

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**SAMSUNG ELECTRONICS CO., LTD. AND
SAMSUNG ELECTRONICS AMERICA, INC.,**
Petitioners

v.

MAXELL CORPORATION,
Patent Owner

Inter Partes Review No.: IPR2025-01316

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. U.S. 10,812,646 UNDER 35 U.S.C. §§ 311-319
AND 37 C.F.R. §§ 42.1-100, ET SEQ**

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1004	U.S. Patent No. 9,736,217 (“Esaka”)
1005	U.S. Patent No. 9,454,251 (“Guihot”)
1006	U.S. Patent No. 9,521,247 (“Bandyopadhyay”)
1007	U.S. Patent No. 10,375,343 (“Sharif-Ahmadi”)
1008	U.S. Patent Application Publication 2012/0129496 (“Park”)
1009	U.S. Patent Application Publication 2014/0019994 (“Miyazawa”)
1010	Amy K. Karlson et. al., <i>AppLens and LaunchTile: Two Designs for One-Handed Thumb Use on Small Devices</i> , PROCEEDINGS OF THE SIGCHI CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS (CHI 2005), 201-210 (2005), https://doi.org/10.1145/1054972.1055001 .
1011	Benjamin B. Bederson et. al., <i>DateLens: A Fisheye Calendar Interface for PDAs</i> , 11 ACM TRANSACTIONS ON COMPUTER-HUMAN INTERACTION 1, 90-119 (March 2004), https://doi.org/10.1145/972648.972652 .
1012	KARLSON, A. ET. AL., HANDBOOK OF RESEARCH ON USER INTERFACE DESIGN AND EVALUATION FOR MOBILE TECHNOLOGY, “Understanding One Handed Use of Mobile Devices,” 86-101 (Lumsden, Jo ed., 2007).
1013	SCH-i600 SERIES USER GUIDE (Samsung Telecommunications America, Inc., 2003).
1014	WILLIAM LIDWELL ET. AL., UNIVERSAL PRINCIPLES OF DESIGN, 142-143 (Rockport Publishers 2003), ISBN 978-1-59253-587-3.
1015	Ben Shneiderman, DESIGNING THE USER INTERFACE: STRATEGIES FOR EFFECTIVE HUMAN-COMPUTER INTERACTION, 74-75 (Addison-Wesley, 3 rd ed. 1998), ISBN 0-201-69497-2.

CHART OF CLAIMS
[1pre] A portable terminal apparatus comprising:
[1a] a display;
[1b] an operation input interface configured to receive an input corresponding to a user operation;
[1c] a wireless communication interface configured to perform communication over a wireless local area network; and
[1d] a processor programmed to control state transitions of the portable terminal apparatus to and from a sleep state and further performing a plurality of display modes, the plurality of display modes including:
[1e] a first display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on the display without display of a control icon when the portable terminal apparatus wakes up from a sleep state based on a first condition, wherein the first condition is met when a control screen for remotely and wirelessly controlling an external device via the wireless communication interface is not displayed on the display before the portable terminal apparatus enters a sleep state;
[1f] a second display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on the display without display of a control icon when the portable terminal apparatus wakes up from a sleep state based on a second condition, wherein the second condition is met when the wireless communication interface is unable to communicate with the external device and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state; and
[1g] a third display mode during which a control icon and a first screen to be moved to a screen for performing authentication to execute an unlock operation are displayed on the display when the portable terminal apparatus wakes up from a sleep state based on a third condition, wherein the third condition is met when the wireless communication interface is able to communicate with the external device and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state,
[1h] wherein the control screen is used to execute control operations on the external device based on the input received by the operation input interface, and
[1i] wherein, when the control icon is selected in the third display mode without the unlock operation, the wireless communication interface transmits a remote control signal corresponding to the selected control icon to the external device.
[2pre] The portable terminal apparatus according to claim 1,

CHART OF CLAIMS	
[2a]	wherein the portable terminal apparatus is a smartphone and the external device is used for display of a video content.
[3pre]	The portable terminal apparatus according to claim 1,
[3a]	wherein the control screen includes a plurality of selectable control icons that enable a user to execute control operations on content being displayed under the control of the external device, the control operations including an operation for selection of content to be displayed.
[4pre]	The portable terminal apparatus according to claim 1, further comprising:
[4a]	a GPS receiver;
[4b]	a sensor determining a movement state of the portable terminal apparatus;
[4c]	an infrared sensor;
[4d]	a gyro sensor determining angular movement of the portable terminal apparatus; and
[4e]	a physical button executing a predetermined operation when a user pushes the physical button.
[5pre]	The portable terminal apparatus according to claim 1, further comprising:
[5a]	a plurality of physical buttons,
[5b]	wherein the simultaneous pushing of the plurality of physical buttons results in a single predetermined operation being executed by the portable terminal apparatus.
[6pre]	The portable terminal apparatus according to claim 1,
[6a]	wherein the unlock operation in the first display mode, the second display mode, and the third display mode is initiated by sliding the first screen.
[7pre]	The portable terminal apparatus according to claim 1,
[7a]	wherein in the third display mode the control icon and the first screen are displayed simultaneously on the display and are arranged such that at least a portion of the control icon is displayed in a top half of the display screen.
[8pre]	The portable terminal apparatus according to claim 1,
[8a]	wherein the wireless communication interface is configured to communicate with the external device by implementing an encryption scheme.
[9pre]	The portable terminal apparatus according to claim 8,
[9a]	wherein the encryption scheme is WEP (Wired Equivalent Privacy).
[10pre]	The portable terminal apparatus according to claim 8,
[10a]	wherein the encryption scheme is WPA (WiFi Protected Access).
[11pre]	The portable terminal apparatus according to claim 8,
[11a]	wherein the encryption scheme is WPA (WiFi Protected Access) 2.
[12pre]	The portable terminal apparatus according to claim 1,

CHART OF CLAIMS
[12a] wherein the portable terminal apparatus has a function not to display the control icon even in the third display mode.
[13pre] The portable terminal apparatus according to claim 1,
[13a] wherein the portable terminal apparatus is configured to allow a user to select whether to display the control icon even in the third display mode.
[14pre] A method executed by a portable terminal apparatus, the method comprising:
[14a] receiving, by an operation input interface, an input corresponding to a user operation;
[14b] performing wireless communication over a wireless local area network;
[14c] controlling state transitions of the portable terminal apparatus to or from a sleep state;
[14d] performing a plurality of display modes, the plurality of display modes including:
[14e] a first display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on a display without display of a control icon when the portable terminal apparatus wakes up from a sleep state based on a first condition, wherein the first condition is met when a control screen for remotely and wirelessly controlling an external device via performing the wireless communication is not displayed on the display before the portable terminal apparatus enters a sleep state;
[14f] a second display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on the display without display of a control icon when the portable terminal apparatus wakes up from a sleep state based on a second condition, wherein the second condition is met when the portable terminal apparatus is unable to communicate with the external device via performing the wireless communication and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state; and
[14g] a third display mode during which a control icon and a first screen to be moved to a screen for performing authentication to execute an unlock operation are displayed on the display when the portable terminal apparatus wakes up from a sleep state based on a third condition, wherein the third condition is met when the portable terminal apparatus is able to communicate with the external device via performing the wireless communication and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state, wherein the control screen is used to execute control operations on the external device based on the input received by the operation input interface; and

CHART OF CLAIMS
[14h] transmitting via wireless communication a remote control signal corresponding to the selected control icon to the external device when the control icon is selected in the third display mode without unlock operation.
[15pre] The method according to claim 14,
[15a] wherein the control screen includes a plurality of selectable control icons that enable a user to execute control operations on content being displayed under control of the external device, the control operations including an operation for selection of content to be displayed.
[16pre] The method according to claim 14, further comprising:
[16a] determining a position of the portable terminal apparatus;
[16b] determining a movement state of the portable terminal apparatus;
[16c] determining angular movement of the portable terminal apparatus; and
[16d] executing a predetermined operation when a user pushes a physical button.
[17pre] The method according to claim 14, further comprising:
[17a] executing a single predetermined operation when a user simultaneously pushes a plurality of physical buttons on the portable terminal apparatus.
[18pre] The method according to claim 14,
[18a] wherein the unlock operation in the first display mode, the second display mode, and the third display mode is initiated by sliding the first screen.
[19pre] The method according to claim 14,
[19a] wherein in the third display mode the control icon and the first screen are displayed simultaneously on the display and are arranged such that at least a portion of the control icon is displayed in a top half of the display screen.
[20pre] The method according to claim 14,
[20a] wherein performing the wireless communication with the external device includes implementing an encryption scheme.
[21pre] The method according to claim 20,
[21a] wherein the encryption scheme is WEP (Wired Equivalent Privacy).
[22pre] The method according to claim 20,
[22a] wherein the encryption scheme is WPA (WiFi Protected Access).
[23pre] The method according to claim 20,
[23a] wherein the encryption scheme is WPA (WiFi Protected Access) 2.
[24pre] The method according to claim 14,
[24a] wherein the portable terminal apparatus has a function not to display the control icon even in the third display mode.
[25pre] The method according to claim 14,
[25a] wherein the portable terminal apparatus is configured to allow a user to select whether to display the control icon even in the third display mode.

I. INTRODUCTION

In accordance with 37 C.F.R. § 42.104(a), Petitioner certifies that U.S. Patent 10,812,646 is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging the patent claims on the grounds identified in this Petition.

II. STATEMENT OF PRECISE RELIEF REQUESTED

In accordance with 35 U.S.C. § 311, Petitioner requests cancellation of claims 1-25 of the '646 patent in view of the following grounds:

Ground	Claims	Stat. Basis	Prior Art
1	1-3, 7, 12-15, 19, 24-25	35 U.S.C. § 103	Esaka in view of Guihot and the knowledge of a person of ordinary skill in the art (“POSITA”)
2	4-6, 16-18	35 U.S.C. § 103	Esaka in view Guihot, Bandyopadhyay and the knowledge of a POSITA
3	8-11, 20-23	35 U.S.C. § 103	Esaka in view Guihot, Sharif-Ahmadi and the knowledge of a POSITA

III. THE '646 PATENT

A. Summary of the '646 Patent

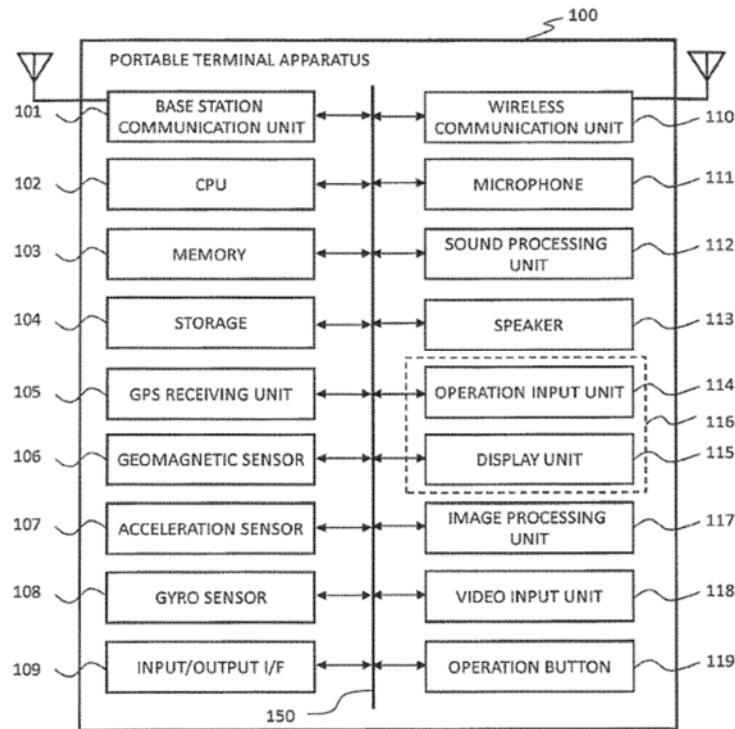
The '646 patent discloses a mobile device; *e.g.*, smartphone, for remotely controlling another device; *e.g.*, a TV, and which may continue being used as a remote control device from a lock screen upon waking up from a sleep state.

EX1001, 11:18-32, claim 1; EX1003, ¶40. The '646 patent purports to improve

user convenience because the user need not unlock the lock screen to continue using the device as a remote control. EX1001, 2:8-20, 7:25-28. EX1003, ¶41.

Figure 1 of the '646 patent, below, shows a block diagram of the portable terminal apparatus (*e.g.*, smartphone), according to an embodiment. It includes a “base station communication unit 101, a CPU 102, a memory 103, a storage 104, a GPS (Global Positioning System) receiving unit 105, a geomagnetic sensor 106, an acceleration sensor 107, a gyro sensor 108, an input/output I/F 109, a wireless communication unit 110, a microphone 111, a sound processing unit 112, a speaker 113, an operation input unit 114, a display unit 115, a touch panel 116, an image processing unit 117, a video input unit 118, and an operation button 119.” EX1001, 4:1-16; EX1003, ¶42. The '646 patent's “operational input unit 114” is the touch screen of the display, where the “operational input unit 114 detects the touch position to receive a command displayed at the touch position.” EX1001, 5:1-12; EX1003, ¶43.

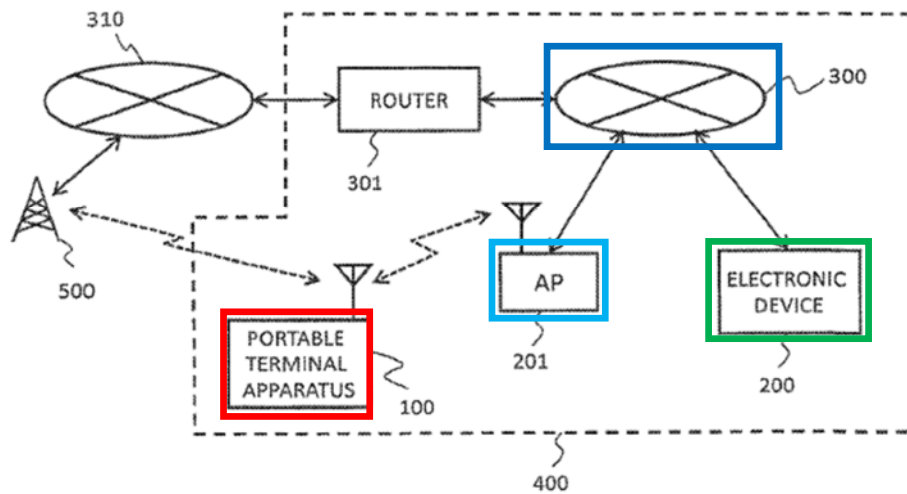
FIG. 1



EX1001, Fig. 1; EX1003, ¶43.

The '646 patent discloses that apparatus 100 controls “electronic device 200 [green box],” which is described as “a television receiver.” EX1001, 5:36-37; EX1003, ¶44. Figure 2 of the '646 patent, below, shows that “the portable terminal apparatus 100 [red box] can remotely control the electronic device 200 via the home network 300 [dark blue box],” which includes access point “AP 201 [light blue box].” EX1001, 5:55-62, 6:4-12, 6:23-25, 6:37-49, 6:58-7:5, Fig. 2; EX1003, ¶45.

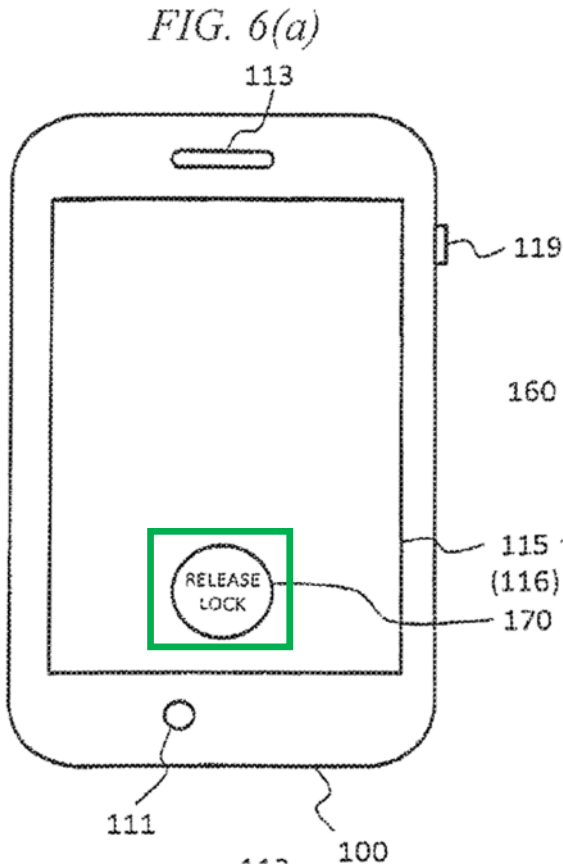
FIG. 2



EX1001, Fig. 2; EX1003, ¶45.

The '646 patent discloses three different display cases for the apparatus 100 upon waking up from a sleep state. EX1001, 9:7-60, Fig. 5; EX1003, ¶46. The first display case “is a case in which a state immediately before the sleep state is a state in which the remote control screen has not been displayed. That is, immediately before the sleep state, the apparatus has performed an operation other than a program for remote control. In this case, the apparatus is started up with a normal lock screen being displayed on a touch panel 116.” EX1001, 10:57-63; EX1003, ¶47. Thus, when the apparatus 100 was not used as a remote control immediately before entering a sleep state (*e.g.*, perhaps it was used as a phone), the normal lock screen, without any remote control icon, is displayed. EX1003, ¶48. Fig. 6(a), below, “shows an example of the normal lock screen [in which] ... only a lock

release button 170 [green box] is displayed on the touch panel 116.” EX1001,
7:50-53; Fig. 6(a); EX1003, ¶49.



EX1001, Fig. 6(a); EX1003, ¶49.

“The second case is a case in which ... immediately before the sleep state ... the remote control screen has been displayed and it is not possible to communicate with the AP 201. In this case, the apparatus is started up with the normal lock screen being displayed on the touch panel 116 ... [Thus,] although the remote control screen has been displayed immediately before the sleep state and the user has performed a remote control operation, the user has carried the portable terminal

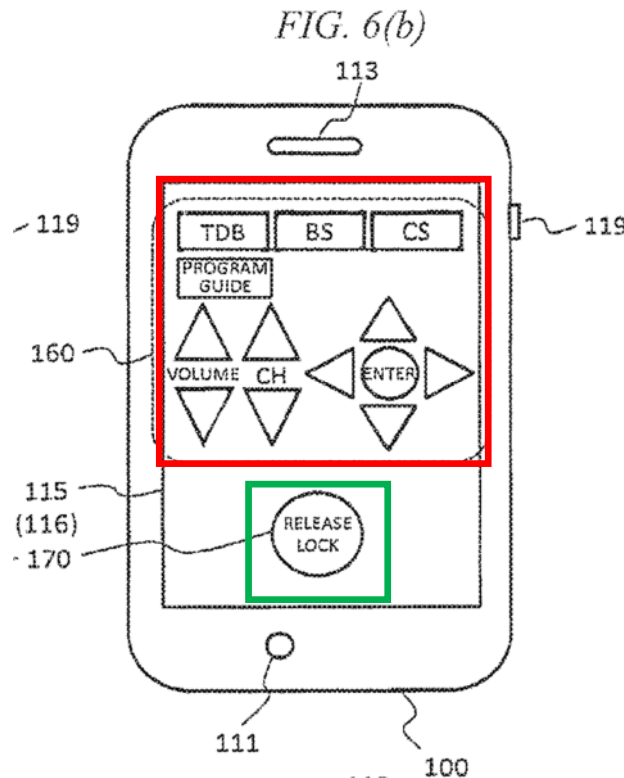
apparatus 100 ... out of range of the AP 201 ... in the sleep state ... and is not located near an electronic device 200.” EX1001, 10:64-11:10; EX1003, ¶50. Thus, even when the user was using the apparatus 100 as a remote control immediately before a sleep state, only the normal lock screen is displayed (Fig. 6(a), above), without a remote control icon, if the apparatus cannot communicate with the AP 201. EX1001, 7:50-53; EX1003, ¶51.

