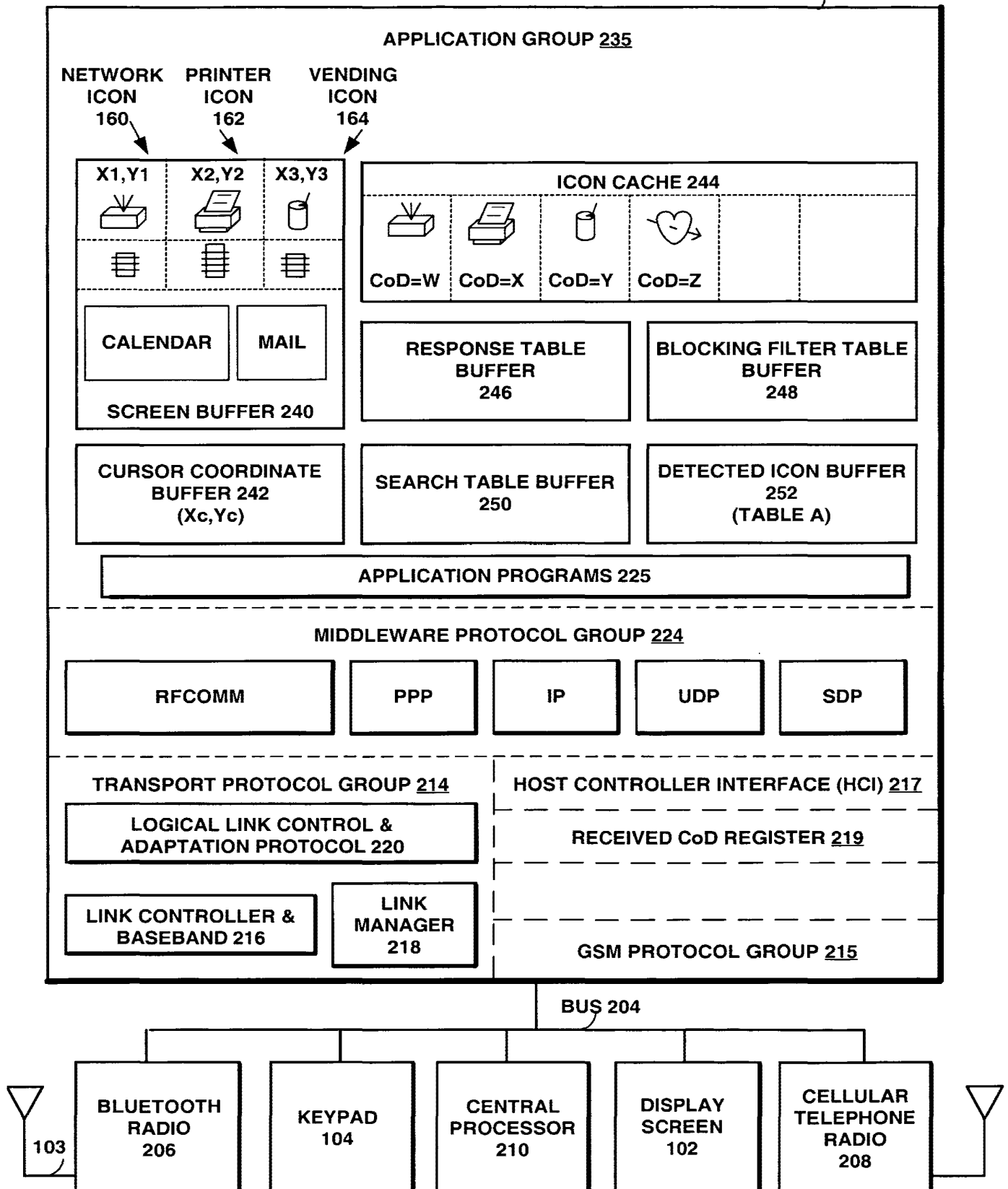
FIG. 1B

3/7

FIG. 1C



4/7

FIG. 2**MOBILE WIRELESS DEVICE 100****MEMORY 202**

5/7

FIG. 3A

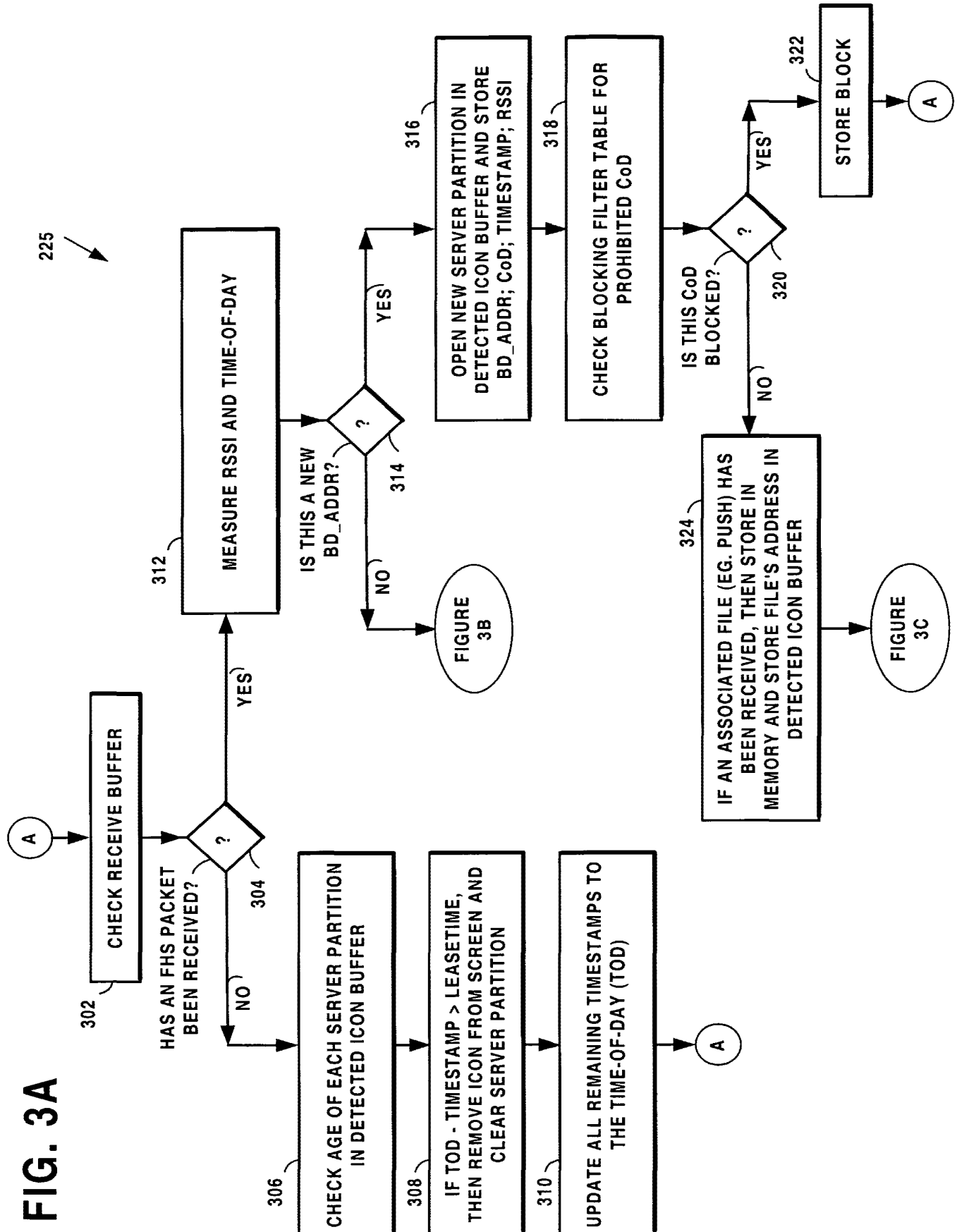
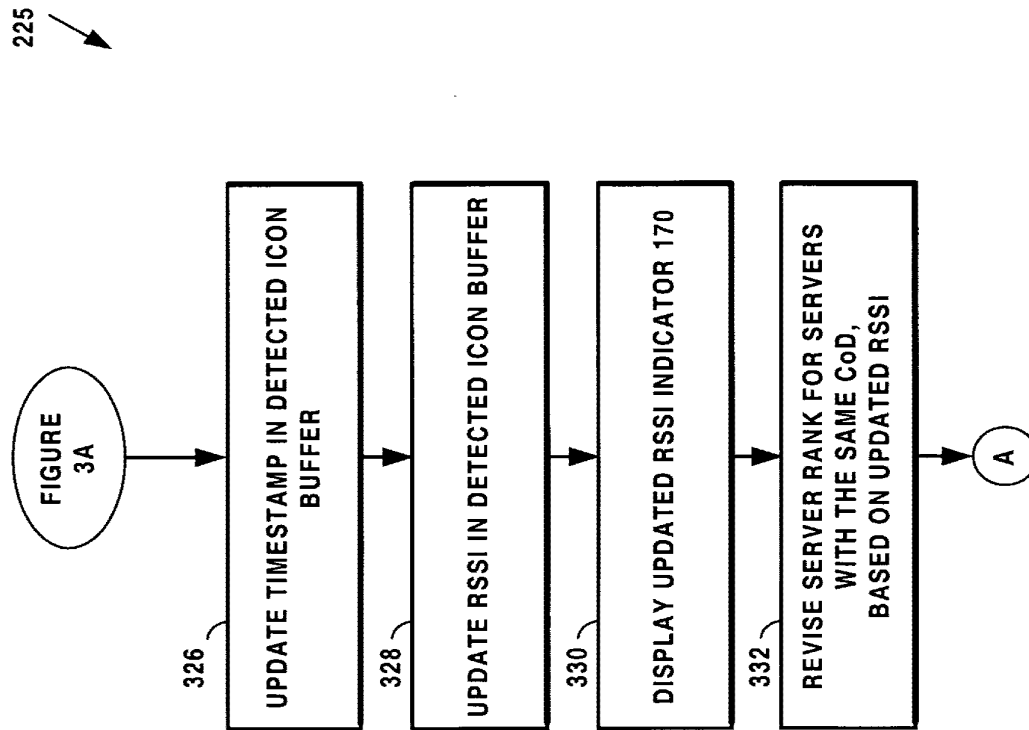
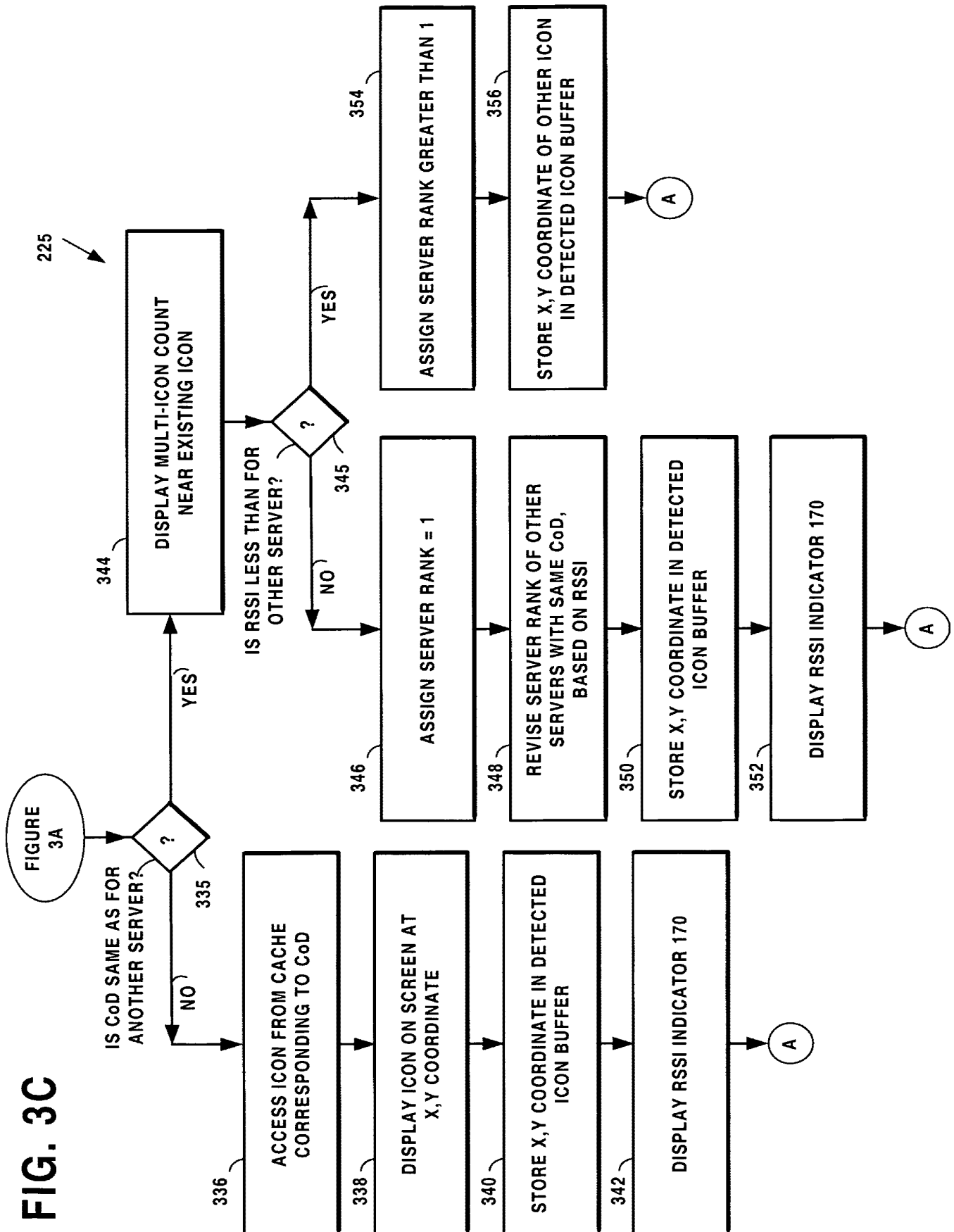


FIG. 3B



7/7



FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. IPH-2-2235US02	SERIAL NO. 12/644,948
	APPLICANT Carlton et al.	
	FILING DATE December 22, 2009	GROUP 2617

U.S. PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
		5,544,321	08/1996	Theimer et al.				
		2006/0293063	12/2006	Corrion				
		2007/0177729	08/2007	Reznik et al.				
FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
		1513262	03/2005	EP				
		03/081373	10/2003	WO				
OTHER DOCUMENTS								
EXAMINER INITIAL		DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)						
		HAZAS ET AL., "A Relative Positioning System for Co-located Mobile Devices," International Conference on Mobile Systems, Proceedings of the 3 rd International Conference on Mobile Systems, Applications and Services, Seattle, Washington, 2005, pages 177-190						

EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Carlton et al.

Application No.: 12/644,948

Confirmation No.: 7345

Filed: December 22, 2009

For: DATA TRANSFER BETWEEN
WIRELESS DEVICES

Group: 2617

Examiner: Not Yet Known

Our File: IPH-2-2235US02

Date: May 12, 2010

INFORMATION DISCLOSURE STATEMENT

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

Dear Examiner:

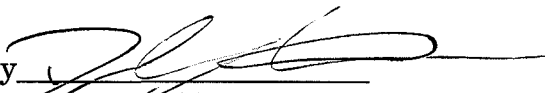
Further to Applicants' Duty of Disclosure pursuant to 37 C.F.R. §1.56, Applicants wish to bring to the Examiner's attention the material cited on the enclosed Form PTO-1449.

This application claims priority from Provisional Application No. 61/140,126 filed on December 23, 2008.

It is respectfully requested that the Examiner consider these documents and return an initialed copy of the Form PTO-1449 indicating his consideration of the cited materials.

Respectfully submitted,

Carlton et al.