Regarding the second case, the ’646 patent further states that when the user is not within range of the AP 201, it “is no problem in starting up the apparatus on the normal lock screen. In contrast, in this state, if the apparatus is started up on the remote control display lock screen, the remote control screen which cannot be used is displayed, and as a result, the apparatus is poor in operability.” EX1001, 9:32-38. EX1003, ¶53. Stated another way, if the apparatus wakes up with the remote control icon displayed on the lock screen, and the apparatus is out of range to be used as a remote control, this is inconvenient to the user. EX1003, ¶54.

“The third case is a case in which ... immediately before the sleep state ... the remote control screen has been displayed and it is also possible to communicate with the AP 201. In this case, the apparatus [100] is started up with the remote control display lock screen being displayed on the touch panel 116.” EX1001, 11:18-23; EX1003, ¶55. Fig. 6(b), below, “shows an example of the ... remote control display lock screen ... [in which] the lock release button 170 [green box]

and the remote control button 160 [red box] are displayed on the touch panel 116.”

EX1001, 8:18-21; Fig. 6(b); EX1003, ¶56.



EX1001, Fig. 6(b); EX1003, ¶56.

Regarding the third case, the '646 patent states “[w]hen the portable terminal apparatus 100 is located inside the communication range with the AP 201, it indicates that the user ... is located near the electronic device 200. Since it is very likely that the user has released the sleep mode of the ... apparatus 100 to remotely control the electronic device 200, starting up the apparatus on the remote control display lock screen allows the user quickly to perform a remote control operation. This improves the operability.” EX1001, 11:23-32; EX1003, ¶57.

Also regarding the third case, the '646 patent discloses: “the remote control buttons 160 need not always be displayed simultaneously with the lock release button” and that the user may select whether to display the remote control buttons 160 along with the lock release button 170. EX1001, 8:61-9:3; EX1003, ¶58.

The '646 patent discloses the apparatus 100 may include standard features found on smartphones including buttons that, when pressed either individually, or simultaneously, perform certain functions. EX1001, 5:22-30; EX1003, ¶¶59-60. Other standard features include encrypted communications, as well as motion and location detection. EX1001, 7:67-8:4, 4:42-49, 4:39-41; EX1003, ¶61.

B. File History and Priority Date of the '646 Patent

The '646 patent was filed on September 19, 2019 and claims priority to U.S. Patent Application No. 16/370,233, filed on March 29, 2019, and U.S. Patent Application No. 15/326,365, filed as PCT/JP2014/068826 on July 15, 2014.¹ EX1001, (22), (63). Twenty-five claims issued on October 20, 2020. EX1002, 1 (Issue Notification); EX1003, ¶¶62-63.

C. State of the Art

As the '646 patent acknowledges, it was known to use a mobile device, *e.g.*, smartphone, for different applications including as a remote control to control

¹ Petitioners do not challenge the July 15, 2014 priority date for purposes of this IPR petition, however reserve their right to challenge whether any issued claims are entitled to that date either in litigation or in another IPR.

another device (*e.g.*, TV) via a wireless local area network (LAN). EX1001, 1:20-35; EX1003, ¶64. The '646 patent also acknowledges it was known that such mobile devices are often “put into a sleep state when a predetermined time (*e.g.*, 30 seconds) of a non-operation state passes.” EX1001, 1:66-2:2; EX1003, ¶65.

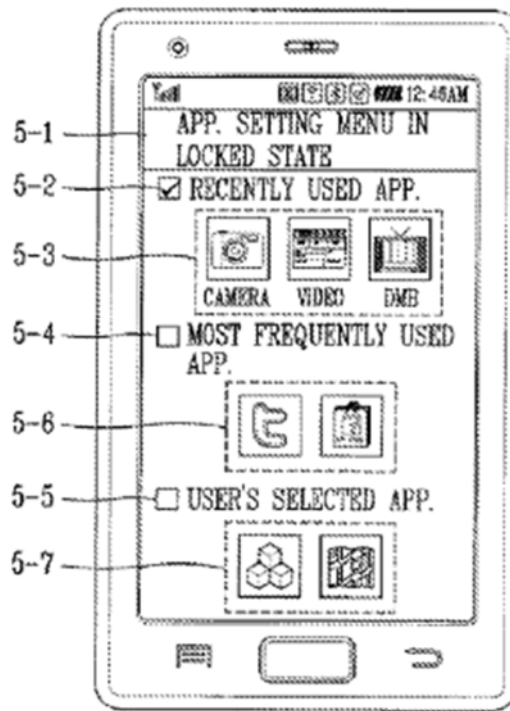
The '646 patent describes a perceived problem is that when a “predetermined time has passed since the previous remote control operation, since the [mobile device] is put into the sleep state, it is necessary to ... perform a lock function release operation such as the password authentication or the pattern authentication before performing a remote control operation.” EX1001, 2:2-15; EX1003, ¶66.

As demonstrated below, and in the specific grounds, it was well known in the art that although a mobile device enters a sleep state, a user could nonetheless access certain applications, including remote control applications, from the lock screen. Section VI; EX1003, ¶¶67-72. It was also well known that allowing such access to applications on the lock screen improved the user's experience and provided added convenience since the user could continue using the mobile device, *e.g.*, a remote control, upon picking it up after laying it down for some time. EX1003, ¶73. It was also known that if the user picked up the mobile device while it is in the sleep state, the user most likely intended to use the mobile device in the same manner; *e.g.*, as a remote control. EX1003, ¶¶74-75.

One example is U.S. Patent Application Publication 2012/0129496 to Park, published May 24, 2012 (“Park”). EX1008. Park discloses “[a] mobile terminal including ... a touch screen ... a wireless communication unit configured to wirelessly communicate with at least one other terminal ... and a controller configured to enter the touch screen into a locked state, to display a lock screen and an application program icon for executing an application program on the lock screen when entering the locked state.” EX1008, Abstract; EX1003, ¶76.

Referring to Fig. 5, below, Park discloses “an application program (APP) setting menu ... for setting an application program to be displayed on the display unit 402 when the touch screen is in a locked state.” EX1008, [0083]. The setting menu includes “recently used application program(s),” “most frequently implemented application program(s),” and “user’s selected application program(s).” EX1008, [0084]; EX1003, ¶77. “The controller 401 may also display icons indicating the application programs as well as an icon for releasing the lock on the display unit 402 when the touch screen is in the locked state.” EX1008, [0087]. Thus, it was known that a mobile device allows a user to access an application displayed on a locked screen and that the application is one most recently used. EX1003, ¶78.

FIG. 5



EX1008, Fig. 5; EX1003, ¶78.

Another example is U.S. Patent Application Publication 2014/0019994 to Miyazawa, published January 16, 2014 ("Miyazawa"). EX1009. Miyazawa discloses "the CPU 201 can initiate an application based on detection of a trigger without clearing the lock function. Consequently, when using the information processing terminal 20 to operate an external device which belongs in the same subnet, the user can omit at least a cumbersome operational procedure of selecting an application and initiating the selected application. Thus, the user can hold and immediately use the information processing terminal as is the case with a normal remote controller." EX1009, [0028]; EX1003, ¶79. The "trigger" may be "the

user's depression of a key which determines recovery ... from a sleep state.”

EX1009, [0030]; EX1003, ¶80. Thus, upon waking up from a sleep state, a remote control application is displayed without clearing the lock function and the user can immediately use the device as a remote controller. EX1003, ¶80.

Miyazawa also discloses the application displayed on the lock screen may be the last application used: “the CPU 201 may preferentially select the last application used as the current application to be used and initiate the application.” EX1009, [0035]; EX1003, ¶81.

Lastly, Miyazawa discloses that whether the application is initiated depends on the detection of a remote device on the same network. If the remote device is not detected, the application is not be displayed, and vice versa. EX1003, ¶82. Referring to Fig. 5, below, Miyazawa discloses “if the ... terminal 20 fails to detect a registered external device which belongs in the same subnet ... the CPU 20 does not continue the process of initiating the application. On the other hand, if the ... terminal 20 detects a registered external device which belongs in the same subnet, the CPU ... initiat[es] the application.” EX1009, [0024]; EX1003, ¶83.

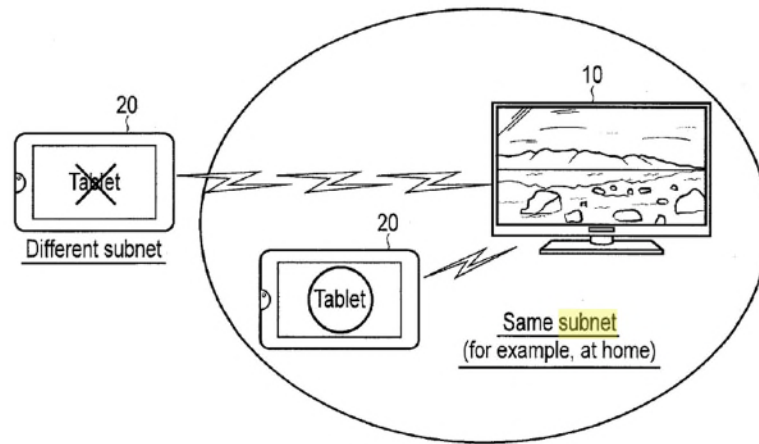


FIG. 5

EX1009, Fig. 5; EX1003, ¶83.

IV. SUMMARY OF PRIOR ART

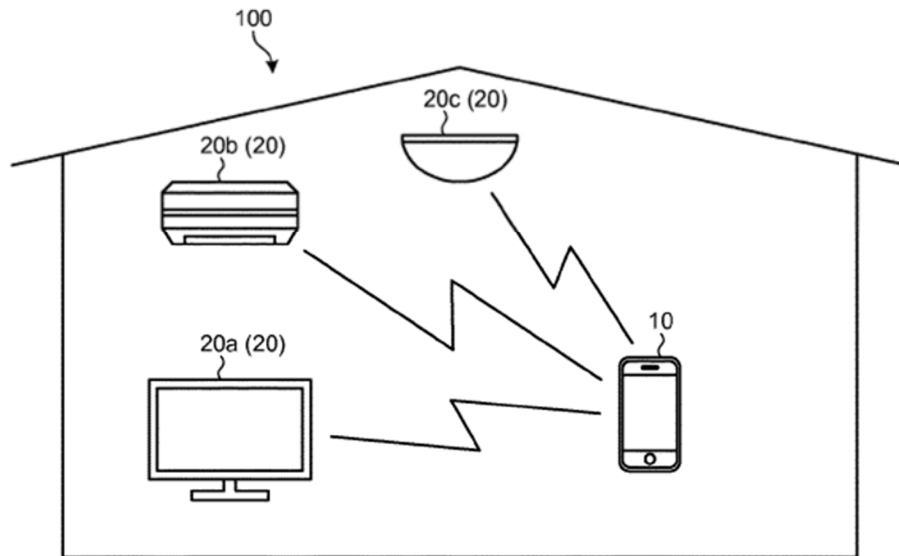
A. Esaka

U.S. Patent No. 9,736,217 (“Esaka”) was filed May 19, 2014 and claims priority to PCT Application No. PCT/JP2013/066884, filed June 19, 2013.

EX1004, cover page. Esaka is prior art under at least 35 U.S.C. § 102(a)(2). Esaka is analogous art to the ’646 patent and was not considered during prosecution of the ’646 patent.

Referring to Fig. 1, below, Esaka discloses “a personal digital assistant [‘PDA’] (for example, a smart phone or a tablet computer) 10” that “is part of a remote control system 100, in which the [PDA] 10 may be used to control device 20 such as a TV 20a.” EX1004, 2:12-30, Fig. 1; EX1003, ¶97.

FIG.1



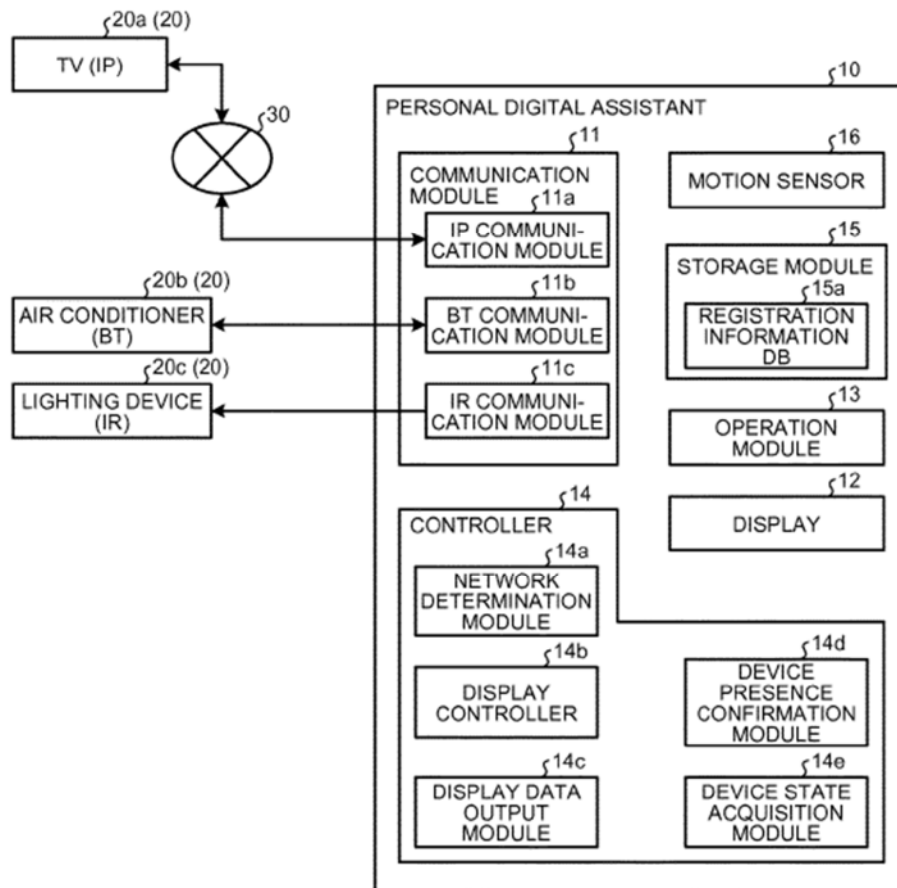
EX1004, Fig 1; EX1003, ¶97.

Esaka follows the “intention of the user” and “improve[s]” the “convenience of the user.” EX1004, 10:5-9, 10:19-25; EX1003, ¶98. For example, Esaka discloses “when the motion sensor 16 detects the movement of the [PDA] 10 and the network determination module 14a determines that the communication module 11 is connected to the network, ... the display ... display[s] the operational screens ... for operating the ... target device 20 on the locked screen.” EX1004, 10:10-18; EX1003, ¶99. Thus, “the convenience of the user can be improved ... [by] following [the] intention of the user.” EX1004, 10:19-25; EX1003, ¶100.

Referring to Fig. 2, below, Esaka discloses how PDA 10 wirelessly controls TV 20. EX1004, 2:32-47; EX1003, ¶101. For example, Esaka discloses “the communication module 11 of the [PDA] 10 comprises an IP communication

module 11a ... [that] is communicatably connected to the TV 20a via the home network 30” (EX1004, 2:39-44) where “[t]he TV 20a is communicably connected to a home network 30 comprising a router.” EX1004, 2:32-34; EX1003, ¶102. Esaka further discloses “[t]he IP communication module 11a is configured to be capable of transmitting a predetermined operation signal (remote control signal) to the TV 20a by performing IP communication.” EX1004, 2:44-47; EX1003, ¶103.

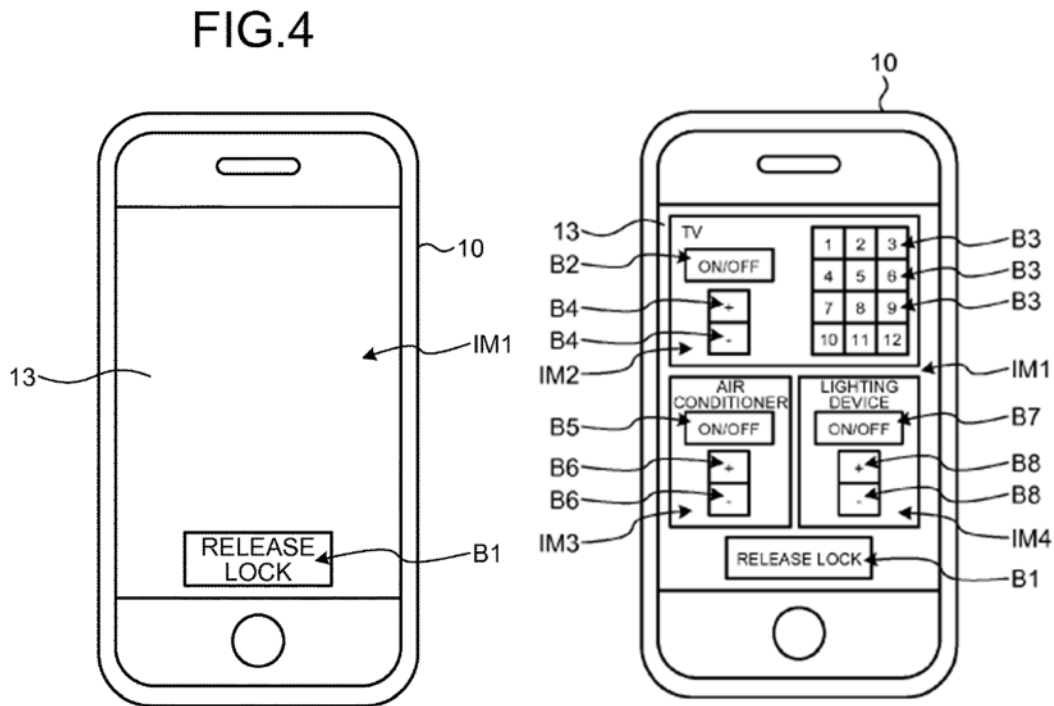
FIG.2



EX1001, Fig. 2; EX1003, ¶103.

Esaka further discloses that only after confirming the PDA 10 can communicate with the remote device 20 upon awakening from a sleep state are the operational screens displayed on the lock screen; otherwise they are not. EX1004, claim 1 (first PDA 10 “display[s], on a screen of the electronic apparatus, a locked screen,” then “determin[es] whether the electronic apparatus is connected with a first network of the first electronic apparatus under the lock condition,” and then it displays, only “upon confirmation that a plurality of electronic apparatuses are present, at least one of a plurality of operational interfaces corresponding to the first electronic apparatus on the locked screen.”); EX1003, ¶104. Fig. 4, below, shows the lock screen IM1 without the operational screens displayed; and Fig. 5, below, shows the lock screen IM1 with operational screens IM2-IM4 displayed. EX1001, 3:22-26; EX1003, ¶105.

FIG.5



EX1004, Figs. 4 and 5; EX1003, ¶105.

In the case of Fig. 5, where the operational screens IM2-IM4 are displayed on the lock screen IM1, Esaka discloses “the operation target device 20 [] can be securely operated by using the [PDA] 10 ... on the locked screen IM1, so that convenience of the user can be improved.” EX1004, 10:5-9; EX1003, ¶106.