By 
Darryl W. Shorter
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United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

DWS/mbs

Electronic Acknowledgement Receipt

EFS ID:	7759994
Application Number:	12644948
International Application Number:	
Confirmation Number:	7345
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES
First Named Inventor/Applicant Name:	Alan G. Carlton
Customer Number:	24374
Filer:	Robert Solomon/Carey Kulp
Filer Authorized By:	Robert Solomon
Attorney Docket Number:	IPH-2-2235US02
Receipt Date:	07-JUN-2010
Filing Date:	22-DEC-2009
Time Stamp:	15:45:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	ids.pdf	52414 3034c17f4bd4780845af68cfe1bb3cb7d9e6f5ac	no	2

Warnings:

Information:

2	Information Disclosure Statement (IDS) Filed (SB/08)	pto1449.pdf	47479 6cf8158b8e55ca1479f8e5cd7d3ff7311a762474	no	1
Warnings:					
Information:					
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Total Files Size (in bytes):				99893	
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FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. IPH-2-2235US02	SERIAL NO. 12/644,948
	APPLICANT Carlton et al.	
	FILING DATE December 22, 2009	GROUP 2617

U.S. PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
		5,544,321	08/1996	Theimer et al.				
		2006/0293063	12/2006	Corrion				
	*	2007/0146347	06/2007	Rosenberg				
		2007/0177729	08/2007	Reznik et al.				
FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
		1 513 262	03/2005	EP				
		03/081373	10/2003	WO				
OTHER DOCUMENTS								
EXAMINER INITIAL		DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)						
		HAZAS ET AL., "A Relative Positioning System for Co-located Mobile Devices," International Conference on Mobile Systems, Proceedings of the 3 rd International Conference on Mobile Systems, Applications and Services, Seattle, Washington, 2005, pages 177-190						

EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Carlton et al.

Application No.: 12/644,948

Confirmation No.: 7345

Filed: December 22, 2009

For: DATA TRANSFER BETWEEN
WIRELESS DEVICES

Group: 2617

Examiner: Dwayne D. Bost

Our File: IPH-2-2235US02

Date: June 7, 2010

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment (via EFS)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Examiner:

Further to Applicants' Duty of Disclosure pursuant to 37 C.F.R. §1.56, Applicants wish to bring to the Examiner's attention the material cited on the enclosed Form PTO-1449.

The listed references include references previously cited in this application. Newly cited documents are indicated by an asterisk (*) on the enclosed Form PTO-1449. Pursuant to 37 C.F.R. §1.98(a)(2)(ii), copies of the newly cited U.S. publications and/or patent documents have not been included.

This Application claims priority from Provisional Application No. 61/140,126, which was filed on December 23, 2008.

It is respectfully requested that the Examiner consider these documents and return an initialed copy of the Form PTO-1449 indicating his consideration of the cited materials.

Respectfully submitted,

Carlton et al.

By_/Darryl W. Shorter/_____
Darryl W. Shorter
Registration No. 47,942
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

DWS/pck
Enclosure



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/644,948	12/22/2009	Alan G. Carlton	IPH-2-2235US02

CONFIRMATION NO. 7345

PUBLICATION NOTICE



OC000000042377792

24374
VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

Title:DATA TRANSFER BETWEEN WIRELESS DEVICES

Publication No.US-2010-0165965-A1

Publication Date:07/01/2010

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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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BIB DATA SHEET

CONFIRMATION NO. 7345

SERIAL NUMBER 12/644,948	FILING or 371(c) DATE 12/22/2009 RULE	CLASS 455	GROUP ART UNIT 2617	ATTORNEY DOCKET NO. IPH-2-2235US02		
APPLICANTS Alan G. Carlton, Mineola, NY; Alexander Reznik, Titusville, NJ; ** CONTINUING DATA ***** This appln claims benefit of 61/140,126 12/23/2008 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 01/11/2010						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/DIANE D MIZRAHI/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY NY	SHEETS DRAWINGS 9	TOTAL CLAIMS 23	INDEPENDENT CLAIMS 4
ADDRESS VOLPE AND KOENIG, P.C. DEPT. ICC UNITED PLAZA 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103 UNITED STATES						
TITLE DATA TRANSFER BETWEEN WIRELESS DEVICES						
FILING FEE RECEIVED 1596	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

WEST Search History for Application 12644948

Creation Date: 2011092219:33

Prior Art Searches

Query	DB	Op.	Plur.	Thes.	Date
20100165965.pn.	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
wireless near5 transmit near5 receive near5 unit or (WTRU)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
visual near10 (touch near5 screen)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
user near5 input	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(user near5 input) and (visual near10 (touch near5 screen))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(user near5 input and visual near10 (touch near5 screen)) and (wireless near5 transmit near5 receive near5 unit or (WTRU))	PGPB, USPT, USOC,	ADJ	YES		09-22-2011

	EPAB, JPAB, DWPI, TDBD				
(user near5 input and visual near10 (touch near5 screen) and wireless near5 transmit near5 receive near5 unit or (WTRU)) and gesture	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(wireless near5 transmit near5 receive near5 unit or (WTRU)).ti.	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
455/73, 75, 436, 509, 522.ccls. or 370/311, 328, 330, 331, 335, 338.ccls. or 375/146.ccls.	PGPB, USPT, USOC	ADJ	YES		09-22-2011
(wireless near5 transmit near5 receive near5 unit or (WTRU))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(touch near5 screen)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((touch near5 screen)) and ((wireless near5 transmit near5 receive near5 unit or (WTRU)))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
TapAPP	PGPB, USPT, USOC, EPAB,	ADJ	YES		09-22-2011

	JPAB, DWPI, TDBD				
((touch near5 screen) and (wireless near5 transmit near5 receive near5 unit or (WTRU))) and gesture	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((touch near5 screen) and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and gesture) and radio	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
detect\$6 near5 servic\$3	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(detect\$6 near5 servic\$3) and ((touch near5 screen) and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and gesture and radio)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((touch near5 screen) and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and gesture and radio) and (455/73, 75, 436, 509, 522.ccls. or 370/311, 328, 330, 331, 335, 338.ccls. or 375/146.ccls.)	PGPB, USPT, USOC	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU))) and environment	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment) and (user near5 input)	PGPB, USPT, USOC,	ADJ	YES		09-22-2011

	EPAB, JPAB, DWPI, TDBD				
local near5 area	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(local near5 area) and ((wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
select\$6 near5 data	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(select\$6 near5 data) and (local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
data near5 transfer\$6	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(data near5 transfer\$6) and (select\$6 near5 data and local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011

((wireless near5 transmit near5 receive near5 unit or (WTRU)) same (target))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU)) same (target)) and (data near5 transfer\$6 and select\$6 near5 data and local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU)) same (target) and data near5 transfer\$6 and select\$6 near5 data and local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input)) and (touch near5 screen\$3)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU)) same (target) and data near5 transfer\$6 and select\$6 near5 data and local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input)) and radio	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011

<i>Index of Claims</i> 	Application/Control No. 12644948	Applicant(s)/Patent Under Reexamination CARLTON ET AL.
	Examiner DIANE MIZRAHI	Art Unit 2617

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	09/12/2011							
	1	✓							
	2	✓							
	3	✓							
	4	✓							
	5	✓							
	6	✓							
	7	✓							
	8	✓							
	9	✓							
	10	✓							
	11	✓							
	12	✓							
	13	✓							
	14	✓							
	15	✓							
	16	✓							
	17	✓							
	18	✓							
	19	✓							
	20	✓							
	21	✓							
	22	✓							
	23	✓							

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. IPH-2-2235US02	SERIAL NO. 12/644,948
	APPLICANT Carlton et al.	
	FILING DATE December 22, 2009	GROUP 2617

U.S. PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
/D.M./		5,544,321	08/1996	Theimer et al.				
		2006/0293063	12/2006	Corrion				
	*	2007/0146347	06/2007	Rosenberg				
		2007/0177729	08/2007	Reznik et al.				
FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
/D.M./		1 513 262	03/2005	EP				
/D.M./		03/081373	10/2003	WO				
OTHER DOCUMENTS								
EXAMINER INITIAL		DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)						
/D.M./		HAZAS ET AL., "A Relative Positioning System for Co-located Mobile Devices," International Conference on Mobile Systems, Proceedings of the 3 rd International Conference on Mobile Systems, Applications and Services, Seattle, Washington, 2005, pages 177-190						

EXAMINER /Diane Mizrahi/ (09/22/2011)	DATE CONSIDERED
--	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1291489-1 ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.M./