B. Guihot

U.S. Patent No. 9,454,251 (“Guihot”) was filed June 26, 2013. EX1005, cover page. Guihot is prior art under at least 35 U.S.C. § 102(a)(2). Guihot is analogous art to the ’646 patent and was not considered during prosecution of the ’646 patent.

Guihot discloses a “mobile device[], such as [a] smartphone[] [...] that] can be used to control presentation of media content on a television.” EX1005, 1:14-16; EX1003, ¶109. Guihot discloses that existing user interfaces “detract from the user’s experience” because they “require[e] the user to unlock the mobile device (e.g., by entering a password, passcode, drawing a particular pattern on the touchscreen, etc.) ... or even restart the dedicated remote control application.” EX1005, 1:24-34; EX1003, ¶110.

Guihot discloses that the mobile device “can launch a dedicated remote control application that presents a control interface to the user” but that “the screen of the mobile device is often turned off after a certain period of inactivity.” EX1005, 1:16-21; EX1003, ¶111. “To continue controlling the television with the control interface of the dedicated remote control application, the user is required to wake up the mobile device” and it would “detract from the user’s experience” for “the user to unlock the mobile device (e.g., by entering a password [...])” before using the remote control again. EX1005, 1:24-32; EX1003, ¶111. To remedy this, Guihot discloses “controlling a remote device using a touch screen of a mobile device in a display inhibited state.” EX1005, 1:35-37; EX1003, ¶111.

Fig. 2B of Guihot, below, shows that “the remote control application is running on mobile device 202 in which a lock screen is presented to a user” and that “[i]n some implementations, remote control interface 230 [red box] can

include a lock icon 232 [green box] which can indicate to a user that mobile device 202 is at a lock screen.” EX1005, 12:8-41; Fig. 2B; EX1003, ¶112. Guihot further discloses that this screen “can be configured to control any suitable functions of the remote device to be controlled,” including, e.g., “play, pause, control volume, rewind, [or] fast forward.” EX1005, 7:20-45, 10:6-48; EX1003, ¶113.

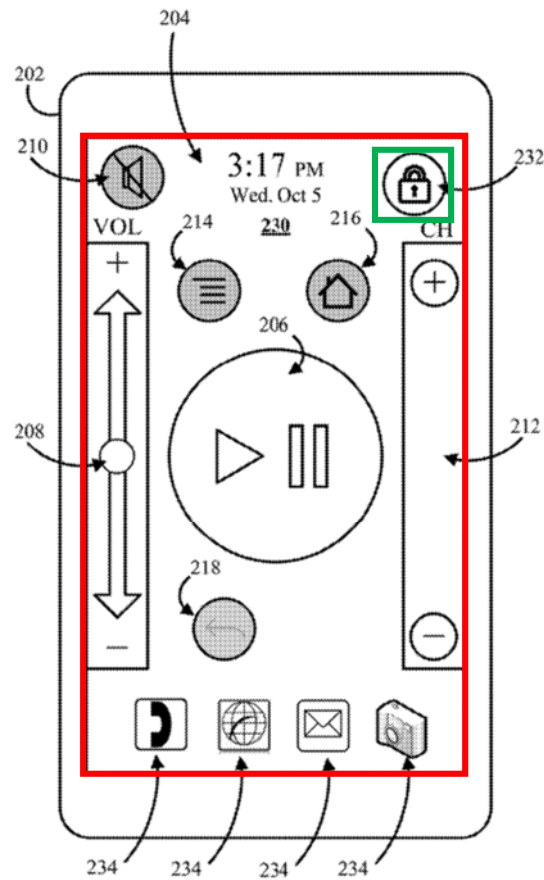


FIG. 2B

EX1005, Fig. 2B; EX1003, ¶113.

Guihot also discloses the user can choose whether to display the remote control interface 230 on the lock screen. EX1005, 12:21-29; EX1003, ¶114.

C. Bandyopadhyay

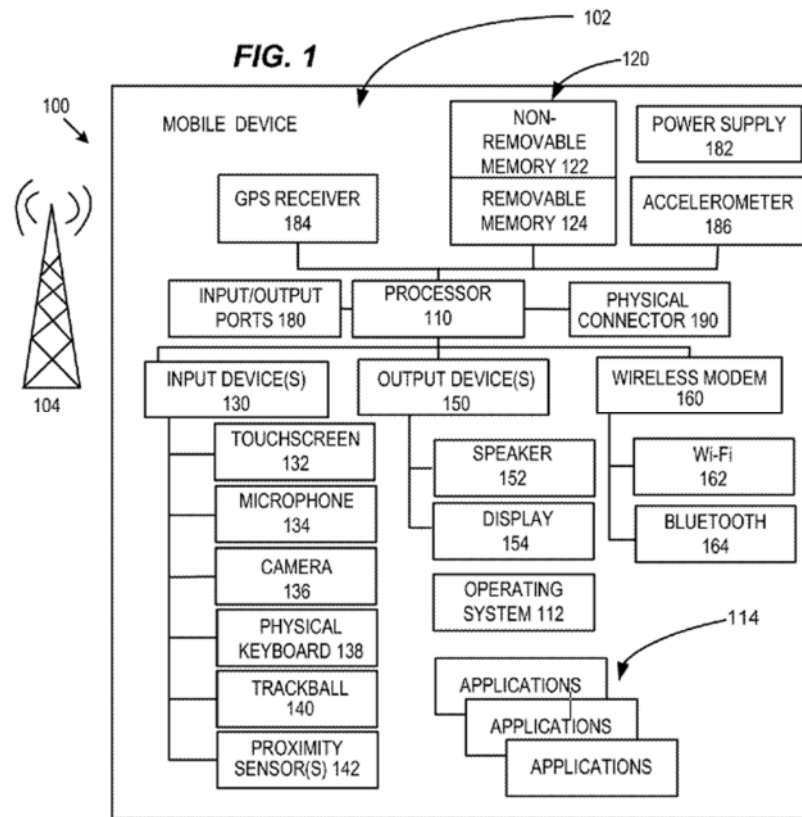
U.S. Patent No. 9,521,247 (“Bandyopadhyay”) was filed July 23, 2014 and claims priority to U.S. Patent Application No. 12/940,913, which was filed November 5, 2010. EX1006, cover page. Bandyopadhyay is prior art under at least 35 U.S.C. § 102(a)(2). Bandyopadhyay is analogous art to the ’646 patent and was not considered during prosecution of the ’646 patent.

Bandyopadhyay discloses a mobile device; *e.g.*, a smartphone, including conventional sensors, physical buttons, and a user interface for accessing an application from a lock screen. EX1006, 1:23-25, 1:55-64; EX1003, ¶116.

Bandyopadhyay is focused on “enhancing user experiences when using a mobile device.” EX1006, 1:14-17, 1:24-27 (“there is a need for improving the user experience by allowing quick access to the image-capture functionality of mobile devices while also preventing accidental and/or unauthorized access to other functionalities on the device.”); EX1003, ¶117.

Bandyopadhyay further describes a mobile device that “can support one or more input devices 130, such as a touch screen” (EX1006, 8:21-25), has “[a] wireless modem [that] can be coupled to an antenna (not shown) and can support two-way communications between the processor 110 and external devices”

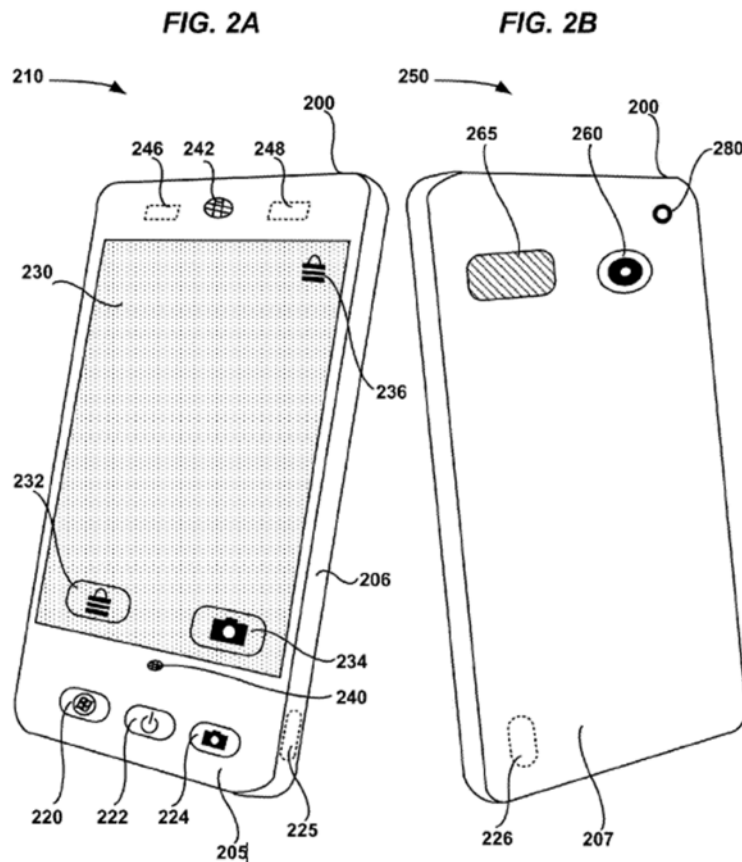
(EX1006, 8:31-37), has a “proximity sensor 142” that “emit[s] an infrared beam and receive[s] a reflected infrared beam” (EX1006, 8:21-24, 9:1-7), and has “a satellite navigation system receiver 184, such as a Global Positioning System (GPS) receiver, an accelerometer 186, [and] a gyroscope (not shown).” EX1006, 8:44-47; Fig. 1; EX1003, ¶118.



EX1006, Fig. 1; EX1003, ¶118.

Referring to Figs 2A and 2B, below, Bandyopadhyay discloses “several hardware buttons, including a home button 220, a power button 222, and a camera shutter (image-capture) button 224” and when “the end user presses and holds the camera button [224], a camera application ... is launched and a live viewfinder

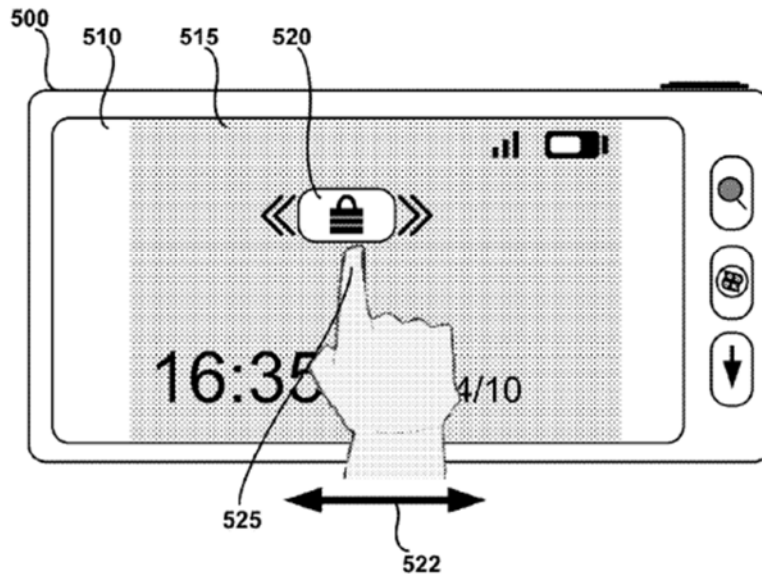
appears on the mobile device display screen.” EX1006, 8:54-62, 10:5-35, 13:60-63; Figs. 2A and 2B; EX1003, ¶119. Moreover, if a “user press[es] and hold[s] a camera button and one or more other buttons (e.g., a power button 220) simultaneously for at least a predetermined duration (e.g., one second),” (EX1006, 14:33-45), “the mobile device launches the camera application.” EX1006, 14:33-45, Fig. 2A; EX1003, ¶120.



EX1006, Figs 2A, 2B.

Bandyopadhyay also discloses “an unlock slider control 520” to initiate unlocking the lock screen. EX1006, 12:15-25; Fig. 5A; EX1003, ¶120.

FIG. 5A



EX1006, Fig. 5A; EX1003, ¶120.

D. Sharif-Ahmadi

U.S. Patent No. 10,375,343 (“Sharif-Ahmadi”) was filed April 2, 2013 and claims priority to Canadian patents 2,773,342, filed March 30, 2012 and 2,791,935, filed October 3, 2012. EX1007, cover page. Sharif-Ahmadi is prior art under at least 35 U.S.C. § 102(a)(2). Sharif-Ahmadi is analogous art to the ’646 patent and was not considered during prosecution of the ’646 patent.

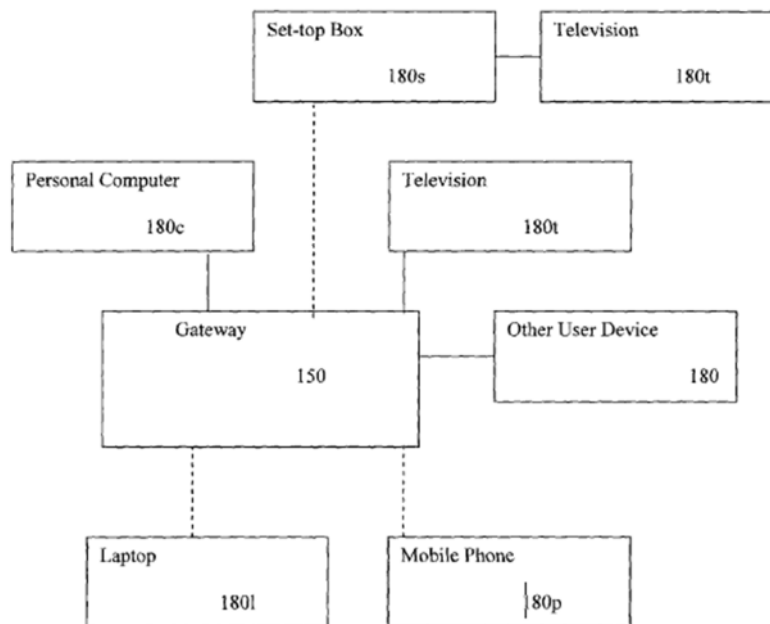
Sharif-Ahmadi discloses “[a] method of controlling a television with a mobile phone” via “an application ... displaying the functions of a remote control on a touchscreen.” EX1007, 5:45-50; EX1003, ¶123. The mobile phone controls the television through “receipt of input on the mobile phone, communicating the

input to the gateway; [and] on receipt of the input from the gateway

communicating the input to the television.” EX1007, 5:50-52; EX1003, ¶124.

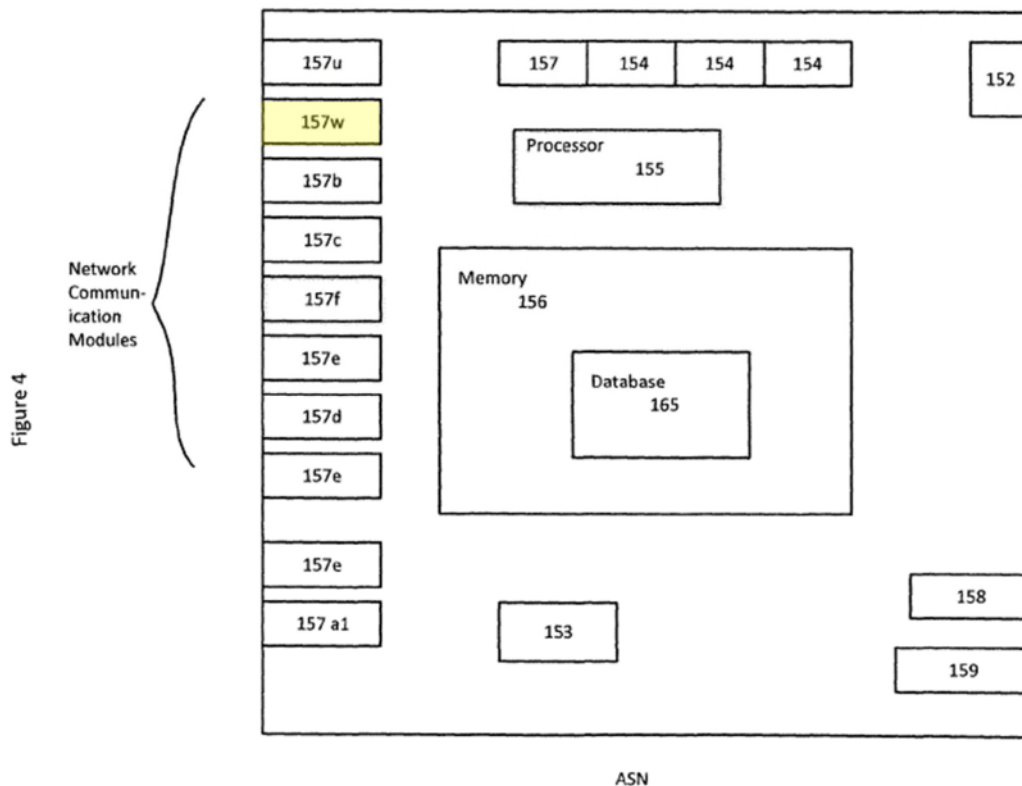
Referring to Fig. 3, below, Sharif-Ahmadi further discloses “a network (or ‘micro-cloud’) of service nodes, referred to as gateways 150 [highlighted, below],” in which “[e]ach gateway acts as one node within a content distribution network (‘CDN’ 15), and is used to forward content to one or more user devices 180 that are registered to use that particular gateway 150.” EX1007, 6:63-7:8; EX1003, ¶125.

FIG. 3



EX1007, Fig. 3; EX1003, ¶125.

“[G]ateway 150 should offer several security features [including] ... encryption/decryption of video streams” (EX1007, 25:32-35) and that “communication modules 157, such as Wi-Fi port 157w [highlighted below in Fig. 4]” “should support ... other features such as security (WEP, WPA, and WPA2).” EX1007, 7:47-56, 8:22-26; EX1003, ¶126.



EX1007, Fig. 4; EX1003, ¶126.

V. CLAIM CONSTRUCTION UNDER 37 C.F.R. § 42.104(B)(3)

A. Claim Construction Standards

The Challenged Claims are interpreted using the same claim construction standard that is used to construe the claim in a civil action in federal district court, which is the “ordinary and customary meaning” as understood by a POSITA. 37

C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312, 1327 (Fed. Cir. 2005).

For purposes of this petition, Petitioners propose that each claim term in the Challenged Claims be given its “ordinary and customary meaning,” and that no specific construction of any claim term is required because the prior art relied on in this Petition meets each of the claim terms under any reasonable construction. Petitioners’ proposal to adopt the “ordinary and customary meaning” in this petition in no way limits their rights to assert a different claim construction of any claim term for any other purpose, including litigation or another IPR petition.

B. Person of Ordinary Skill in the Art

A POSITA at the time of the alleged invention of the ’646 patent (July 15, 2014) would have had a Bachelors’ degree in Computer Science, Electrical or Computer Engineering or a comparable field of study, plus approximately one or two years of professional experience with user interface design for mobile devices or other relevant industry experience. EX1003, ¶93. Additional graduate education could substitute for professional experience, and significant experience in the field could substitute for formal education. EX1003, ¶93.

VI. GROUND 1: CLAIMS 1-3, 7, 12-15, 19, 24-25 ARE OBVIOUS IN VIEW OF ESAKA, GUIHOT, AND THE KNOWLEDGE OF A POSITA

A. Motivation to Combine

At the time of the '646 Patent, a POSITA would have been motivated to combine Esaka and Guihot; EX1003, ¶127. As an initial matter, both references are directed to essentially the same subject matter; *e.g.*, a mobile device such as a smartphone that can be used as a remote control for another device. EX1004, 2:12-30; EX1005, 1:14-16; EX1003, ¶128. Both Esaka and Guihot also disclose that the remote control can be accessed from the smartphone's lock screen to further improve the user's convenience by not requiring the user to first enter a password to unlock the screen before using the device as a remote control. EX1004, 4:55-61, 10:5-9, claim 1; EX1005, 1:16-37, Fig. 2B; EX1003, ¶129. Further, both Esaka and Guihot intend to improve the user's convenience by presenting the user with the remote control on the lock screen when it is apparent the user was using the smartphone as a remote control in particular circumstances. EX1004, 10:5-9, 10:19-25; EX1005, 1:28-34; EX1003, ¶130. For example, Esaka discloses the device should check whether it can communicate with the TV before it displays the remote icons on the lock screen. EX1004, claim 1. Similarly, Guihot discloses that if the smartphone was previously used as a remote control prior to entering a sleep state the remote icons should be displayed on the lock screen. EX1005, 1:16-32,

7:20-45, 10:21-30, 11:11-12:40; EX1003, ¶¶131-132. A POSITA would be motivated to combine Esaka's disclosure to check whether the smartphone can communicate with the TV with Guihot's disclosure to check whether the smartphone was previously used as a remote control prior to entering a sleep state because both scenarios are directed to the stated goal of improving user convenience and reducing user burden by enabling use of the smartphone as a remote control without requiring the user to first unlock the screen. EX1003, ¶133. A POSITA also would have been able to combine the disclosures of Esaka and Guihot as it would have been straight-forward and within the capabilities of a POSITA. *See, e.g.*, EX1004, 2:12-30, 4:55-61, 10:5-9, 10:19-25, claim 1; EX1005, 1:28-34; EX1003, ¶134.

A POSITA would understand it follows the intention of a user to give the user quick access to the application it was using just prior to setting the device down—and therefore would be motivated to utilize Guihot's prior use verification. EX1005, 1:28-34, 7:20-45, 10:31-33, 10:58-12:41; EX1003, ¶135. Similarly, a POSITA would have understood that it follows the intention of the user to use Esaka's disclosure to verify the smartphone can communicate with the external device prior to displaying remote control icons on the lock screen. EX1004, claim 1; EX1003, ¶136. It would decrease user convenience to display remote control

icons for an external device that the smartphone cannot communicate with.

EX1003, ¶137.

Combining Esaka with Guihot would simply involve a known technique (adding a logic step to the user interface software program) to yield predictable results (a program that verifies whether the smartphone can communicate with the TV, and whether the smartphone was previously used as a remote control).

EX1003, ¶138. A POSITA would have had a reasonable expectation of success because Esaka's user interface already has a logic step that considers whether the smartphone can communicate with the TV. Adding another logic step that determines whether the device was previously used as a remote control would be a matter of simple programming. EX1004, claim 1; EX1005, 1:16-37; EX1003, ¶139. A POSITA would have had a reasonable expectation that this modification would be successful because the teachings of Esaka and Guihot both make clear that these logic steps are designed to follow the intention of the user and can be predictably nested together in any software program without undue experimentation. EX1004, 4:55-61, 10:5-9, 10:19-25, claim 1; EX1005, 1:16-37; EX1003, ¶140. This modification also yields predictable results because it requires no change to Esaka's smartphone or TV hardware or industrial design. EX1004, 2:32-47, 3:19-26, 4:30-40, 4:44-55, Fig. 2, Fig. 4; EX1003, ¶141.

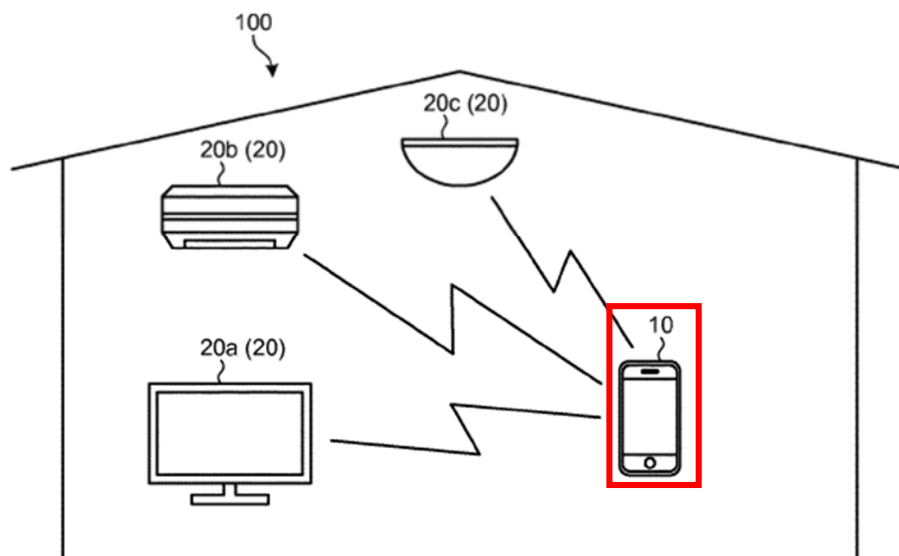
If Patent Owner argues the portions of Esaka and Guihot cited below relate to different, incompatible embodiments (which they do not), it would have been obvious to a POSITA to combine such embodiments into a single device at least because such embodiments are described in the same prior art reference, are fully compatible with each other, and could be combined with minimal effort to achieve predictable results. EX1003, ¶142.

B. Claim 1

1. [1pre] A portable terminal apparatus comprising:

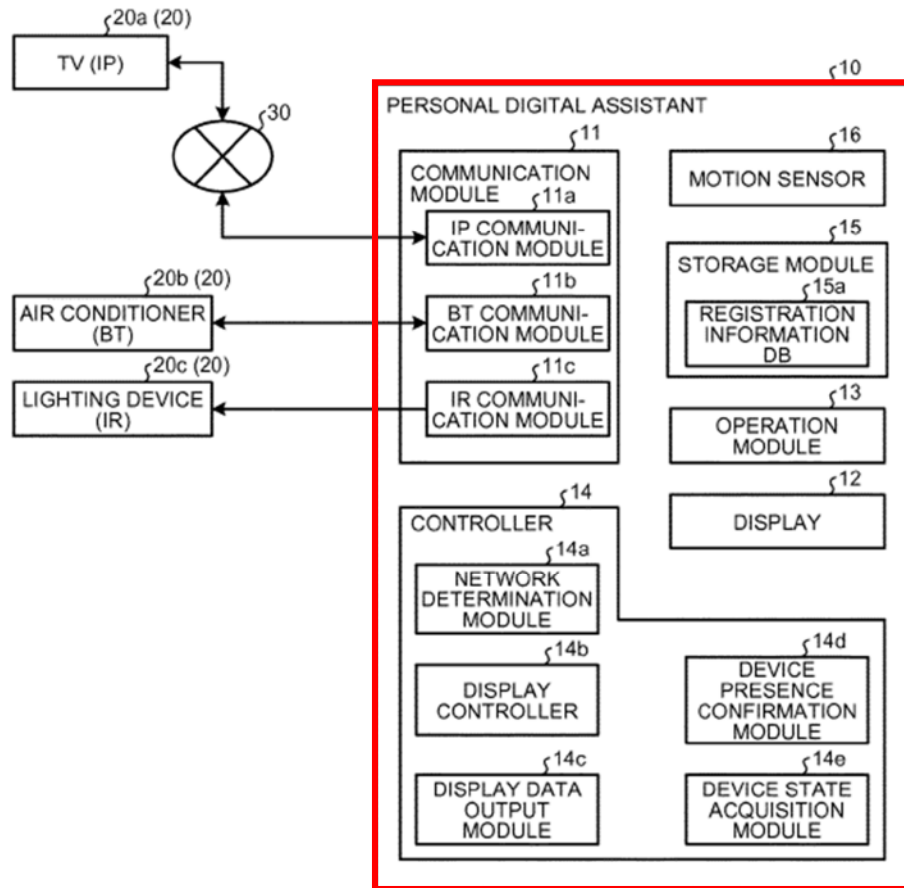
To the extent the preamble is limiting, Esaka discloses it. EX1003, ¶143. Esaka discloses an electronic device such as “a personal digital assistant [‘PDA’] (for example, a smart phone or a tablet computer) 10 [red in Figs. 1 and 2, below].” EX1004, 2:12-17; EX1003, ¶144. In particular, Esaka discloses the PDA 10 is part of a remote control system 100, in which the PDA 10 may be used to control device 20 such as a TV (20a). EX1004, 2:18-30, Figs. 1-5; EX1003, ¶145.

FIG.1



EX1004, Fig 1; EX1003, ¶145.

FIG.2

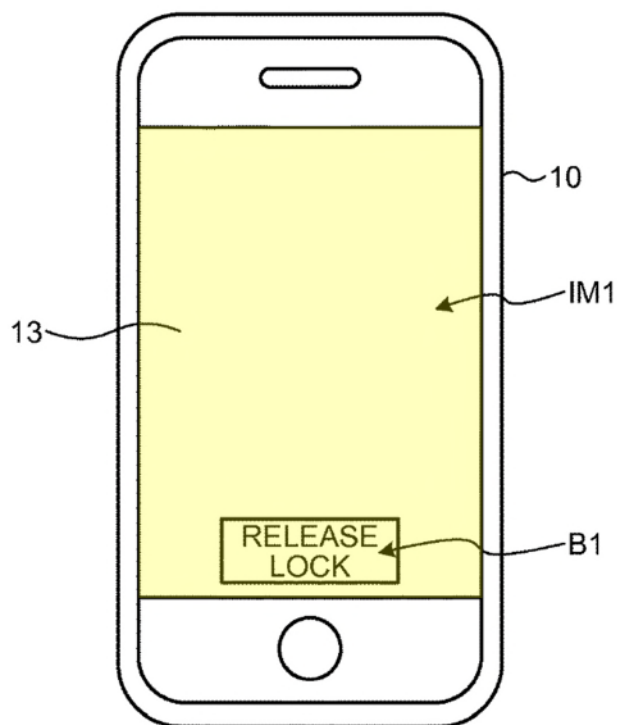


EX1004, Fig 2; EX1003, ¶145.

2. [1a] a display;

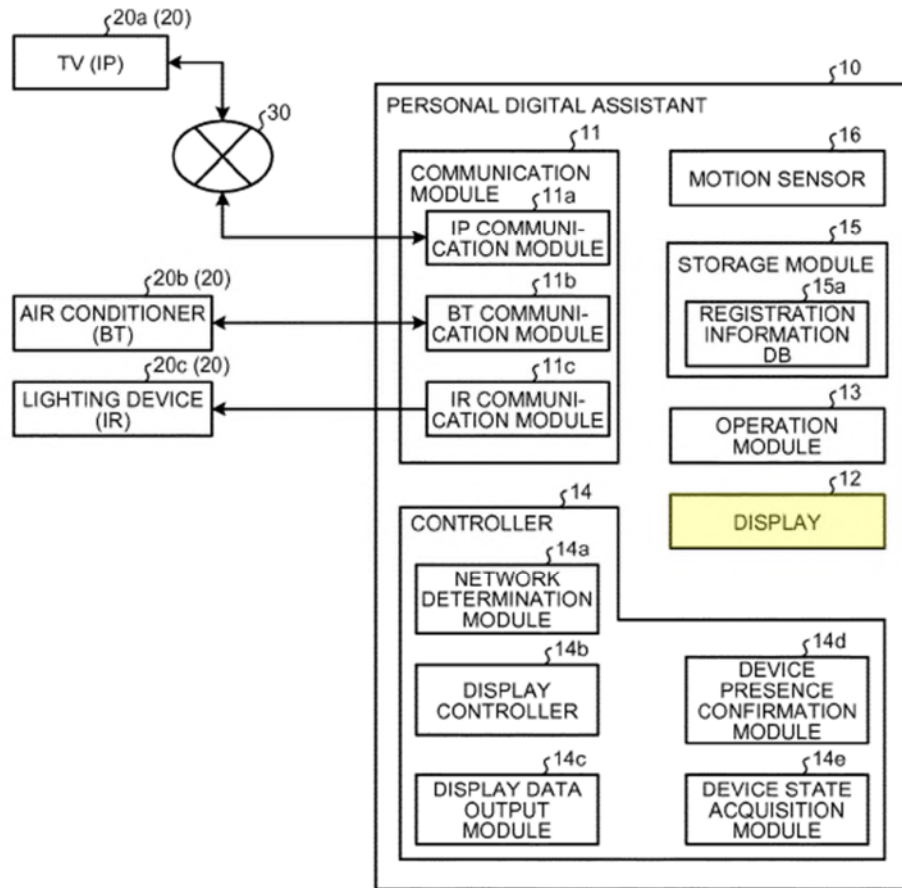
Esaka discloses this limitation. EX1003, ¶146. Esaka discloses “[t]he display 12 [highlighted yellow in Figs. 4 and 2, below] of the [PDA] 10 comprises a liquid crystal panel that can display an image.” EX1004, 3:19-26; EX1003, ¶146.

FIG.4



EX1004, Fig 4; EX1003, ¶146.

FIG.2

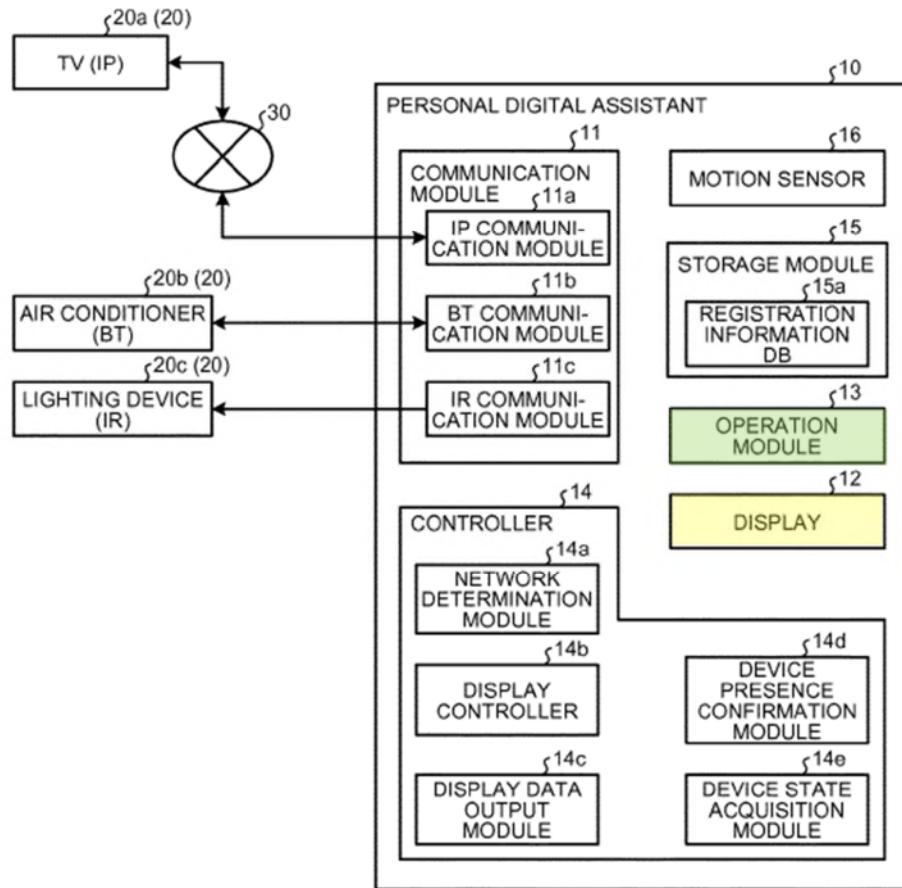


EX1004, Fig 2; EX1003, ¶146.

3. [1b] an operation input interface configured to receive an input corresponding to a user operation;

Esaka discloses this limitation. EX1003, ¶¶147-149. Esaka discloses “[t]he operation module 13 [highlighted green, below] of the [PDA] 10 comprises a touch panel using the display 12 [highlighted yellow, below].” EX1004, 3:19-26, Fig. 2; EX1003, ¶147.

FIG.2



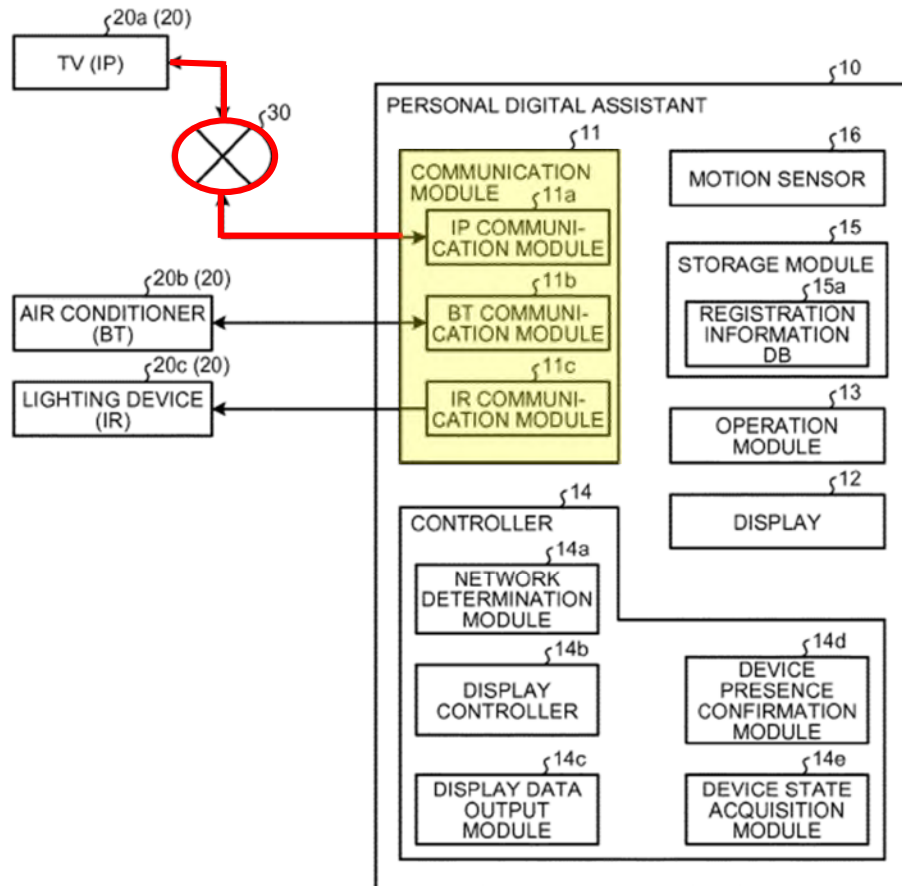
EX1004, Fig 2; EX1003, ¶147.

Esaka further discloses “[e]ach of the operational screens IM2 to IM4 (refer to FIG. 5) is a screen on which various buttons for operating the operation target device 20 are displayed, and the user can perform various operations on the operation target device 20 by performing an operation of pushing down the various buttons displayed on the operation module 13.” EX1004, 4:55-61; EX1003, ¶¶148-149.

4. [1c] a wireless communication interface configured to perform communication over a wireless local area network; and

Esaka discloses this limitation. EX1003, ¶¶150-152. With reference to Fig. 2, below, Esaka discloses “the communication module 11 [highlighted yellow] of the [PDA] 10 comprises an IP communication module 11a ... [that] is communicatably connected [red link] to the TV 20a via the home network 30” (EX1004, 2:39-44; EX1003, ¶150) where “[t]he TV 20a is communicably connected to a home network 30 comprising a router installed at home.” EX1004, 2:32-34; EX1003, ¶150. Esaka further discloses “[t]he IP communication module 11a is configured to be capable of transmitting a predetermined operation signal (remote control signal) to the TV 20a by performing IP communication [red link].” EX1004, 2:44-47; EX1003, ¶151.