Notice of References Cited	Application/Control No. 12/644,948		Applicant(s)/Patent Under Reexamination CARLTON ET AL.	
	Examiner DIANE MIZRAHI		Art Unit 2617	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2011/0119702	05-2011	Jang et al.	725/32
*	B	US-2011/0119710	05-2011	JANG et al.	725/41
*	C	US-2011/0126237	05-2011	LEE et al.	725/46
*	D	US-2011/0138334	06-2011	JUNG, Hee Jung	715/841
*	E	US-7,877,494	01-2011	Carlton et al.	709/229
*	F	US-2007/0271379	11-2007	Carlton et al.	709/225
*	G	US-2006/0234762	10-2006	Ozluturk, Fatih	455/552.1
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	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.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/644,948	12/22/2009	Alan G. Carlton	IPH-2-2235US02	7345
24374	7590	09/28/2011		
VOLPE AND KOENIG, P.C. DEPT. ICC UNITED PLAZA 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			EXAMINER MIZRAHI, DIANE D	
			ART UNIT 2617	PAPER NUMBER
			NOTIFICATION DATE 09/28/2011	DELIVERY MODE 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):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 12/644,948	Applicant(s) CARLTON ET AL.	
	Examiner DIANE MIZRAHI	Art Unit 2617	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ 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.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-23 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-23 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 22 December 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
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)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application |
| 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) ☐ Other: ____. |

DETAILED ACTION

Claims 1-23 are pending.

Information Disclosure Statement

As required by M.P.E.P. 609(c), the applicant's submissions of the Information Disclosure Statement are acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending. As required by M.P.E.P. 609 C(2), a copy of the PTOL-1449 initialed and dated by the examiner is attached to the instant office action.

Applicants' Information Disclosure Statements have been received, entered into the record, and considered. See attached form PTO-1449.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

a. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-23 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

In regards to Claims 1-23

A § 101 process must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. If neither of these requirements is met by the claim, the method is not a patent eligible process under § 101 and should be rejected as being directed to nonstatutory subject matter.

As to claims 1-23, these claims recited purely mental steps. These claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. As such, they fail to tie with a statutory category. Thus, to qualify as a § 101 statutory process, the claim should positively recite the other statutory class (the thing or product) to which it is tied, for example by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example by identifying the material that is being changed to a different state.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Fatih Ozlurk (US Publication No. 20060234762 and Ozlurk hereinafter).

Regarding Claims 1 and 7, Ozlurk teaches a method for controlling communication of data in wireless communications, implemented in a wireless transmit/receive unit (WTRU) (i.e. of transferring data using a wireless transmit/receive unit (WTRU), the WTRU having at least two communication modes available for supporting the transfer of data, the method comprising: (a) the WTRU establishing a connection with a first wireless communication network while the WTRU is operating in a first one of the communication modes; (b) a user of the WTRU selecting data to be transferred while the WTRU is in the first communication mode; (c) the user of the WTRU indicating that a second one of the communication modes is to be used to support the transfer of the selected data; and (d) transferring the selected data while the WTRU is connected to a second wireless communication network associated with the second communication mode.) Para [0034, element number 1], and (i.e. wireless communication system 100 including a WTRU) Para [0003] the method comprising:

detecting environment information relating (i.e. the user input unit 620, a user of the WTRU 600 may select the specific data that the user desires to be transferred. The user input unit may be a keypad, keyboard, mouse, touchscreen, voice activation mechanism or any other graphical user interface (GUI)) Para [0024] to at least one candidate WTRU operating in a local area associated with the WTRU (i.e. the WTRU may have more than two modes of communication whereby a request for a data transfer may be made when the WTRU is in any one of those modes) Para [0015];

receiving user input (i.e. The user then enters and/or selects parameters via the user input unit) Para [0025]

processing the user input and the environment information (i.e. a user of the WTRU may request the transfer of data to or from the WTRU, (i.e., a download or an upload) Para [0005];

and identifying at least one candidate WTRU as a target WTRU based at least in part on the user input (i.e. for transferring data may be selected by the user, (i.e., manually) Para [0018],

and wherein the user input relates to a selection of data for transfer between the WTRU and the target WTRU (i.e. The user then enters and/or selects parameters via the user input unit 620 while viewing the menu display 625 to generate a data transfer request to be queued in the data transfer request) Para [0025] and (i.e. parameters selected by the user including the "address" of the file to be downloaded) Para [0026].

Allowable Subject Matter

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure [see USPTO 892]:

Claims 2-6 and 8-12 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C, 101, 2nd paragraph, set forth in this Office action.

Interpreting the claims in light of the specification, Examiner finds the claimed invention is patentably distinct from the prior art of record, which sets forth in the following: the prior art of record does not teach the combination of claimed elements including and under the broadest reasonable interpretation of the claimed limitation consistence with the Applicant's Specification. The prior art cited above fails to teach all of the Applicant's claimed limitation.

The claimed invention advantageously provides a finer level of detail that includes "detecting environment information which includes: detecting a service supported by one candidate WTRU, establishing a radio dialog between the WTRU and one candidate WTRU, analyzing a signal received from the candidate WTRU, exchanging detected service information between the WTRU and the candidate WTRU, detecting environment which includes detecting a service supported by one candidate WTRU, establishing a radio dialog between the WTRU and one candidate WTRU,

analyzing a signal received from the candidate WTRU, exchanging detected service information between the WTRU and one candidate WTRU; and constructing a real-time local map including relative position information for one candidate WTRU, and identifying the target WTRU based at least in part on the real-time local map” in combination with the other limitations of the claims, was not disclosed by, would not have been obvious over, nor would have been fairly suggested by the prior art of record in context to the claims and the specification.

Claims 13-14 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C, 101, 2nd paragraph, set forth in this Office action.

The following is an examiner's statement of reasons for allowance:

Interpreting the claims in light of the specification, Examiner finds the claimed invention is patentably distinct from the prior art of record, which sets forth in the following: the prior art of record does not teach the combination of claimed elements including and under the broadest reasonable interpretation of the claimed limitation consistence with the Applicant's Specification. The prior art cited above fails to teach all of the Applicant's claimed limitation.

In regards to Claim 13:

In particularly, the claimed invention advantageously provides a finer level of detail that includes “transmitting data between a sending wireless transmit/receive unit (WTRU) and one receiving WTRU which includes receiving a gestural user input, such that the gesture is directed toward a desired receiving WTRU, analyzing an electromagnetic spectrum in a local area of the sending WTRU, identifying one candidate WTRU operating in the electromagnetic spectrum and the local area of the sending WTRU, processing the user input to select a target WTRU from the identified candidate WTRU, and transmitting data to the target WTRU” in combination with the other limitations of the claims, was not disclosed by, would not have been obvious over, nor would have been fairly suggested by the prior art of record in context to the claims and the specification.

In regards to Claim 14:

In particularly, the claimed invention advantageously provides a finer level of detail that includes “sending WTRU, soliciting environment information relating to active communication devices in a local area of the sending WTRU, identifying a media element stored in a file system of the sending WTRU, receiving a physical input from a user at the sending WTRU, converting the physical input to an electromechanical signal, selecting a target WTRU based on the electromechanical signal and the environment information, generating configuration information and target transmission instructions based on the selected media element, and instructing a communication

Art Unit: 2617

peripheral to transmit the selected media element to the selected target WTRU based on the generated configuration information and transmission instructions” in combination with the other limitations of the claims, was not disclosed by, would not have been obvious over, nor would have been fairly suggested by the prior art of record in context to the claims and the specification.

The dependent claims, being further limiting to the independent claims, definite and enabled by the Specification are also allowed.

The Examiner asserts that the claims overcome the prior art of record as describes above when the limitations are read in combination with the respective claimed limitations in their entirety.

Thus, prior art of record neither render obvious nor anticipates the combination of claimed elements in light of the specification.

All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. *See KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007).

It is noted, *PATENTS ARE RELEVANT AS PRIOR ART FOR ALL THEY CONTAIN* "The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain." In re Heck, 699 F.2d 1331, 1332-33, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including non-preferred embodiments (see MPEP 2123).