FIG.2



EX1004, Fig 2; EX1003, ¶151.

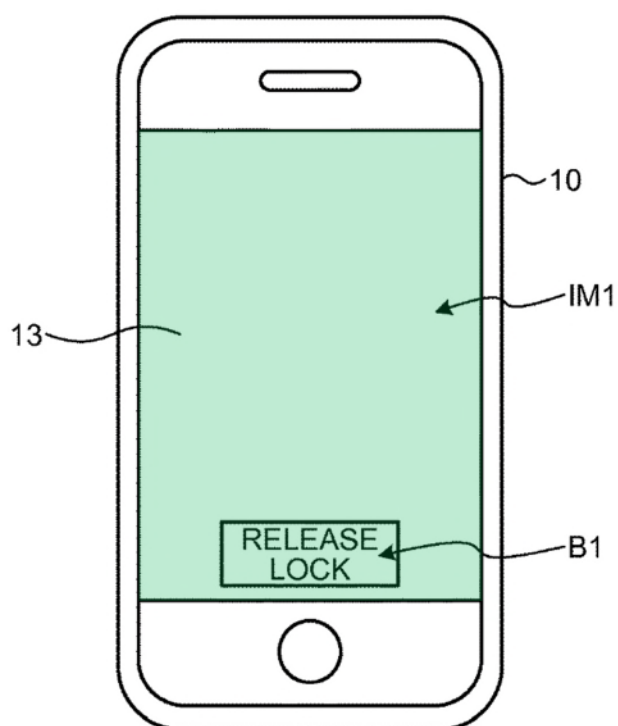
To the extent PO argues Esaka does not expressly disclose a “wireless local area network,” based on these disclosures it would have been obvious to a POSITA. EX1003, ¶152. For example, Esaka’s disclosure of a router and IP (internet protocol) communications for controlling the TV, as well as other disclosed well-known wireless communication links, *e.g.*, infrared (EX1004, Fig. 2, IR 11c) and Bluetooth (EX1004, Fig. 2, BT 11b), strongly suggests to a POSITA

that the home network 30 is a wireless local area network, and at the very least it would have been obvious to a POSITA. EX1003, ¶152.

5. [1d] a processor programmed to control state transitions of the portable terminal apparatus to and from a sleep state and further performing a plurality of display modes, the plurality of display modes including:

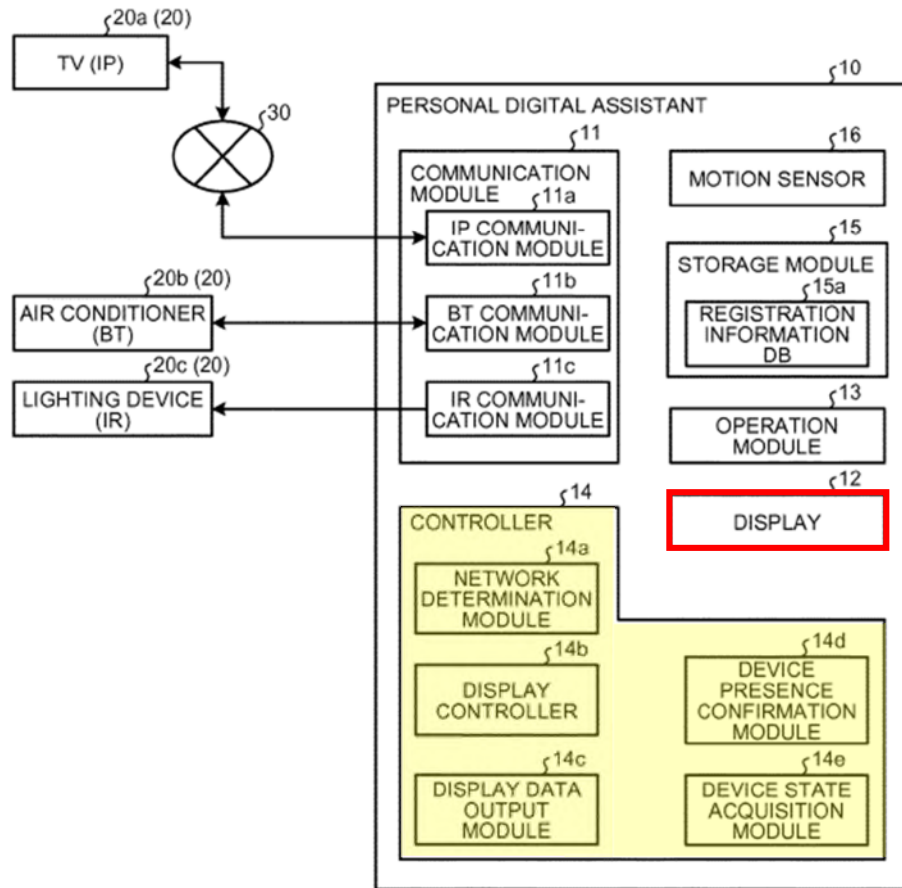
Esaka discloses this limitation. EX1003, ¶¶153-159. Esaka discloses a processor programmed to control state transitions of the portable terminal apparatus to and from a sleep state where it discloses “the display controller 14b of the controller 14 [highlighted yellow in Fig. 2, below] performs control of activating the display 12 [red box in Fig. 2, below] from the OFF state to the ON state to display the locked screen IM1 (highlighted green in Fig. 4, below) on the display 12.” EX1004, 4:30-40, Figs. 2, 4; EX1003, ¶153.

FIG.4



EX1004, Fig 4; EX1003, ¶153.

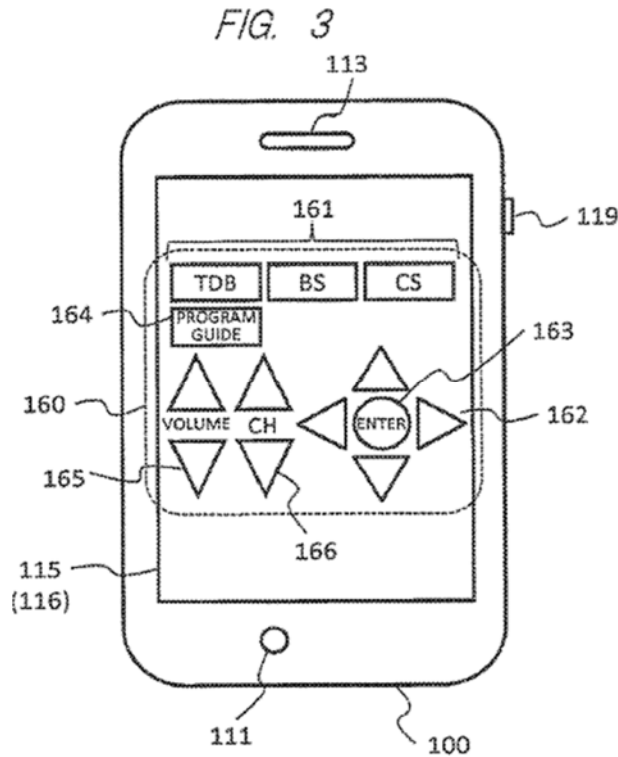
FIG.2



EX1004, Fig 2; EX1003, ¶153.

Esaka further discloses that “[a]n OFF state represents a state in which the display 12 displays no image (standby state; refer to FIG. 3). The display 12 is configured to be in the OFF state when the user leaves the personal digital assistant 10 unattended without any operation performed for a predetermined time or more.”

EX1004, 3:26-31, Fig. 3; EX1003, ¶154.



EX1004, Fig. 3; EX1003, ¶154.

To the extent PO argues that Esaka does not expressly disclose that the display controller 14b controls the state transition from the ON state to the OFF state when PDA 10 is unattended for a predetermined time, it would have been obvious to a POSITA that display controller 14b performs this function. For example, a POSITA would have understood that because the display 12 is “configured” to be in the OFF state when the user leaves the PDA 10 unattended without any operation performed for a predetermined time or more, display 12 is configured this way via the display controller 14b, which could be programmed to perform this function. EX1003, ¶155. Moreover, Esaka expressly discloses that the

display controller 14b “performs control of activating the display 12 from the OFF state to the ON state.” EX1004, 4:30-40; EX1003, ¶156. Thus, it would have been obvious to a POSITA that the simplest implementation would be for the same display controller 14b to perform control of de-activating the display 12 from the ON state to the OFF state. EX1003, ¶¶157-158.

Esaka also discloses a processor programmed to control state transitions. In particular, each of three state display modes controlled by the processor are described below in Sections VI.B.6 through VI.B.8. EX1003, ¶159.

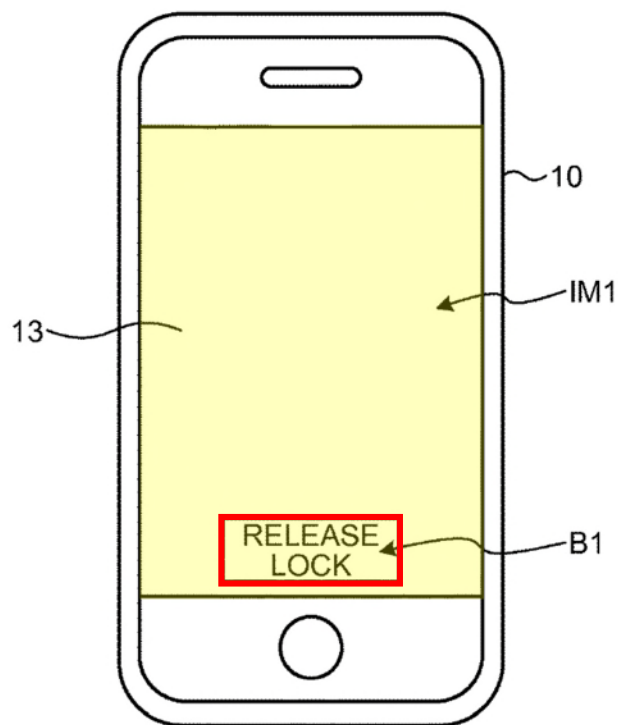
6. **[1e] a first display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on the display without display of a control icon when the portable terminal apparatus wakes up from a sleep state based on a first condition, wherein the first condition is met when a control screen for remotely and wirelessly controlling an external device via the wireless communication interface is not displayed on the display before the portable terminal apparatus enters a sleep state;**

Esaka, together with Guihot and the knowledge of a POSITA, discloses, or renders obvious, this limitation. EX1003, ¶¶160-181. Esaka discloses a first display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on the display without displaying a control icon. Specifically, Esaka discloses a “locked screen is exemplified as the locked screen IM1 (refer to FIG. 4) [highlighted yellow]” and that “the operation restriction on the personal digital assistant 10 can be released by

the user pushing down (touching) a lock releasing button B1 [red box, below]

displayed on the locked screen IM1,” which describes a first screen for performing authentication to execute an unlock operation. EX1004, 4:44-55, Fig. 4; EX1003, ¶160.

FIG.4



EX1004, Fig. 4; EX1003, ¶160.

To the extent PO argues Esaka does not expressly disclose performing authentication to execute an unlock operation, authentication requirements for unlocking a screen were well known in the art as exemplified by Guihot: “entering a password, passcode, drawing a particular pattern on the touchscreen.” EX1005, 1:28-32; EX1003, ¶161.

Further, as shown in Fig. 4 (above), Esaka discloses a first display mode where the first screen to be moved to a screen for performing authentication (locked screen) is displayed on the display without display of a control icon. EX1004, 4:44-50; EX1003, ¶162.

Esaka also discloses a first display mode where the first screen is displayed, without display of a control icon, when the portable terminal apparatus wakes up from a sleep state. For example, Esaka discloses “[t]he motion sensor 16 reacts when the user lifts up the [PDA] 10 left unattended for a predetermined time or more at home (the [PDA] 10 of which display 12 is in the OFF state) to operate the operation target device 20 [*i.e.*, wakes up from a sleep state] ... the display controller 14b ... then performs control of activating the display 12 to display the locked screen IM1 (refer to FIG. 4) on the display 12.” EX1004, 6:18-34; EX1003, ¶163. And although Esaka also discloses that, upon wake-up, “the operational screens IM2 to IM4” are also displayed “on the locked screen” (EX1004, 6:18-34; EX1003, ¶164), Esaka also discloses that the operational screens (control icons) [IM2-IM4] need not be displayed on the lock screen. EX1004, 11:22-25 (“the processing of displaying the operational screen on the locked screen is not necessarily performed”); *see also*, EX1004, 10:10-25, FIG. 4 (displays only the locked screen IM1 without the operational icons IM2-IM4); EX1003, ¶164.

Finally, Esaka and the knowledge of a POSITA discloses the above-described first display mode when a first condition is met—i.e., when a control screen for remotely and wirelessly controlling an external device via the wireless communication interface is not displayed on the display before the portable terminal apparatus enters a sleep state. EX1003, ¶165. Put simply, the first condition is met, and the operational icons will not be displayed on the lock screen, when the portable apparatus was not used as a remote control just prior to entering a sleep state. EX1003, ¶166.

While Esaka does not expressly disclose whether the PDA 10 was used as a remote control just prior to entering a sleep state, it does disclose its objectives are to follow the “intention of the user” and to “improve[]” the “convenience of the user.” EX1004, 10:5-9, 10:19-25; EX1003, ¶167.

Esaka discloses “when the user lifts up the personal digital assistant 10 with his/her hand to operate the operation target device 20 ... the operational screen for operating the operation target device 20 is displayed, so that the convenience of the user can be improved because the operational screen is displayed at an appropriate timing following intention of the user.” EX1004, 10:19-25; EX1003, ¶168.

Moreover, it was known in the art that a mobile device being used as a remote control could display the remote control icon on a lock screen if the remote

control application was the last application being used. Section III.C; EX1008, [0083-0084]; EX1009, [0035]; EX1003, ¶169.

In light of Esaka's objective to follow the user's apparent intent, and the knowledge of a POSITA based on the state of the art at the time of the alleged invention, a POSITA would understand this disclosure to mean that because the user was using the PDA 10 as a remote control device just prior to entering a sleep state, it follows the user's intention to use the PDA 10 as a remote control device again when it is next picked up and awakes from sleep by displaying the operational icons to control an operation target device 20 upon wake-up. EX1003, ¶170.

Esaka also discloses that PDA 10 can be, *e.g.*, a smart phone. EX1004, 2:13-14; EX1003, ¶171. Thus, a POSITA would understand that the user could use the PDA 10 for many other uses aside from a remote control device. Such other uses can include reading and drafting emails, text messaging, talking on the phone, surfing the web, etc. *See, e.g.*, EX1005, 17:59-62 (email); EX1003, ¶171.

If the user was using the PDA 10 only for email prior to entering a sleep state, it makes no sense for PDA 10 to display operational screens for a remote control device upon wake-up. EX1003, ¶172. In that case, a POSITA would understand that following the user's intent means to display a lock screen without remote control icons, or perhaps with, *e.g.*, email operational controls displayed,

because there is no recent history of the user using the PDA 10 as a remote control device. EX1003, ¶173. It makes sense that the user wants to continue using PDA 10 in the same manner it was used prior to entering a sleep state (*e.g.*, for email), rather than for an entirely different use, such as a remote control device. EX1003, ¶173.

Esaka also discloses one of its goals is “so that convenience of the user can be improved.” EX1004, 10:5-9; EX1003, ¶174. Once again, in light of this disclosure in Esaka, as well as the state of the art, a POSITA would understand that Esaka’s disclosure of improving the user’s convenience (*i.e.*, displaying the operational icons to control an operation target device 20 upon wake-up) only makes sense if the user was using the PDA 10 as a remote control device just prior to entering a sleep state. EX1003, ¶174. This is the simplest and most obvious way to improve the user’s convenience. EX1003, ¶174. For example, if the user was using the PDA 10 for email just prior to entering a sleep state, it makes no sense to display operational icons for a remote control upon wake-up. EX1003, ¶175. That would not improve the user’s convenience, because there is no indication the user would find it convenient to have remote control operational icons displayed on the lock screen. EX1003, ¶175. To the contrary, it would likely hinder and inconvenience the user to display remote control operational icons on wake-up if the user intended to continue to use the PDA 10 as an email device. EX1003, ¶175.

In this example, the user would first need to remove unwanted remote control operational icon(s) from the screen before they could access the desired email application. EX1003, ¶175.

Based on these express disclosures of Esaka, as well as the state of the art, a POSITA would understand that if the remote control operational icons are not displayed on the lock screen at wake-up, it is because the control screen was not displayed just prior to entering a sleep state— *i.e.*, the user was not using PDA 10 as a remote control device just prior to entering a sleep state. EX1003, ¶¶176-177. Thus, Esaka discloses to a POSITA the claimed first display mode when the claimed first condition is met. EX1003, ¶178.

To the extent PO argues that a POSITA would not reasonably understand or infer from Esaka that the first display mode is disclosed, at the very least it would have been obvious to a POSITA that, based on the state of the art and the express disclosure in Esaka that operational icons are displayed on the locked screen to comply with the user's intent and to improve the user's convenience. EX1003, ¶179. Based on basic principles of user interface design, and as was well-known in the state of the art, the operational icons would not be displayed on the locked screen if they were not previously displayed on the screen just prior to entering a sleep state, as required by the first display mode's first condition. EX1003, ¶180. In other words, it would have been obvious to a POSITA that if the user was not

using the PDA 10 as a remote control device just prior to entering a sleep state, the remote control operational icons would not be displayed on the lock screen upon wake-up as doing so would be contrary to the user's apparent intent and would inconvenience the user. EX1003, ¶181.

7. **[1f] a second display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on the display without display of a control icon when the portable terminal apparatus wakes up from a sleep state based on a second condition, wherein the second condition is met when the wireless communication interface is unable to communicate with the external device and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state; and**

Esaka, together with Guihot and the knowledge of a POSITA, disclose, or render obvious, this limitation. As described above, Esaka and/or Guihot disclose a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on the display. See §VI.B.6; EX1003, ¶182. Also as described above, Esaka further discloses the first screen (lock screen) is displayed without display of a control icon when the portable display apparatus wakes up from a sleep state. See §VI.B.6; EX1003, ¶182. Thus, Esaka together with Guihot disclose the second display mode. EX1003, ¶182.

Esaka, together with Guihot and the knowledge of a POSITA in view of the state of the art, further discloses, or renders obvious, the second display mode when a second condition is met—*i.e.*, when the wireless communication interface

is unable to communicate with the external device and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state. EX1003, ¶183. Put simply, the second condition is met if the portable terminal apparatus was used as a remote control before sleep, but, despite this, the remote control icons are not displayed on the locked screen upon wake-up because the portable terminal apparatus cannot wirelessly communicate with the external device. EX1003, ¶184.

Guihot discloses a mobile device (portable terminal apparatus) used as a remote control, with the remote control screen displayed on the display, before the mobile device enters a sleep state. Specifically, Guihot discloses “a mobile device can launch a dedicated remote control application that presents a control interface to the user” whereafter “the screen of the mobile device is often turned off after a period of inactivity” and “[i]n order to continue controlling the television ... the user is required to wake up the mobile device ... [which] can also include requiring the user to unlock the mobile device (e.g., by entering a password [...]).” EX1005, 1:16-32; EX1003, ¶185. Thus, Guihot discloses that the mobile device was used as a remote control, and displaying the remote control screen, before entering a sleep state; *i.e.*, one of the conditions of the second display mode. EX1003, ¶186.

Esaka also discloses, or renders obvious, the second condition of the second display mode; *i.e.*, if the portable terminal apparatus cannot wirelessly

communicate with the external device. EX1003, ¶187. For example, claim 1 of Esaka expressly discloses a scenario in which the operational interface is unusable if the electronic apparatus is not connected with the network, and unable to communicate with the external device. EX1004, claim 1 (“the operational interface on the locked screen is not usable under the lock condition, if it is determined that the electronic apparatus is not connected with the first network”). EX1003, ¶188. Although claim 1 seems to state that the operational interface is displayed, despite being unusable, Esaka also expressly discloses that “displaying the operational screen on the locked screen is not necessarily performed.” EX1004, 11:22-25; EX1003, ¶189. Thus, based on these disclosures in Esaka, at the very least it would have been obvious to a POSITA that if the PDA is unable to communicate with the external device via the network, the remote control operational interface would not be displayed on the lock screen since the user would be unable to use it even if it were displayed. EX1003, ¶190.

In another example, Esaka’s claim 1 discloses that the electronic apparatus “display[s], on a screen of the electronic apparatus, a locked screen.” EX1004, claim 1; EX1003, ¶191. Then it “determin[es] whether the electronic apparatus is connected with a first network of the first electronic apparatus under the lock condition.” EX1003, ¶191. Next, Esaka discloses “displaying, upon confirmation that a plurality of electronic apparatuses are present, at least one of a plurality of

operational interfaces corresponding to the first electronic apparatus on the locked screen.” EX1004, claim 1; EX1003, ¶192. Thus, Esaka discloses that before at least one operational interface is displayed, the electronic apparatus first confirms whether it is connected to a network and able to communicate with a plurality of electronic apparatuses. EX1003, ¶192. In other words, if the electronic apparatus cannot confirm it is connected to a network and is able to communicate with a plurality of electronic apparatuses, the at least one operational interface will not be displayed. EX1003, ¶192.

Lastly, as Dr. Bederson explains, it was already known in the art that if a mobile device cannot communicate with a remote device, the remote control icon is not displayed on the lock screen. Section III.C; EX1009, [0024] (“if the ... terminal 20 fails to detect a registered external device which belongs in the same subnet ... the CPU 20 does not continue the process of initiating the application.”); EX1003, ¶193.

It also would have been obvious to a POSITA that if a mobile device cannot communicate with a remote device, the remote control icon is not displayed on the lock screen. EX1003, ¶194. If the mobile device cannot communicate with the remote device, e.g., the user left the house and is no longer close to the TV, it would be inconvenient to display the remote control icon since the user does not intend to use the mobile device as a remote control. EX1003, ¶194.

In light of these express disclosures in Esaka, and the state of the art, at the very least, it would have been obvious to a POSITA that if the mobile device cannot communicate with a remote device, the remote icon is not displayed on the lock screen. EX1003, ¶195.

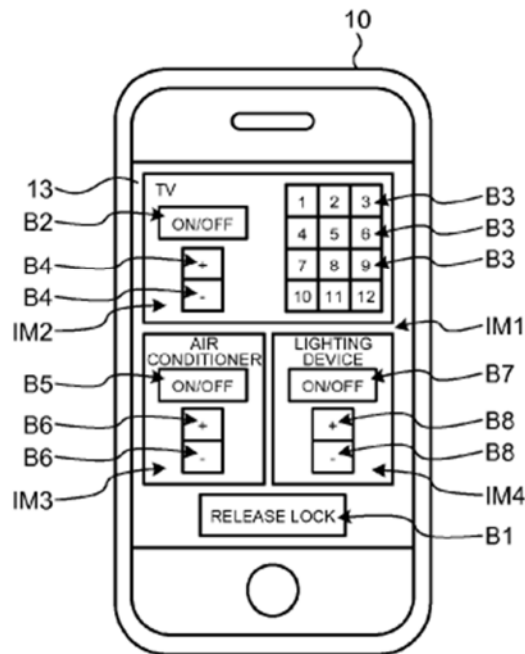
8. **[1g] a third display mode during which a control icon and a first screen to be moved to a screen for performing authentication to execute an unlock operation are displayed on the display when the portable terminal apparatus wakes up from a sleep state based on a third condition, wherein the third condition is met when the wireless communication interface is able to communicate with the external device and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state,**

Esaka, together with Guihot discloses, or renders obvious, this limitation. EX1003, ¶¶196-204. Referring to Fig. 5, below, Esaka discloses a third display mode during which a control icon and a first screen to be moved to a screen for performing authentication to execute an unlock operation are displayed on the display when the portable terminal apparatus wakes up from a sleeps state. EX1003, ¶196. For example, Esaka discloses “[t]he motion sensor 16 reacts when the user lifts up the [PDA] 10 left unattended for a predetermined time or more at home (the [PDA] 10 of which display 12 is in the OFF state) to operate the operation target device 20 [*i.e.*, wakes up from a sleep state] ... the display controller 14b ... then performs control of activating the display 12 to display the locked screen IM1 ... and displays the operational screens on IM2-IM4 (refer to

Fig. 5) for operating the operation target device 20 on the locked screen IM1.

EX1004, 6:18-34; EX1003, ¶197.

FIG.5



EX1004, Fig. 5; EX1003, ¶197.

In addition, Guihot discloses a third display mode during which a control icon and a first screen to be moved to a screen for performing authentication to execute an unlock operation are both displayed on the display when the portable terminal apparatus wakes up from a sleep state. EX1003, ¶198.

Specifically, Guihot discloses “a mobile device can launch a dedicated remote control application that presents a control interface to the user,” and that “the screen of the mobile device is often turned off after a certain period of

inactivity,” and that when the user “wake[s] up the mobile device,” it would “detract from the user’s experience” to “unlock the mobile device.” EX1005, 1:16-32; EX1003, ¶199. To remedy this, Guihot discloses “controlling a remote device using a touch screen of a mobile device in a display inhibited state.” EX1005, 1:35-37; EX1003, ¶199. In other words, the mobile device displays the remote control interface on the lock screen when the mobile device wakes up from a sleep state. EX1003, ¶199.

Figure 2B of Guihot, below, shows “the remote control application [yellow highlighted] is running on mobile device 202 in which a lock screen [red circle] is presented to a user.” EX1005, 12:8-41, Fig. 2B; EX1003, ¶200. Thus, Guihot discloses the third display mode in this limitation. EX1003, ¶196-200.

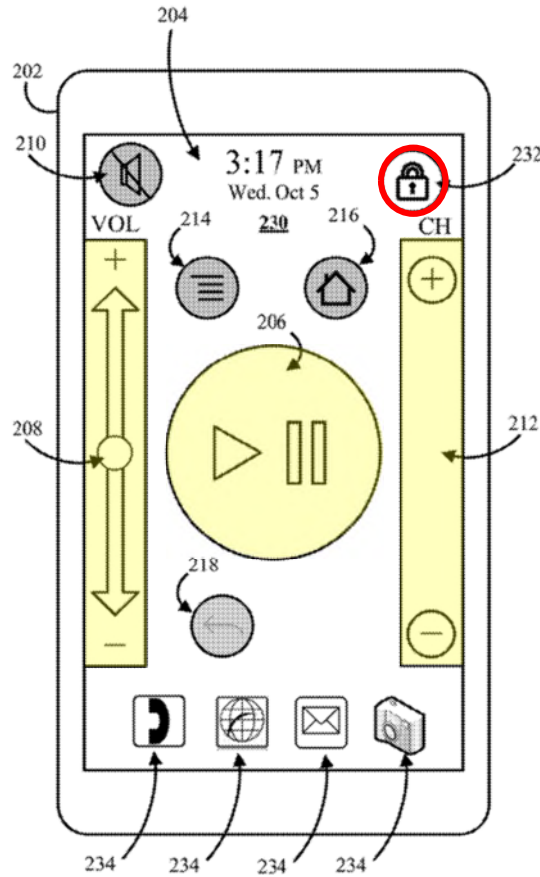


FIG. 2B

EX1005, Fig. 2B; EX1003, ¶200.

Esaka, together with Guihot, discloses the claimed third condition—*i.e.*, “when the wireless communication interface is able to communicate with the external device and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state.” EX1003, ¶201.

First, Esaka discloses that the mobile device is able to wirelessly communicate with the external device. EX1004, claim 1; EX1003, ¶202. As

described above (Section VI.B.7.), Esaka discloses that the mobile device “determine[es] whether [it] is connected with a first network ... under the lock condition.” EX1004, claim 1. EX1003, ¶202. Then, Esaka discloses “displaying, upon confirmation that a plurality of electronic apparatuses are present, at least one of a plurality of operational interfaces corresponding to the first electronic apparatus on the locked screen.” EX1004, claim 1; EX1003, ¶203. In other words, Esaka discloses displaying the operational interface (control icons) on the locked screen when the mobile device (portable terminal apparatus) determines it is able to communicate with at least a first electronic apparatus (external device). EX1003, ¶203.

Moreover, as Dr. Bederson explains, it was also known in the art for a mobile device to condition the display of a remote control application on whether the remote device to be controlled is detected in the same network as the mobile device. Section III.C; EX1009, [0024].

Second, as described above (*see* §VI.B.7.), Guihot discloses that the control screen is displayed on the display before the portable terminal apparatus enters a sleep state. *See* EX1005, 1:16-37; EX1003, ¶204.

Moreover, as Dr. Bederson explains, it was also known in the art that a mobile device could display on a lock screen the same application that was last

used prior to entering a sleep state, *e.g.*, a remote control. Section III.C; EX1008, [0083-0084]; EX1009, [0035].

9. [1h] wherein the control screen is used to execute control operations on the external device based on the input received by the operation input interface, and

Guihot and Esaka, either together or separately, disclose this limitation.

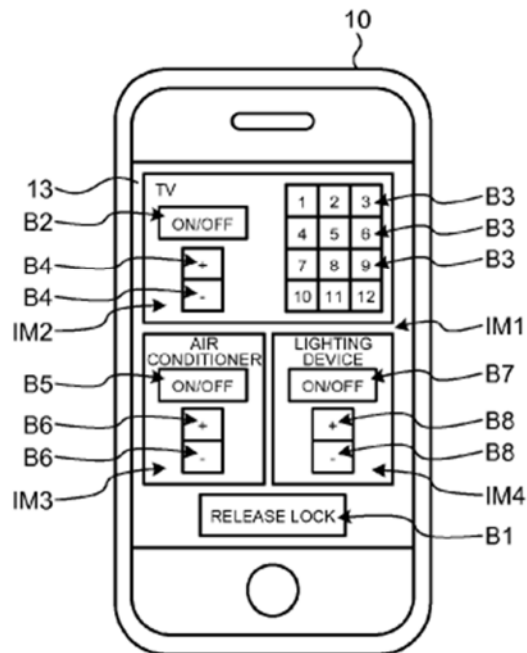
EX1003, ¶¶205-206. As described above (see §VI.B.3.), Esaka discloses an operation input interface configured to receive an input corresponding to a user operation. EX1003, ¶205. Esaka also discloses that “[e]ach of the operational screens IM2 to IM4 (refer to FIG. 5) is a screen on which various buttons for operating the operation target device 20 are displayed, and the user can perform various operations on the operation target device 20 by performing an operation of pushing down the various buttons displayed on the operation module 13.” EX1004, 4:55-61. EX1003, ¶205.

Similarly, Guihot discloses that the control screen is used to execute control operations on the external device based on the input received by the operation input interface. Specifically, Guihot discloses that the control screen “can be configured to control any suitable functions of the remote device to be controlled.” EX1005, 7:20-45; EX1003, ¶206. For example, the control screen shown at step 106 in Guihot’s Figure 1 can “play, pause, control volume, rewind, [or] fast forward” content on the external device. EX1005, 7:20-45; EX1003, ¶206.

10. [1i] wherein, when the control icon is selected in the third display mode without the unlock operation, the wireless communication interface transmits a remote control signal corresponding to the selected control icon to the external device.

Esaka discloses this limitation. EX1003, ¶207. Referring to Fig. 5, below, in which the control icon is displayed on the lock screen (*i.e.*, third display mode), Esaka discloses “a user can operate the operation target devices 20 (the TV 20a ...) by operating the operation module 13 of the personal digital assistant 10 ... to transmit an operation signal corresponding to the user’s operation.” EX1004, 2:55-61; EX1003, ¶207.

FIG.5



EX1004, Fig. 5; EX1003, ¶207.

C. Claim 2

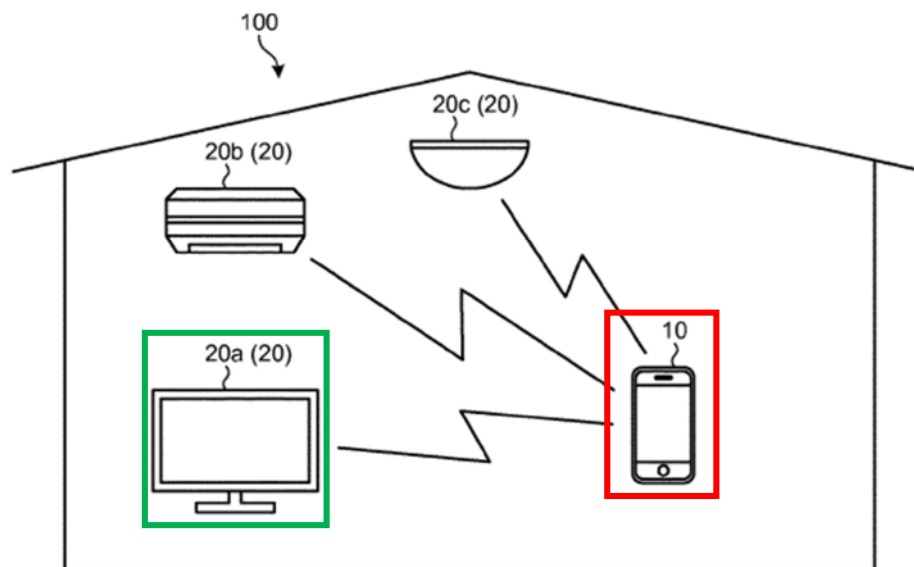
1. [2pre] The portable terminal apparatus according to claim 1,

See §VI.B.

2. [2a] wherein the portable terminal apparatus is a smartphone and the external device is used for display of a video content.

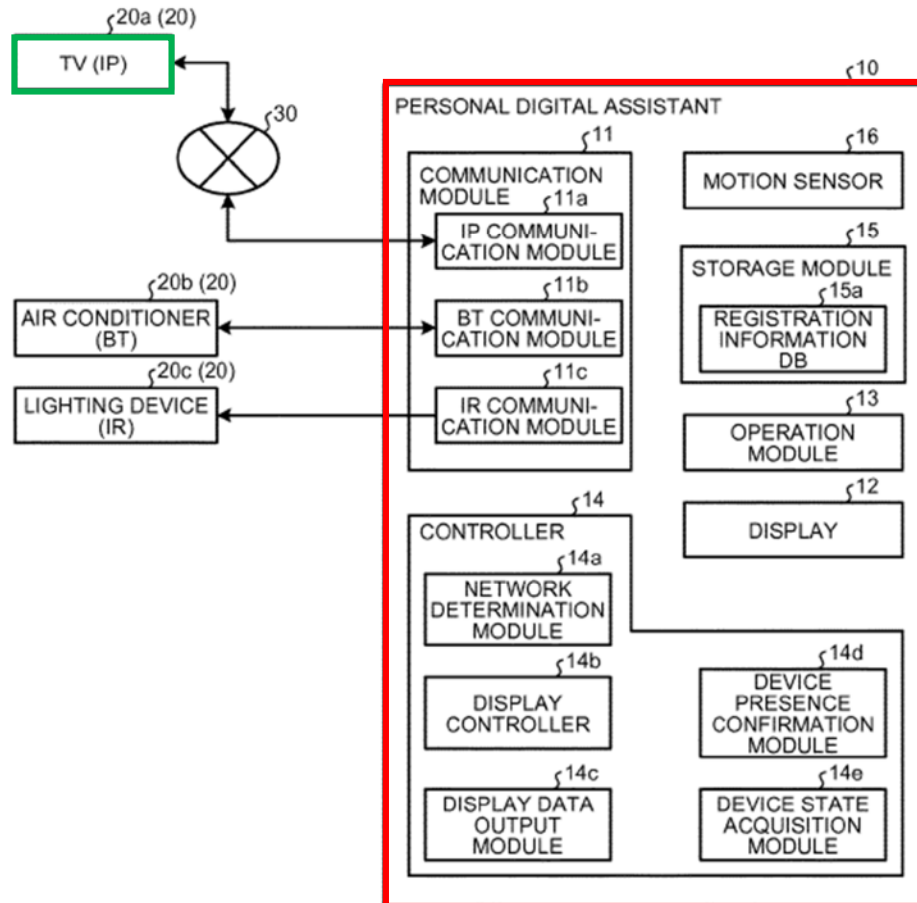
Esaka discloses this limitation. EX1003, ¶¶209-210. Esaka discloses “a personal digital assistant (for example, a smart phone [...]) 10” (red boxes, below in Figs. 1 and 2). EX1004, 2:12-17; Figs. 1, 2; EX1003, ¶209. Esaka further discloses the external device is used for display of a video content, because it discloses a TV 20a (green boxes, below in Figs. 1 and 2). EX1004, 2:18-30, 6:53-59; Figs. 1 and 2; EX1003, ¶210.

FIG.1



EX1004, Fig. 1; EX1003, ¶210.

FIG.2



EX1004, Fig. 2; EX1003, ¶210.

D. Claim 3

1. [3pre] The portable terminal apparatus according to claim 1,

See §VI.B.

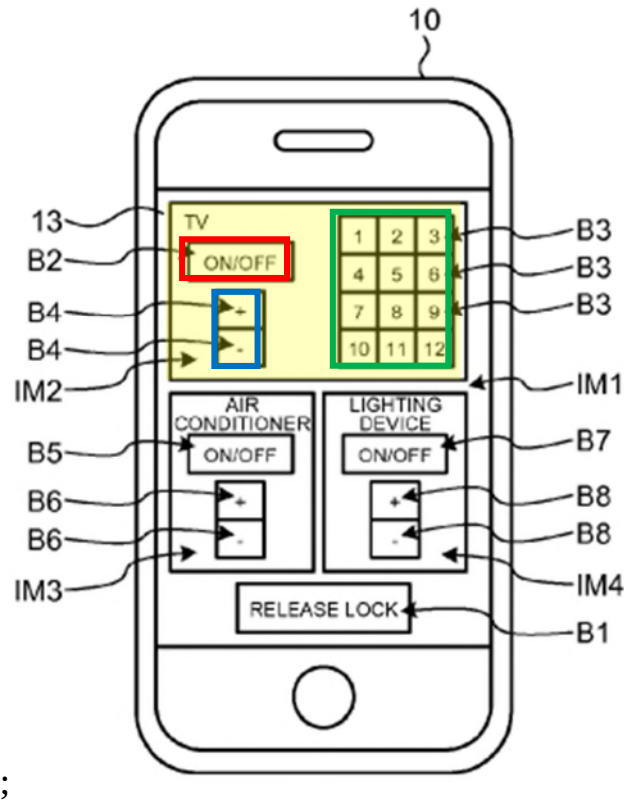
2. [3a] wherein the control screen includes a plurality of selectable control icons that enable a user to execute control operations on content being displayed under the control of

the external device, the control operations including an operation for selection of content to be displayed.

Esaka, alone or in combination with Guihot, discloses this limitation.

EX1003, ¶¶212-213. Esaka discloses a plurality of selectable control icons or buttons on operational screen IM2 (highlighted yellow, below), including “a power supply button (a button on which the characters ‘ON/OFF’ are displayed) B2 for switching on/off the power supply of the TV 20a [controlling content being displayed on TV 20a, red box, below], a plurality of channel selection buttons (buttons on which the numerals ‘1’, ‘2’, . . . , ‘12’ are displayed) B3 for selecting channels of the TV 20a [selection of content to be displayed on TV 20a, green box, below], and a sound volume adjustment button (a button on which the characters ‘+’ and ‘—’ are displayed) B4 for adjusting the sound volume of the TV 20a [controlling content being displayed on TV 20a, blue box, below].” EX1004, 4:61-5:3, Fig. 5; EX1003, ¶212.