It is noted that any citations to specific, pages, columns, lines, or figures in the prior art references and any interpretation of the references should not be considered to be limiting in any way. A reference is relevant for all it contains and may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. (See MPEP 2123.)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diane D. Mizrahi whose telephone number is 571-272-4079. The examiner can normally be reached on Monday-Thursday (8:30 - 4:30 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on **(571) 272-7876**. The fax phone numbers for the organization where this application or proceeding is assigned are **(703) 872-9306** for regular communications and (703) 305-3900 for After Final communication.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is **(571) 272-2600**.

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).

/Diane Mizrahi/

Diane.Mizrahi@USPTO.gov
Primary Patent Examiner

September 12, 2011

Search Notes 	Application/Control No. 12644948	Applicant(s)/Patent Under Reexamination CARLTON ET AL.
	Examiner DIANE MIZRAHI	Art Unit 2617

SEARCHED			
Class	Subclass	Date	Examiner
455	73,75,436,509,522	9-12-11	dm
370	311,328,330,331,335,338	9-12-11	dm
375	146	9-12-11	dm

SEARCH NOTES		
Search Notes	Date	Examiner
Searched the Manual of Patent Classification	9-12-11	dm
Examined claims and the disclosure for possible 35 USC 101 and 112 issues. Searched for double patenting using inventors names listed in the instant application.	9-12-11	dm
Databases searched WEST: US Patents; US Publications; European and Japanese Patent Office (Abstracts); Derwent; IBM Technical Disclosures; OCR. Performed text search using US Publications and US Patents. (See attached search history strategy report).	9-12-11	dm

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

	/DIANE MIZRAHI/ Primary Examiner.Art Unit 2617
--	---

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Carlton et al.

Application No.: 12/644,948

Confirmation No.: 7345

Filed: December 22, 2009

For: DATA TRANSFER BETWEEN
WIRELESS DEVICES

Group: 2617

Examiner: Mizrahi, Diane D.

Our File: IPH-2-2235US02

Date: December 28, 2011

REPLY PURSUANT TO 37 C.F.R. §1.111

Mail Stop Amendment (Via EFS)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply is being timely filed in response to the Office Action dated September 28, 2011.

Please amend the application without prejudice or disclaimer as follows:

REMARKS/ARGUMENTS

After the foregoing Amendment, claims 1-7, 9-11, 13-17, and 20-27 are currently pending in this application. Claims 8, 12, 18, and 19 are canceled without prejudice. Claims 1, 2, 6, 7, 9-11, 13, 14, and 23 are amended. New claims 24-27 are added.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 2-6, 8-12, and 13-14 contain allowable subject matter.

Claim Rejections - 35 USC § 101

Claims 1-23 are rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. Independent claims 1, 7, 13, and 14 are directed towards a method implemented in a wireless transmit/receive unit (WTRU). Thus, the recited features are performed at a WTRU, which is a statutory apparatus. Further, claims 1, 7, 13, and 14 are amended to further clarify that the features are performed at a statutory apparatus. Accordingly, withdrawal of the 35 U.S.C. § 101 rejections of claims 1, 7, 13, and 14 is respectfully requested. Claims 2-6, 9-11, 15-17, and 20-23 are dependent upon claims 1, 7, 13, or 14, and withdrawal of the 35 U.S.C. § 101 rejections of these claims is also respectfully requested. Claims 8, 12, 18, and 19 are canceled, so the rejections with respect to those claims are now moot.

Claim Rejections - 35 USC § 102

Claims 1 and 7 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Publication No. 20060234762 to Ozluturk (hereinafter “Ozluturk”). Applicants respectfully traverse this rejection.

Claim 7 is amended to include the subject matter of previous claim 8, which was indicated as allowable in the Office Action. Accordingly, claim 7 is believed to be novel and non-obvious.

Amended claim 1 recites, in part, “receiving, at the WTRU, user input that indicates at least a direction and a selection of data for transfer between the WTRU and a target WTRU.” Applicants submit that the “user input that indicates at least a direction,” as recited in claim 1 is consistent with the allowable subject matter. Further, Ozluturk fails to teach or suggest at least this feature of claim 1. Thus, claim 1 is believed to be novel and non-obvious.

Based on the arguments presented above, withdrawal of the 35 U.S.C. § 102 rejections of claims 1 and 7 is respectfully requested.

New Claims 24-27

New independent claim 24 recites features consistent with the subject matter that is indicated as allowable in the Office Action. Thus, claim 24 is believed to be novel and non-obvious. Claims 25-27 are dependent upon claim 24 and these claims

are also novel and non-obvious at least by virtue of their respective dependencies upon claim 24.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephonic interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

Carlton et al.

By /John Porrazza/
John Porrazza
Registration No. 68,126
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

JP/jmn

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for controlling communication of data in wireless communications, implemented in a wireless transmit/receive unit (WTRU), the method comprising:

detecting, at the WTRU, environment information relating to at least one candidate WTRU operating in a local area associated with the WTRU;

receiving, at the WTRU, user input that indicates at least a direction and a selection of data for transfer between the WTRU and a target WTRU;

processing, at the WTRU, the user input and the environment information; ~~and~~
identifying, at the WTRU, at least one candidate WTRU as the [[a]] target WTRU based at least in part on the user input; and ~~and wherein the user input relates to a selection of data for transfer between the WTRU and the target WTRU~~
transmitting the data to the target WTRU.

2. (Currently Amended) The method of claim 1, wherein detecting environment information comprises:

detecting, at the WTRU, a service supported by the at least one candidate WTRU;

establishing a radio dialog between the WTRU and the at least one candidate WTRU;

analyzing, at the WTRU, a signal received from the candidate WTRU; and
~~exchanging~~ transmitting or receiving, at the WTRU, detected service information to or from ~~between the WTRU and~~ the at least one candidate WTRU.

3. (Original) The method of claim 2, wherein the service is detected by a Service Discovery Protocol (SDP).

4. (Original) The method of claim 3, wherein analyzing the signal received by the candidate WTRU is based on the power level of the received signal.

5. (Original) The method of claim 3, wherein analyzing the signal received by the candidate WTRU is based on the quality of the received signal.

6. (Currently Amended) The method of claim 1, wherein detecting environment information further comprises:

performing, at the WTRU, a first radius search, wherein a first number of candidate WTRUs are detected;

performing, at the WTRU, a second radius search based on the detected first number of candidate WTRUs; and

selecting, at the WTRU, a subset of the first number of candidate WTRUs, wherein the subset is selected based on service supported by each of the first number of candidate WTRUs.

7. (Currently Amended) A method of communicating data in wireless communications, implemented in a wireless transmit/receive unit (WTRU), the method comprising:

receiving, at the WTRU, user input;

soliciting information, at the WTRU, ~~through a lower layer~~ related to at least one candidate WTRU operating in a local area of the WTRU;

constructing a real-time local map including relative position information for the at least one candidate WTRU;

identifying, at the WTRU, a target WTRU based at least in part on ~~by~~ ~~processing~~ the user input, the real-time local map, and the solicited information from the at least one candidate WTRU;

generating, at the WTRU, environment information based on the target WTRU;

generating, at the WTRU, transmission instructions based on the target WTRU; and

transmitting data to the target WTRU based on the environment information and the transmission instructions.

8. (Canceled)

9. (Currently Amended) The method of claim 7 [[8]] wherein the real-time local map includes relative location information relating to the at least one candidate determined through a triangulation procedure.

10. (Currently Amended) The method of claim 7 [[8]], wherein the real-time local map includes relative location information relating to the at least one candidate WTRU established through Global Positioning System ~~Satellite~~ (GPS) information.

11. (Currently Amended) The method of claim 7 [[8]], wherein the real-time local map is determined by a radio dialog defined by a service discovery protocol.

12. (Canceled)

13. (Currently Amended) A method of transmitting data implemented in ~~between a sending wireless transmit/receive unit (WTRU) and at least one receiving WTRU~~, the method comprising:

receiving, at the WTRU, a gestural user input, wherein the gesture is directed toward a desired receiving WTRU;

analyzing, at the WTRU, an electromagnetic spectrum in a local area of the ~~sending~~ WTRU;

identifying, at the WTRU, at least one candidate WTRU operating in the electromagnetic spectrum and the local area of the ~~sending~~ WTRU;

processing, at the WTRU, the user input to select a target WTRU from the identified at least one candidate WTRU; and

transmitting data to the target WTRU.