FIG.5



EX1004, Fig. 5; EX1003, ¶212.

Additionally, Guihot discloses a plurality of selectable control icons in remote control interface 200 which “can include play/pause button 206, a volume control 208, a mute button 210, a channel control 212 [*e.g.*, for selection of content to be displayed], a guide button 214, a home button 216, and a back button 218” (highlighted yellow, below). EX1005, 8:1-7; EX1003, ¶213. “Remote control interface 230 shown in the example of FIG. 2B can include various user interface elements for controlling operation of a remote device, which can include user

interface elements 206-218, described above in connection with FIG. 2A.”

EX1005, 8:1-12, 12:14-18, Fig. 2B; EX1003, ¶213. A POSITA would have found it obvious to use buttons with icons as disclosed in Guihot as such icon-based buttons were well-known. EX1003, ¶213. Furthermore, a POSITA would have looked to disclosures such as those in Guihot to improve the usability of the user interface consistent with the previously described motivations of both Esaka and Guihot to do so. EX1003, ¶213.

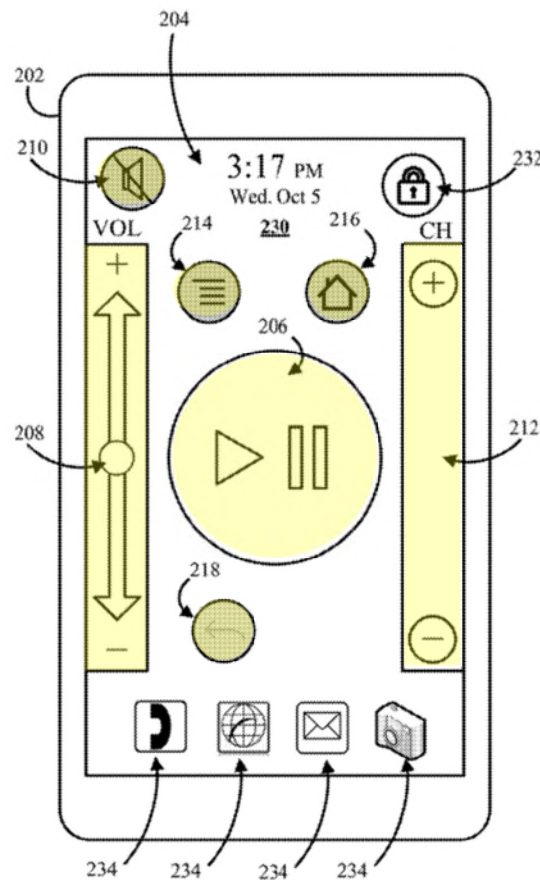


FIG. 2B

EX1005, FIG. 2B; EX1003, ¶213.

E. Claim 7

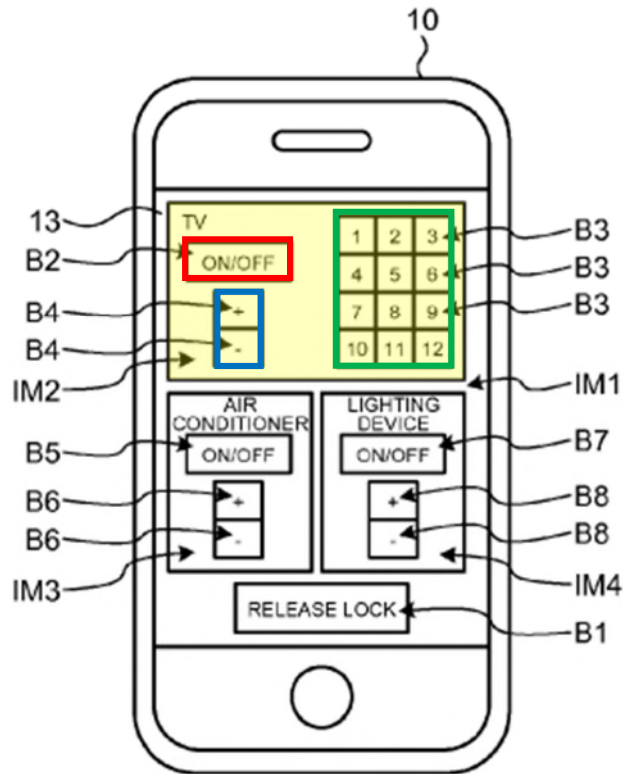
1. **[7pre] The portable terminal apparatus according to claim 1,**

See §VI.B.

2. **[7a] wherein in the third display mode the control icon and the first screen are displayed simultaneously on the display and are arranged such that at least a portion of the control icon is displayed in a top half of the display screen.**

Esaka discloses this limitation. EX1003, ¶¶215-216. Esaka discloses control icons included in operational screens IM2-IM4 (control icons B2 through B8) are displayed simultaneously with the first screen—*i.e.*, the “release lock” icon B1. EX1004, Fig. 5; EX1003, ¶215. Esaka also discloses that at least a portion of the operational screens, e.g., IM2 (including control icons B2 through B4), are displayed in a top half of the display screen. EX1004, Fig. 5; EX1003, ¶216.

FIG.5



EX1004, Fig. 5; EX1003, ¶216.

F. Claim 12

1. [12pre] The portable terminal apparatus according to claim 1,

See §VI.B.

2. [12a] wherein the portable terminal apparatus has a function not to display the control icon even in the third display mode.

Esaka, together with Guhot, disclose this limitation. EX1003, ¶¶218-221. As described above, Esaka together with Guihot disclose the third display mode in

which both the control icon and the first screen (locked screen) are displayed on the display. See §VI.B.8. EX1003, ¶218.

Esaka further discloses that although conditions may exist that necessitate displaying both the operational screen (control icon) and the locked screen (first screen) on the display (i.e., the third display mode), the operational screen nonetheless may not be displayed on the display with the locked screen. EX1003, ¶219. Specifically, Esaka discloses “[i]n the embodiment, when it is determined that the personal digital assistant is connected to the network registered in advance (home network corresponding to the TV) and the display of the personal digital assistant is activated, the processing of displaying the operational screen on the locked screen [*i.e.*, the third display mode] is necessarily performed. EX1003, ¶220. However, in the present technology, the processing of displaying the operational screen on the locked screen is not necessarily performed in the case described above.” EX1004, 11:17-25; EX1003, ¶221.

G. Claim 13

1. **[13pre] The portable terminal apparatus according to claim 1,**

See §VI.B.

2. [13a] wherein the portable terminal apparatus is configured to allow a user to select whether to display the control icon even in the third display mode.

Esaka, together with Guihot, disclose this limitation. EX1003, ¶¶223-224.

As described above (§VI.F.2), Esaka discloses wherein the portable terminal apparatus has a function not to display the control icon even in the third display mode. EX1003, ¶223.

Guihot further discloses that the portable terminal apparatus allows the user to select whether to display the control icon even in the third display mode.

EX1003, ¶224. For example, Guihot discloses “[i]n some implementations, remote control interface 230 [highlighted below] can include a lock icon 232 [red circle, below] which can indicate to a user that mobile device 202 is at a lock screen [third display mode]. Additionally, selection of lock icon 232 can [...] cause the mobile device to inhibit presentation of remote control interface 230 (or present remote control interface 230 if presentation has previously been inhibited) [...].” EX1005, 12:14-29; EX1003, ¶224.

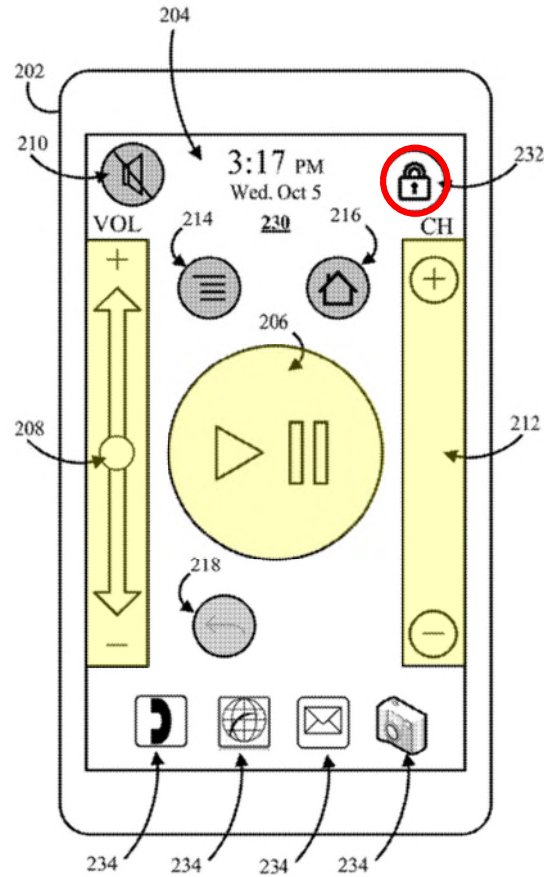


FIG. 2B

EX1005, Fig. 2B; EX1003, ¶224.

H. Claim 14

1. [14pre] A method executed by a portable terminal apparatus, the method comprising:

See §VI.B.1.

2. [14a] receiving, by an operation input interface, an input corresponding to a user operation;

See §VI.B.3.

3. **[14b] performing wireless communication over a wireless local area network;**

See §VI.B.4.

4. **[14c] controlling state transitions of the portable terminal apparatus to or from a sleep state;**

See §VI.B.5.

5. **[14d] performing a plurality of display modes, the plurality of display modes including:**

See §VI.B.5.

6. **[14e] a first display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on a display without display of a control icon when the portable terminal apparatus wakes up from a sleep state based on a first condition, wherein the first condition is met when a control screen for remotely and wirelessly controlling an external device via performing the wireless communication is not displayed on the display before the portable terminal apparatus enters a sleep state;**

See §VI.B.6.

7. **[14f] a second display mode during which a first screen to be moved to a screen for performing authentication to execute an unlock operation is displayed on the display without display of a control icon when the portable terminal apparatus wakes up from a sleep state based on a second condition, wherein the second condition is met when the portable terminal apparatus is unable to communicate with the external device via performing the wireless communication and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state; and**

See §VI.B.7.

8. **[14g] a third display mode during which a control icon and a first screen to be moved to a screen for performing authentication to execute an unlock operation are displayed on the display when the portable terminal apparatus wakes up from a sleep state based on a third condition, wherein the third condition is met when the portable terminal apparatus is able to communicate with the external device via performing the wireless communication and the control screen is displayed on the display before the portable terminal apparatus enters a sleep state, wherein the control screen is used to execute control operations on the external device based on the input received by the operation input interface; and**

See §§VI.B.8., VI.B.9.

9. **[14h] transmitting via wireless communication a remote control signal corresponding to the selected control icon to the external device when the control icon is selected in the third display mode without unlock operation.**

See §VI.B.10.

I. Claim 15

1. **[15pre] The method according to claim 14,**

See §VI.H.

2. **[15a] wherein the control screen includes a plurality of selectable control icons that enable a user to execute control operations on content being displayed under control of the external device, the control operations including an operation for selection of content to be displayed.**

See §VI.D.2.

J. Claim 19

1. **[19pre] The method according to claim 14,**

See §VI.H.

2. [19a] wherein in the third display mode the control icon and the first screen are displayed simultaneously on the display and are arranged such that at least a portion of the control icon is displayed in a top half of the display screen.

See §VI.E.2.

K. Claim 24

1. [24pre] The method according to claim 14,

See §VI.H.

2. [24a] wherein the portable terminal apparatus has a function not to display the control icon even in the third display mode.

See §VI.F.2.

L. Claim 25

1. [25pre] The method according to claim 14,

See §VI.H.

2. [25a] wherein the portable terminal apparatus is configured to allow a user to select whether to display the control icon even in the third display mode.

See §VI.G.2.

VII. GROUND 2: CLAIMS 4-6 AND 16-18 ARE OBVIOUS IN VIEW OF ESAKA, GUIHOT, BANDYOPADHYAY, AND THE KNOWLEDGE OF A POSITA

A. Motivation to Combine

As described above (Section VI.A.), a POSITA would have been motivated to combine Esaka and Guihot. At the time of the '646 Patent, a POSITA also would have been motivated to combine Esaka and Guihot with Bandyopadhyay.

EX1003, ¶243. Each of those references describe a mobile device such as a conventional smartphone comprising conventional hardware and a conventional user interface. EX1004, 2:32-47, 3:19-26, Fig. 2; EX1005, 10:6-30; EX1006, 1:23-25, 1:55-64, 8:21-25, 8:31-37, 8:44-47, 8:54-62, 9:1-7, 10:5-35, 12:15-25, Figs. 2A, 2B, 5A. EX1003, ¶243. All three references are also directed toward providing a user with easier and more convenient access to certain applications while the device is in locked state. EX1004, Abstract; EX1005, 3:51-56; EX1006, Abstract. EX1003, ¶244. Although Esaka and Guihot disclose smartphones, they lack detail on conventional sensors, buttons, and user interface unlock mechanisms that were well known at the time of the purported invention. EX1003, ¶245. A POSITA would have looked to other references in the same field for such additional conventional features to be added to the smartphones disclosed in either Esaka or Guihot. EX1003, ¶245. Moreover, in light of the similarities between all three references, a POSITA would have known of all three. Bandyopadhyay discloses these conventional sensors, buttons, and user interface unlock mechanism that were well known at the time for use on smartphones. EX1006, 1:23-25, 1:55-64, 8:21-25, 8:31-37, 8:44-47, 8:54-62, 9:1-7, 10:5-35, 12:15-25, Figs. 2A, 2B, 5A; EX1003, ¶246. As Dr. Bederson explains, POSITA would know that while touch screen-based virtual buttons could work well, there were distinct advantages of using physical buttons on mobile devices. EX1003, ¶247. Their tactile or “haptic”

feedback enables users to operate the devices “eyes-free”, by touch alone. EX1003, ¶247. This enables users to, for example, change the volume with physical buttons without taking their eyes away from another task. EX1003, ¶247. This is particularly helpful for visually impaired users. EX1003, ¶247. Physical buttons also tend to work more reliably and accurately when wearing gloves or in specialized situations – such as when the screen is wet and may not detect finger interaction well. EX1003, ¶247.

In light of these known benefits, a POSITA would have been motivated to add Bandyopadhyay’s conventional sensors, buttons, and user interface unlock mechanism to the smartphones disclosed in Esaka and Guihot. Moreover, a POSITA would have been capable of combining the disclosure of Bandyopadhyay with that of Esaka and/or Guihot to do so. EX1003, ¶248.

A POSITA would have recognized the benefit of using Bandyopadhyay’s conventional sensors, buttons, and user interface unlock mechanism in Esaka and Guihot because Bandyopadhyay teaches these conventional components as part of a typical smartphone known at the time of the purported invention. EX1006, 1:23-25, 1:55-64, 8:21-25, 8:31-37, 8:44-47, 8:54-62, 9:1-7, 10:5-35, 12:15-25, Figs. 2A, 2B, 5A; EX1003, ¶249. A POSITA would have understood, for example, that the design of Bandyopadhyay’s conventional sensors, buttons, and user interface would improve user convenience because it describes a typical smartphone already

known to users. EX1003, ¶250. The benefit of utilizing a known smartphone, familiar to users in function and user interface, would have motivated a POSITA to make this combination. EX1003, ¶251.

Combining the disclosure of Bandyopadhyay with that of Esaka and Guihot would simply involve adding known components (Bandyopadhyay's sensors, buttons, and user interface) to known devices of the same type (Esaka or Guihot's smartphone) but that did not disclose all such additional components to yield predictable results (a smartphone with physical buttons, motion and location sensors, etc.) so that it can sense when it has been picked up or whether it is physically close to an external device like a TV. EX1003, ¶252. A POSITA would have had a reasonable expectation that the modification would be successful because, for example, the teachings of Esaka and Guihot disclose that the smartphone enters a sleep or low power state, and that it can sense when it has been picked up, but do not disclose precisely which sensors it utilizes. EX1003, ¶253. Esaka, Guihot, and Bandyopadhyay would be predictably combined due to the predictability of the smartphone art and the known utilization of conventional sensors, buttons, and user interface design. EX1003, ¶253.

If Patent Owner argues the portions of Esaka, Guihot, and Bandyopadhyay cited below relate to different, incompatible embodiments (which they do not), it would have been obvious to a POSITA to combine such embodiments into a single

device at least because such embodiments are described in the same prior art reference, are fully compatible with each other, and could be combined with minimal effort to achieve predictable results. EX1003, ¶254.

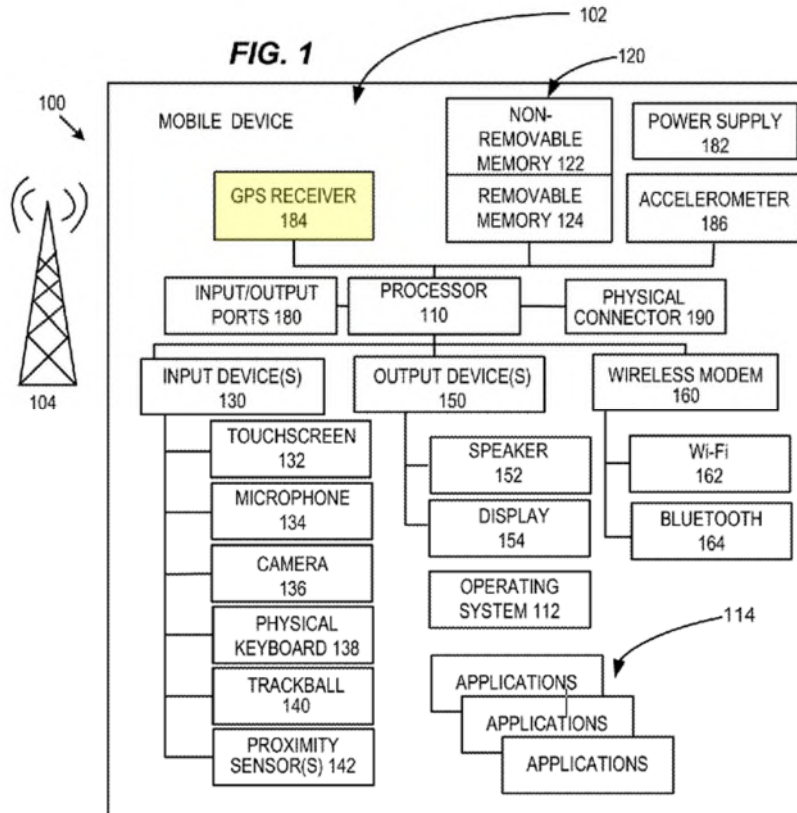
B. Claim 4

- 1. [4pre] The portable terminal apparatus according to claim 1, further comprising:**

See §VI.B.

- 2. [4a] a GPS receiver;**

Bandyopadhyay discloses this limitation. EX1003, ¶256. Bandyopadhyay discloses “[t]he mobile device can further include [...] a satellite navigation system receiver 184, such as a Global Positioning System (GPS) receiver,” (highlighted yellow, below). EX1006, 8:44-47, Fig. 1; EX1003, ¶256.