14. (Currently Amended) A method of data transfer implemented in between a plurality of wireless transmit/receive unit[[s]] (WTRU[[s]]), the method comprising:

~~at a sending WTRU~~, soliciting, at the WTRU, environment information relating to active communication devices in a local area of the ~~sending~~ WTRU;

~~identifying~~ selecting, at the WTRU, a media element stored in a file system of the ~~sending~~ WTRU;

receiving, at the WTRU, a physical input from a user ~~at the sending WTRU~~;

converting, at the WTRU, the physical input to an electromechanical signal;

selecting, at the WTRU, a target WTRU based on the electromechanical signal and the environment information;

generating configuration information and target transmission instructions based on the selected media element; and

~~instructing a communication peripheral to~~ transmitting the selected media element to the selected target WTRU based on the generated configuration information and target transmission instructions.

15. (Original) The method of claim 14, wherein the soliciting information is based on a configuration variable which indicates a search radius defining the local area of the sending communication device.

16. (Original) The method of claim 14, wherein the soliciting information is obtained periodically and on a condition that the sending communication device enters a send operation.

17. (Currently Amended) The method of claim 14, wherein soliciting information relating to active communication devices is performed through a mesh network or a sensor network.

18. - 19. (Canceled)

20. (Original) The method of claim 14, wherein receiving a physical input from the user is performed through a touchscreen.

21. (Original) The method of claim 14, wherein receiving a physical input from the user comprises:

detecting the user touching a user interface;

sensing a motion of the user's touch;

detecting a release of the user's touch.

22. (Original) The method of claim 21, wherein detecting the user touching the user interface includes detecting the user touching a visual representation of the identified media element.

23. (Currently Amended) The method of claim 21, wherein selecting a receiving communication device comprises:

receiving an electromechanical signal, which indicates a direction of the motion of ~~a the user's touch~~ by the user;

analyzing the solicited information based on active communication devices in the local area of the sending communication device;

identifying a target receiving device located in a direction of the motion of the user's touch; and

selecting the target receiving device for transmitting the selected media element.

24. (New) A wireless transmit/receive unit (WTRU) comprising:
- a processor configured to detect environment information relating to at least one candidate WTRU operating in a local area associated with the WTRU;
 - a display configured to receive user input that indicates at least a direction and a selection of data for transfer between the WTRU and a target WTRU;
 - the processor configured to:
 - process the user input and the environment information; and
 - identify at least one candidate WTRU as the target WTRU based at least in part on the user input; and
 - a transmitter configured to transmit the data to the target WTRU.

25. (New) The WTRU of claim 24, wherein the user input is a gestural input.

26. (New) The WTRU of claim 25, wherein the gestural input indicates the at least one direction, and the at least one direction is directed towards the target WTRU.

27. (New) The WTRU of claim 24, wherein the display is a touchscreen.

Electronic Acknowledgement Receipt

EFS ID:	11719706
Application Number:	12644948
International Application Number:	
Confirmation Number:	7345
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES
First Named Inventor/Applicant Name:	Alan G. Carlton
Customer Number:	24374
Filer:	John Porrazza/Janice Nightlinger
Filer Authorized By:	John Porrazza
Attorney Docket Number:	IPH-2-2235US02
Receipt Date:	28-DEC-2011
Filing Date:	22-DEC-2009
Time Stamp:	15:11:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 250
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1		20111228_IPH_2_2235US02_Reply.pdf	90320 f3ecf8ee7ee90ed58f5abf972e95b61364e00b0cf	yes	13
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(Column 1)			(Column 2)			SMALL ENTITY ☐ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*	X \$	=	OR	X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=		X \$	=			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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).									
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☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR			
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	250	
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
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	Total (37 CFR 1.16(i))	*	Minus	**	=		X \$	=		
	Independent (37 CFR 1.16(h))	*	Minus	***	=		X \$	=		
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR			
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Application Number:	12644948			
Filing Date:	22-Dec-2009			
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES			
First Named Inventor/Applicant Name:	Alan G. Carlton			
Filer:	John Porrazza/Janice Nightlinger			
Attorney Docket Number:	IPH-2-2235US02			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Independent claims in excess of 3	1201	1	250	250
Miscellaneous-Filing:				
Petition:				
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DATA TRANSFER BETWEEN WIRELESS DEVICES

www.google.com/patents/US20100165965
US Pat. App. 12644948 - Filed Dec 22, 2009 - INTERDIGITAL PATENT HOLDINGS, INC.
A method for controlling communication of **data in wireless** communications, implemented in a **wireless transmit/receive unit (WTRU)**, the method comprising: ...
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Patent US20100165965 - DATA TRANSFER BETWEEN WIREL...
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WO/2010/075378 DATA TRANSFER BETWEEN WIRELESS D...
[www.wipo.int/patentscope/search/en/WO2010075378](#)
Jul 1, 2010 -- A method of **data transfer between wireless transmit/receive units (WTRUs)** is performed by a ... variable that may be configured to indicate a **search radius**. Within the local area, information relating to active **candidate WTRUs** is ... to **select a target WTRU** from the **candidate WTRUs** to receive the **data transfer**.

DATA TRANSFER BETWEEN WIRELESS DEVICES - US Pate...
[www.patentstorm.us/applications/20100165965/claims.html](#)
Jul 1, 2010 -- A method for controlling communication of **data in wireless communications**, implemented in a **wireless transmit/receive unit (WTRU)**, the method ... input relates to a **selection of data for transfer between the WTRU and the target WTRU** ... a first **radius search**, wherein a first number of **candidate WTRUs** are ...

DATA TRANSFER BETWEEN WIRELESS DEVICES...
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A method of **data transfer between wireless transmit/receive units (WTRUs)** is performed ... by an environment variable that may be configured to indicate a **search radius**. Within the local area, information relating to active **candidate WTRUs** is ... to **select a target WTRU** from the **candidate WTRUs** to receive the **data transfer**.

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[J.A. Belward](#)
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[Wei Zheng, Hanqiao Jiang, Minfeng Chen, Fubin Zhang](#)
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[Javier Esparza, Claus Schröder](#)
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Publisher: IOS Press
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We study four solutions to the reachability problem for 1-safe Petri nets, all of them based on the unfolding technique. We define the problem as follows: given a set of places of the net, determine if some reachable marking puts a token in all of them. ...

6 [Automatic differentiation of algorithms](#)
[Michael Bartholomew-Biggs, Steven Brown, Bruce Christianson, Laurence Dixon](#)
December 2000 **Journal of Computational and Applied Mathematics** , Volume 124 Issue 1-2
Publisher: Elsevier Science Publishers B. V.
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Keywords: adjoint programming, algorithm, automatic differentiation, checkpoints, error analysis, function approximation, implicit equations, interval analysis, nonlinear optimization, optimal control, parallelism, penalty functions, program transformation, variable momentum

- 7 [Inside risks: the clock grows at midnight](#)
[Peter G. Neumann](#)



January 1991

Communications of the ACM , Volume 34 Issue 1

Publisher: ACM [Request Permissions](#)

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- 8 [An overview of the new routing algorithm for the ARPANET](#)
[John M. McQuillan, Ira Fisher, Eric C. Rosen](#)



January 1995

SI GCOMM Computer Communication Review , Volume 25 Issue 1

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- 10 [New Neural Nets](#)
[Thomas Kötter](#)

October 2001

Proceedings of the International Conference, 7th Fuzzy Days on Computational Intelligence, Theory and Applications

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- 11 [Comparing Concepts of Object Petri Net Formalisms](#)
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December 2000

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Keywords: derivative-free optimization, direct search methods, pattern search methods

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[Dick Henthater, Pablo Pinay-Dummer, Norbert M. Seel](#)

March 2010

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Keywords: set theory

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[H. Shahkuli, M. Mokhtary, E. Ahmadi](#)

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March 2011 **APPEEC '11:** Proceedings of the 2011 Asia-Pacific Power and Energy Engineering Conference

Publisher: IEEE Computer Society

Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count: 0

NA

18 [Real-Time Access Guarantees for NAND Flash Using Partial Block Cleaning](#)

[Siddharth Choudhuri, Tony Givargis](#)

October 2008 **SEUS '08:** Proceedings of the 6th IFIP WG 10.2 international workshop on Software Technologies for Embedded and Ubiquitous Systems

Publisher: Springer-Verlag

Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count: 0

Increasing use of NAND flash in newer application domains has been possible due to lowering cost per GB, consumer demands for storage and advantages of NAND flash over traditional disks. However, NAND flash has its idiosyncrasies resulting in asymmetric ...

Keywords: NAND flash, embedded systems, file system, real-time

19 [Inherent Wave Estimation on Ultrasonic Non-destructive Testing Using Fuzzy Inference](#)

[Kouki Nagamune, Yutaka Hata, Kazuhiko Taniguchi](#)

October 2001 Proceedings of the International Conference, 7th Fuzzy Days on Computational Intelligence, Theory and Applications

Publisher: Springer-Verlag

Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count: 0

This paper proposes the new method for suppressing the inherent wave of the sensor system. The inherent wave often prevents from analyzing the signal of target. Previous method calculated the inherent wave to solve this problem using two assumptions. ...

20 [Topology Discovery in Dynamic and Decentralized Networks with Mobile Agents and Swarm Intelligence](#)

[Rodan L. Nassu, Takashi Nanyu, Elias F. Duarte](#)

October 2007 **ISDA '07:** Proceedings of the Seventh International Conference on Intelligent Systems Design and Applications

Publisher: IEEE Computer Society

Full text available:  [Publisher Site](#)

Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Downloads (Overall): n/a, Citation Count: 1

Topology discovery is a key task for several computer network applications such as diagnosis, routing and network management. Traditional approaches for topology discovery cannot always be used in dynamic and decentralized networks, such as unstructured ...

Result page: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [next](#) [»](#)

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WEST Search History for Application 12644948

Creation Date: 2012020718:08

Prior Art Searches

Query	DB	Op.	Plur.	Thes.	Date
20100165965.pn.	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
wireless near5 transmit near5 receive near5 unit or (WTRU)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
visual near10 (touch near5 screen)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
user near5 input	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(user near5 input) and (visual near10 (touch near5 screen))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(user near5 input and visual near10 (touch near5 screen)) and (wireless near5 transmit near5 receive near5 unit or (WTRU))	PGPB, USPT, USOC,	ADJ	YES		09-22-2011

	EPAB, JPAB, DWPI, TDBD				
(user near5 input and visual near10 (touch near5 screen) and wireless near5 transmit near5 receive near5 unit or (WTRU)) and gesture	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(wireless near5 transmit near5 receive near5 unit or (WTRU)).ti.	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
455/73, 75, 436, 509, 522.ccls. or 370/311, 328, 330, 331, 335, 338.ccls. or 375/146.ccls.	PGPB, USPT, USOC	ADJ	YES		09-22-2011
(wireless near5 transmit near5 receive near5 unit or (WTRU))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(touch near5 screen)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((touch near5 screen)) and ((wireless near5 transmit near5 receive near5 unit or (WTRU)))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
TapAPP	PGPB, USPT, USOC, EPAB,	ADJ	YES		09-22-2011

	JPAB, DWPI, TDBD				
((touch near5 screen) and (wireless near5 transmit near5 receive near5 unit or (WTRU))) and gesture	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((touch near5 screen) and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and gesture) and radio	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
detect\$6 near5 servic\$3	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(detect\$6 near5 servic\$3) and ((touch near5 screen) and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and gesture and radio)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((touch near5 screen) and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and gesture and radio) and (455/73, 75, 436, 509, 522.ccls. or 370/311, 328, 330, 331, 335, 338.ccls. or 375/146.ccls.)	PGPB, USPT, USOC	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU))) and environment	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment) and (user near5 input)	PGPB, USPT, USOC,	ADJ	YES		09-22-2011

	EPAB, JPAB, DWPI, TDBD				
local near5 area	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(local near5 area) and ((wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
select\$6 near5 data	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(select\$6 near5 data) and (local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
data near5 transfer\$6	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
(data near5 transfer\$6) and (select\$6 near5 data and local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011

((wireless near5 transmit near5 receive near5 unit or (WTRU)) same (target))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU)) same (target)) and (data near5 transfer\$6 and select\$6 near5 data and local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input))	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU)) same (target) and data near5 transfer\$6 and select\$6 near5 data and local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input)) and (touch near5 screen\$3)	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 transmit near5 receive near5 unit or (WTRU)) same (target) and data near5 transfer\$6 and select\$6 near5 data and local near5 area and (wireless near5 transmit near5 receive near5 unit or (WTRU)) and environment and (user near5 input)) and radio	PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD	ADJ	YES		09-22-2011
((wireless near5 communication) and (Wireless near5 transmit near5 receive near5 unit or WTRU) and (detect\$6) and (candidate near5 WTRU) and (target near5 WTRU) and (direction or position or location) and (transfer\$6) and (user near5 input)).clms.	PGPB, USPT, USOC	ADJ	YES		02-07-2012
((wireless near5 communication) and (Wireless near5 transmit near5 receive near5 unit or WTRU) and (detect\$6) and (candidate near5 WTRU) and (target near5 WTRU) and (direction or position or location) and (transfer\$6) and (user near5 input)).clms.	PGPB, USPT, USOC	ADJ	YES		02-07-2012
((wireless near5 communication) and (Wireless near5 transmit near5 receive near5 unit or WTRU) and (detect\$6) and (candidate near5 WTRU) and (target near5 WTRU) and (direction or position or location) and (transfer\$6) and (user near5 input)).clms.	PGPB, USPT, USOC	ADJ	YES		02-07-2012

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. IPH-2-2235US02	SERIAL NO. 12/644,948
	APPLICANT Carlton et al.	
	FILING DATE December 22, 2009	GROUP 2617

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
/D.M./		5,544,321	08/1996	Theimer et al.			
/D.M./		2006/0293063	12/2006	Corrion			
/D.M./ *		2007/0146347	06/2007	Rosenberg			
/D.M./		2007/0177729	08/2007	Reznik et al.			
FOREIGN PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
/D.M./		1 513 262	03/2005	EP			
/D.M./		03/081373	10/2003	WO			
OTHER DOCUMENTS							
EXAMINER INITIAL		DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)					
/D.M./		HAZAS ET AL., "A Relative Positioning System for Co-located Mobile Devices," International Conference on Mobile Systems, Proceedings of the 3 rd International Conference on Mobile Systems, Applications and Services, Seattle, Washington, 2005, pages 177-190					

EXAMINER /Diane Mizrahi/ (02/07/2012)	DATE CONSIDERED
--	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.M./

1291489-1

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. IPH-2-2235US02	SERIAL NO. 12/644,948
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/D.M./		2006/0293063	12/2006	Corrion				
/D.M./		2007/0177729	08/2007	Reznik et al.				
FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
/D.M./		1513262	03/2005	EP				
/D.M./		03/081373	10/2003	WO				
OTHER DOCUMENTS								
EXAMINER INITIAL		DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)						
/D.M./		HAZAS ET AL., "A Relative Positioning System for Co-located Mobile Devices," International Conference on Mobile Systems, Proceedings of the 3 rd International Conference on Mobile Systems, Applications and Services, Seattle, Washington, 2005, pages 177-190						

EXAMINER /Diane Mizrahi/ (09/22/2011)	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



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NOTICE OF ALLOWANCE AND FEE(S) DUE

24374 7590 02/13/2012
VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER

MIZRAHI, DIANE D

ART UNIT

PAPER NUMBER

2617

DATE MAILED: 02/13/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

12/644,948

12/22/2009

Alan G. Carlton

IPH-2-2235US02

7345

TITLE OF INVENTION: DATA TRANSFER BETWEEN WIRELESS DEVICES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300	\$0	\$2040	05/14/2012

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 SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
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or Fax **(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)

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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 facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

12/644,948 12/22/2009 Alan G. Carlton IPH-2-2235US02 7345

TITLE OF INVENTION: DATA TRANSFER BETWEEN WIRELESS DEVICES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1740 \$300 \$0 \$2040 05/14/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
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MIZRAHI, DIANE D 2617 455-509000

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 03-02 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 has been filed for recordation as set forth in 37 CFR 3.11. 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. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information 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 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, 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.

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/644,948	12/22/2009	Alan G. Carlton	IPH-2-2235US02	7345

24374 7590 02/13/2012
VOLPE AND KOENIG, P.C.
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UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER

MIZRAHI, DIANE D

ART UNIT	PAPER NUMBER
----------	--------------

2617

DATE MAILED: 02/13/2012

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

The Patent Term Adjustment to date is 218 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 218 day(s).

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 Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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 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.

Notice of Allowability	Application No.	Applicant(s)	
	12/644,948	CARLTON ET AL.	
	Examiner	Art Unit	
	DIANE MIZRAHI	2617	

-- 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 12-28-2011.
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 1-7,9-11,13-17 and 20-27.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - 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. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
 - (b) ☐ 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).**
7. ☐ 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. ☐ Notice of Informal Patent Application |
| 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____. |
| 3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____ | 7. ☐ Examiner's Amendment/Comment |
| 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. ☐ Examiner's Statement of Reasons for Allowance |
| | 9. ☐ Other ____. |

/Diane Mizrahi/
Primary Examiner, Art Unit 2617

Search Notes 	Application/Control No. 12644948	Applicant(s)/Patent Under Reexamination CARLTON ET AL.
	Examiner DIANE MIZRAHI	Art Unit 2617

SEARCHED			
Class	Subclass	Date	Examiner
455	73,75,436,509,522	9-12-11	dm
370	311,328,330,331,335,338	9-12-11	dm
375	146	9-12-11	dm
updated search		2-1-12	dm

SEARCH NOTES		
Search Notes	Date	Examiner
Searched the Manual of Patent Classification	9-12-11	dm
Examined claims and the disclosure for possible 35 USC 101 and 112 issues. Searched for double patenting using inventors names listed in the instant application.	9-12-11	dm
Databases searched WEST: US Patents; US Publications; European and Japanese Patent Office (Abstracts); Derwent; IBM Technical Disclosures; OCR. Performed text search using US Publications and US Patents. (See attached search history strategy report).	9-12-11	dm
Updated search	2-1-12	dm
Performed NPL ACM Search (see attached search strategy report attached)Performed NPL Google Search (see attached search strategy report attached.Performed NPL IEEE Search (see attached search strategy report attached.Performed Google Patents Search (see attached search strategy report attached).	2-1-12	dm
Updated WEST database search(supra for databases)	2-1-12	dm

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
455	509	2-1-12	dm

	/DIANE MIZRAHI/ Primary Examiner.Art Unit 2617
--	---

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner
Performed text search using US Publications and US Patents. (See attached search history strategy report).		2-1-12	dm

/DIANE MIZRAHI/
Primary Examiner.Art Unit 2617

Electronic Acknowledgement Receipt

EFS ID:	12770653
Application Number:	12644948
International Application Number:	
Confirmation Number:	7345
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES
First Named Inventor/Applicant Name:	Alan G. Carlton
Customer Number:	24374
Filer:	John Porrazza/Janice Nightlinger
Filer Authorized By:	John Porrazza
Attorney Docket Number:	IPH-2-2235US02
Receipt Date:	14-MAY-2012
Filing Date:	22-DEC-2009
Time Stamp:	15:30:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 2040
RAM confirmation Number	2225
Deposit Account	090435
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	20120514_IPH_2_2235US02_Is sue_Fee_Transmittal.pdf	183604 70096c0a12c94eef96649e86756ea29f64e28e4d	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32111 fbd64d74b7ab43079194352bc3923725f7015b14	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			215715		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Electronic Patent Application Fee Transmittal

Application Number:	12644948			
Filing Date:	22-Dec-2009			
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES			
First Named Inventor/Applicant Name:	Alan G. Carlton			
Filer:	John Porrazza/Janice Nightlinger			
Attorney Docket Number:	IPH-2-2235US02			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1740	1740
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2040

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(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.

24374 7590 02/13/2012
VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

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 facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

12/644,948

12/22/2009

Alan G. Carlton

IPH-2-2235US02

7345

TITLE OF INVENTION: DATA TRANSFER BETWEEN WIRELESS DEVICES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300	\$0	\$2040	05/14/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
MIZRAHI, DIANE D	2617	455-509000

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 03-02 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 Volpe and Koenig, P.C.

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 has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

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

InterDigital Patent Holdings, Inc.

Wilmington, Delaware, USA

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

4a. The following fee(s) are submitted:

☒ Issue Fee

☒ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

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

☐ A check is enclosed.

☒ Payment by credit card. Form PTO-2038 is attached.

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 09-0435 (enclose an extra copy of this form).

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

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /John Porrazza/

Date May 14, 2012

Typed or printed name John Porrazza

Registration No. 68,126

This collection of information 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 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, 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.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/644,948	06/12/2012	8200265	IPH-2-2235US02	7345

24374 7590 05/23/2012
VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

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 217 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):

Alan G. Carlton, Mineola, NY;
Alexander Reznik, Titusville, NJ;

Electronic Acknowledgement Receipt

EFS ID:	14998600
Application Number:	12644948
International Application Number:	
Confirmation Number:	7345
Title of Invention:	DATA TRANSFER BETWEEN WIRELESS DEVICES
First Named Inventor/Applicant Name:	Alan G. Carlton
Customer Number:	24374
Filer:	Dawn C. Kerner/Elizabeth McGinty
Filer Authorized By:	Dawn C. Kerner
Attorney Docket Number:	IPH-2-2235US02
Receipt Date:	20-FEB-2013
Filing Date:	22-DEC-2009
Time Stamp:	11:55:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	IPH-2-2235US02_ReqCertificate ofCorrection.PDF	51344 ea30c0c7e0768168a999979ea264d71b81c383ab	no	3

Warnings:

Information:

2	Request for Certificate of Correction	IPH-2-2235US02_CertificateofCorrectionSB44.PDF	380322 2d3de63d0da9ba0de6be00ea53ac938b7bd72343	no	1
Warnings:					
Information:					
Total Files Size (in bytes):			431666		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 8,200,265
APPLICATION NO.: 12/644,948
ISSUE DATE : June 12, 2012
INVENTOR(S) : Carlton et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

IN THE CLAIMS

At Claim 2, column 11, line 8, after "to or from", delete "and".

At Claim 12, column 12, line 6, after "input from a user", insert ";".

At Claim 19, column 12, line 38, after "motion of a", delete "the user'".

MAILING ADDRESS OF SENDER (Please do not use customer number below):

**Volpe and Koenig, P.C.
United Plaza, 18th Floor
Philadelphia, PA 19103**

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. 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 1.0 hour 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: Attention Certificate of Corrections Branch, Commissioner for Patents, 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Carlton et al.

Patent No.: 8,200,265

Issued: June 12, 2012

Application No.: 12/644,948

Confirmation No.: 7345

Filed: December 22, 2009

For: DATA TRANSFER BETWEEN
WIRELESS DEVICES

Our File: IPH-2-2235US02

Date: February 20, 2013

REQUEST FOR CERTIFICATE OF CORRECTION

Certificate of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

A Certificate of Correction under 35 U.S.C. § 254 and 37 C.F.R. §1.322 is requested for U.S. Patent No. 8,200,265. The following errors were made during printing by the United States Patent and Trademark Office.

IN THE CLAIMS

At Claim 2, column 11, line 8, after "to or from", delete "and".

At Claim 12, column 12, line 6, after "input from a user", insert ";".

At Claim 19, column 12, line 38, after "motion of a", delete "the user'".

REMARKS

Patentees believe that the above errors are of such a nature as to justify the issuance of a Certificate of Correction. Patentees have enclosed a completed Certificate of Correction Form PTO/SB/44.

Patentees respectfully request that the Certificate of Correction be issued.

Respectfully submitted,

Carlton et al.

By /Dawn C. Kerner/
Dawn C. Kerner
Registration No. 67,743
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

DCK/eam

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 8,200,265 B2
APPLICATION NO. : 12/644948
DATED : June 12, 2012
INVENTOR(S) : Carlton et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At Claim 2, column 11, line 8, after “to or from”, delete “and”.

At Claim 12, column 12, line 6, after “input from a user”, insert --;--.

At Claim 19, column 12, line 38, after “motion of a”, delete “the user’,”.

Signed and Sealed this
Second Day of April, 2013



Teresa Stanek Rea
Acting Director of the United States Patent and Trademark Office