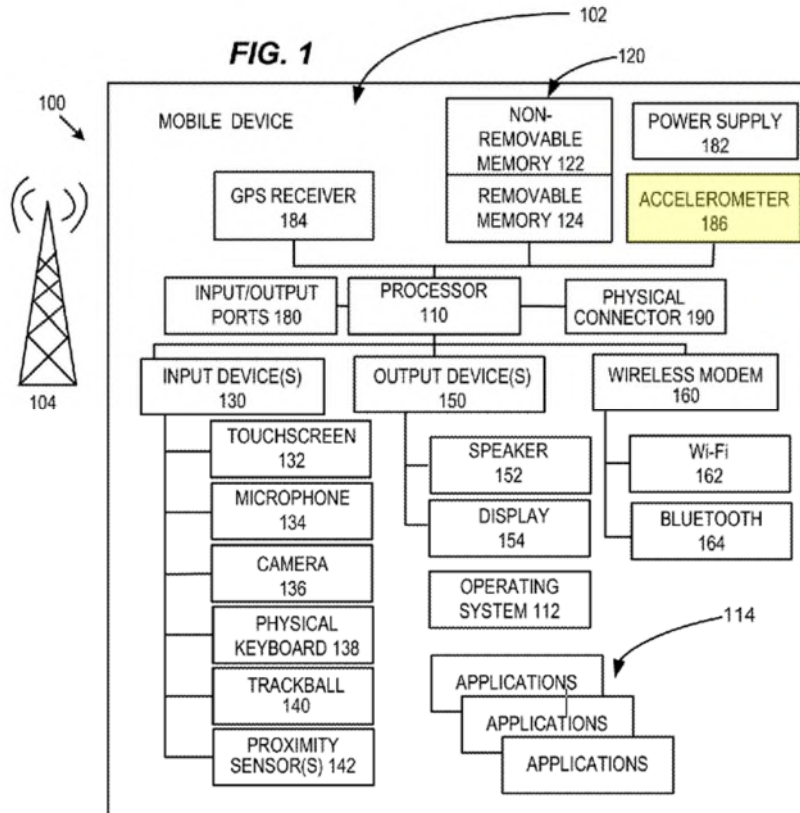


EX1006, Fig. 1; EX1003, ¶256..

3. [4b] a sensor determining a movement state of the portable terminal apparatus;

Bandyopadhyay discloses this limitation. EX1003, ¶¶257-258.

Bandyopadhyay discloses “[t]he mobile device can further include [...] an accelerometer 186,” (highlighted below). EX1006, 8:44-47, 12:42-47 (“the mobile device can receive input data from an input source such as [...] one or more accelerometers”), Fig. 1; EX1003, ¶257. A POSITA would understand an accelerometer to be a sensor that can determine the movement state of the device it is in. EX1003, ¶258.

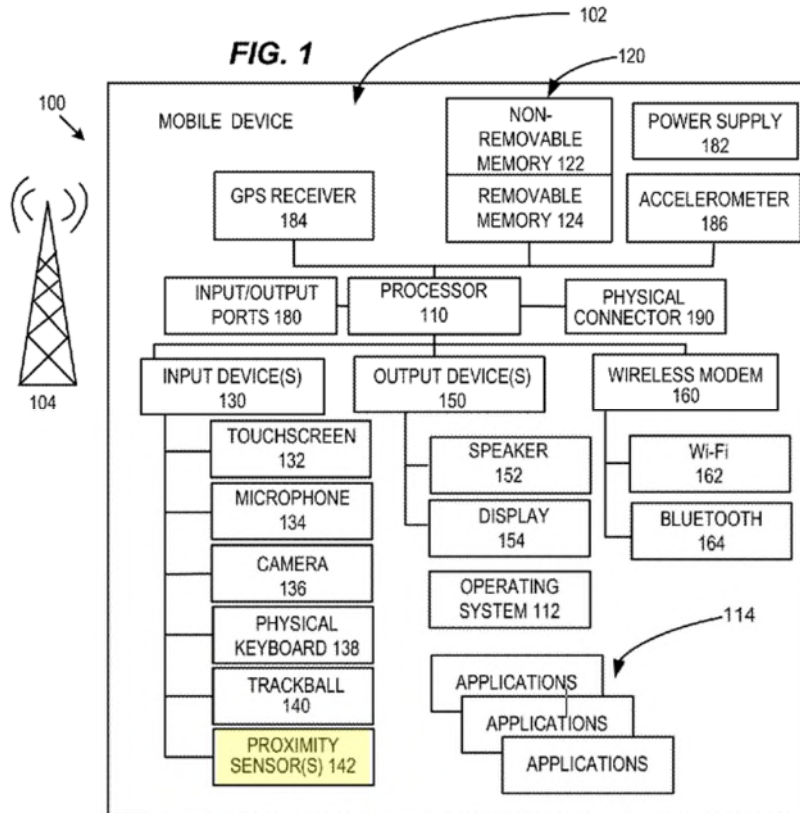


EX1006, Fig. 1; EX1003, ¶258.

4. [4c] an infrared sensor;

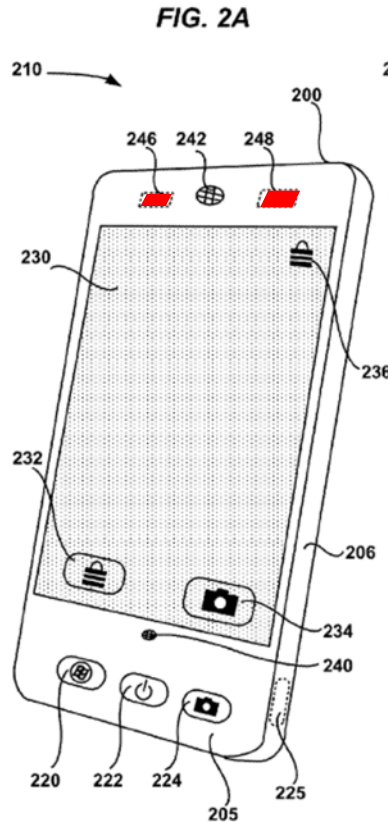
Bandyopadhyay discloses this limitation. EX1003, ¶¶259-260.

Bandyopadhyay discloses that “[t]he mobile device 100 can support one or more input devices 130, such as a [...] proximity sensor 142 [highlighted yellow, below].” EX1006, 8:21-24, Fig. 1; EX1003, ¶259.



EX1006, Fig. 1; EX1003, ¶259.

Bandyopadhyay further discloses that “[i]n some examples, the proximity sensors 246 and 248 emit an infrared beam and receive a reflected infrared beam, which is reflected off the surface of a nearby object that has been illuminated by the emitted infrared beam,” (red boxes, below). EX1006, 9:1-7, Fig. 2A, *see also* EX1006, 5:44-54; EX1003, ¶260.



EX1006, Fig. 2A; EX1003, ¶260.

5. [4d] a gyro sensor determining angular movement of the portable terminal apparatus; and

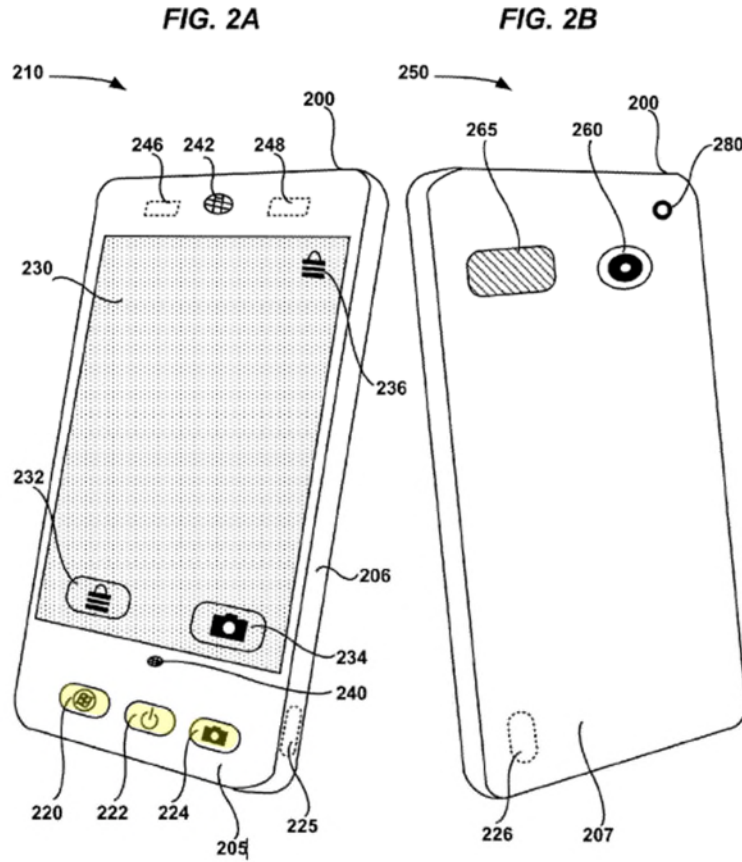
Bandyopadhyay discloses this limitation. EX1003, ¶¶261-262.

Bandyopadhyay discloses “[t]he mobile device can further include [...] a gyroscope (not shown).” EX1006, 8:44-48; EX1003, ¶261. A POSITA would understand a gyroscope to be a gyro sensor that can determine angular movement of a device within which it is included. EX1003, ¶262.

6. [4e] a physical button executing a predetermined operation when a user pushes the physical button.

Bandyopadhyay discloses this limitation. EX1003, ¶¶263-265.

Bandyopadhyay discloses “the mobile device 200 includes several hardware buttons, including a home button 220, a power button 222, and a camera shutter (image-capture) button 224” (highlighted below). EX1006, 8:54-62, Fig. 2A, *see also* EX1006, 10:5-14, 10:15-35; EX1003, ¶263. Bandyopadhyay further discloses “a first option, dubbed ‘Camera Button Press & Hold,’ [which] involves a mobile device user pressing and holding a dedicated hardware camera button [224] connected to the mobile device while the mobile device is in an above-lock mode for a predetermined time (e.g., for one second).” EX1006, 13:47-51; EX1003, ¶264. It further states that “[w]hen the end user presses and holds the camera button [224], a camera application ... is launched and a live viewfinder appears on the mobile device display screen.” EX1006, 13:60-63; EX1003, ¶264. A POSITA would understand that this “Camera Button Press & Hold” using Bandyopadhyay’s camera shutter button 224 executes a predetermined operation to launch the camera application. EX1006, 13:47-14:14; EX1003, ¶265.



EX1006, Figs 2A, 2B; EX1003, ¶265.

C. Claim 5

1. [5pre] The portable terminal apparatus according to claim 1, further comprising:

See §VI.B.

2. [5a] a plurality of physical buttons,

See §VII.B.6.

3. **[5b] wherein the simultaneous pushing of the plurality of physical buttons results in a single predetermined operation being executed by the portable terminal apparatus.**

Bandyopadhyay discloses this limitation. EX1003, ¶¶268-269.

Bandyopadhyay discloses “the mobile device 200 includes several hardware buttons, including a home button 220, a power button 222, and a camera shutter (image-capture) button 224.” EX1006, 8:54-62, Fig. 2A; EX1003, ¶268.

Bandyopadhyay further discloses “[a] third option, dubbed ‘Key Combination Press,’ [which] involves a mobile device user pressing and holding a camera button and one or more other buttons (e.g., a power button 220) simultaneously for at least a predetermined duration (e.g., one second).” EX1006, 14:33-45; EX1003, ¶269.

Bandyopadhyay next discloses that “[a]fter a press and hold of these two buttons is detected, the mobile device launches the camera application and the live viewfinder is displayed on the screen.” EX1006, 14:33-45; EX1003, ¶269.

D. Claim 6

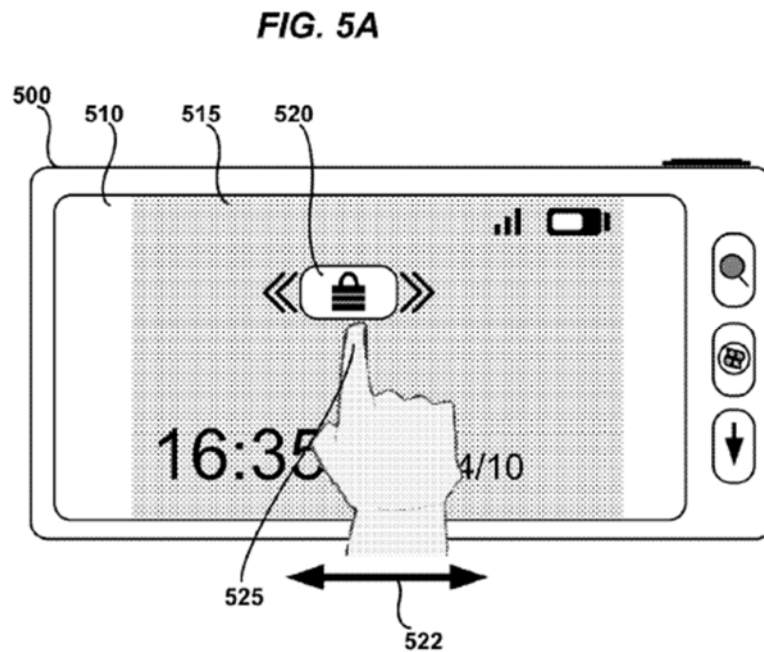
1. **[6pre] The portable terminal apparatus according to claim 1,**

See §VI.B.

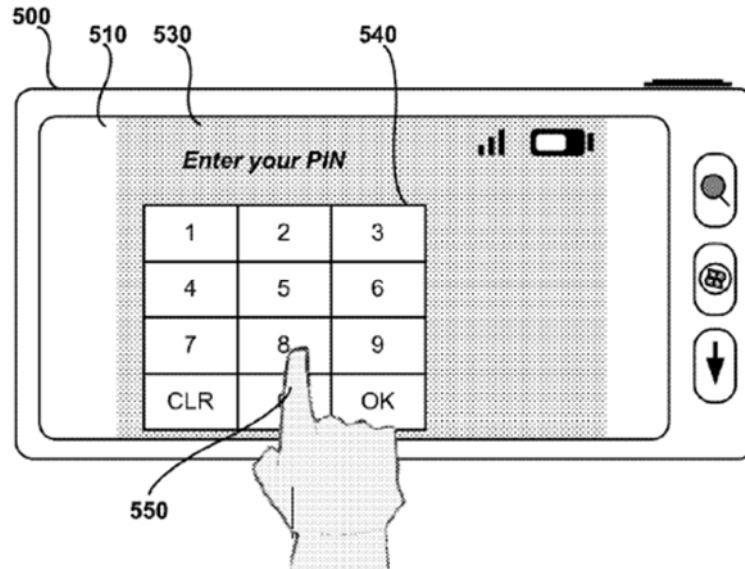
2. **[6a] wherein the unlock operation in the first display mode, the second display mode, and the third display mode is initiated by sliding the first screen.**

Bandyopadhyay discloses this limitation. EX1003, ¶¶271-272. Referring to Fig. 5A, below, Bandyopadhyay discloses “a mobile device 500 having a touch

screen display 510, which is displaying a lock screen 515, including an unlock slider control 520.” EX1006, 12:15-25; EX1003, ¶271. Bandyopadhyay further discloses “[a] mobile device user can slide/drag a finger 525 in the direction indicated by the arrows displayed with the unlock slider control 520 (finger motion is in either of the directions indicated by the arrow 522) in order to request the device to present an authentication screen, for example, as shown in FIG. 5B.” EX1006, 12:15-25, Fig. 5A; EX1003, ¶272.



EX1006, Fig. 5A; EX1003, ¶272.



EX1006, Fig. 5B; EX1003, ¶272.

E. Claim 16

1. [16pre] The method according to claim 14, further comprising:

See §VI.H.

2. [16a] determining a position of the portable terminal apparatus;

See §VII.B.2.

3. [16b] determining a movement state of the portable terminal apparatus;

See §VII.B.3.

4. [16c] determining angular movement of the portable terminal apparatus; and

See §VII.B.5.

5. [16d] executing a predetermined operation when a user pushes a physical button.

See §VII.B.6.

F. Claim 17

1. [17pre] The method according to claim 14, further comprising:

See §VI.H.

2. [17a] executing a single predetermined operation when a user simultaneously pushes a plurality of physical buttons on the portable terminal apparatus.

See §VII.C.3.

G. Claim 18

1. [18pre] The method according to claim 14,

See §VI.H.

2. [18a] wherein the unlock operation in the first display mode, the second display mode, and the third display mode is initiated by sliding the first screen.

See §VII.D.2.

VIII. GROUND 3: CLAIMS 8-11 AND 20-23 ARE OBVIOUS IN VIEW OF ESAKA, GUIHOT, SHARIF-AHMADI, AND THE KNOWLEDGE OF A POSITA

A. Motivation to Combine

As described above (Section VI.A.), a POSITA would have been motivated to combine Esaka and Guihot. EX1003, ¶282. A POSITA also would have been motivated to combine Sharif-Ahmadi with Esaka and Guihot because they each

describe a similar type of mobile device, e.g., a smartphone, acting as a remote control for an external device, such as a TV. EX1004, 2:12-30; EX1005, 1:14-16; EX1007, 5:45-52; EX1003, ¶283. Both Esaka and Guihot disclose a smartphone, but they lack detail on the type of secure or encrypted wireless network over which the smartphone can communicate with the TV, that was well known at the time of the purported invention, therefore, a POSITA would have looked to other references in the field for details of such a device. EX1003, ¶284. Sharif-Ahmadi discloses these conventional encrypted wireless networks that were well known at the time. EX1007, 6:63-7:30, 7:34-62, 8:22-26; EX1003, ¶285. Further, Guihot is concerned with network security and discloses that some applications, like email, are considered “privileged actions” that merit additional security and require “the user to perform an unlock action or series of actions before granting access to the email application.” EX1005, 17:46-48; EX1003, ¶285. Similarly, Esaka is also concerned with providing operational screens that “can be securely operated.” EX1004, 10:5-9; EX1003, ¶285. Therefore, a POSITA, knowing both Guihot and Esaka are concerned with security, but did not disclose well-known security features such as, e.g., encrypted wireless communications, would look to a reference that discloses other ways to secure the communications of the mobile device. EX1003, ¶285. A POSITA would have known of and would have been motivated to combine the security features of Sharif-Ahmadi’s with the

smartphones disclosed in Esaka and Guihot. EX1003, ¶286. A POSITA also would have been capable of combining the disclosures in Esaka, Guihot, and Sharif-Ahmadi to do so as it would have involved only simple software modifications. EX1003, ¶286.

A POSITA would have recognized the benefit of using Sharif-Ahmadi's secure wireless network in Esaka and Guihot because Sharif-Ahmadi teaches these secure wireless networks as part of a typical smartphone known at the time of the purported invention. EX1007, 6:63-7:30, 7:34-62, 8:22-26; EX1003, ¶287. A POSITA would have understood, for example, that the design of Sharif-Ahmadi's conventional secure wireless networks would improve user convenience because it describes a typical home wireless network already known to users. EX1003, ¶287. The benefit of utilizing a known smartphone and home wireless network, familiar to users, would have motivated a POSITA to make this combination. EX1003, ¶287.

Combining Esaka and Guihot with Sharif-Ahmadi would simply involve applying known techniques (Sharif-Ahmadi's secure wireless networks) to a known device that simply did not disclose all components (Esaka's or Guihot's smartphone and home network) to yield predictable results (a smartphone that communicates with a TV over a secure wireless network). EX1003, ¶288. A POSITA would have had a reasonable expectation that the modification would be

successful because the teachings of Esaka and Guihot disclose that the smartphone communicates with a TV over a home wireless network, but do not disclose the home wireless network's encryption or security. EX1003, ¶289. Esaka, Guihot, and Sharif-Ahmadi would be predictably combined due to the predictability of the smartphone art and the known utilization of secure wireless networks. EX1003, ¶289.

If Patent Owner argues the portions of Esaka, Guihot, and Sharif-Ahmadi cited below relate to different, incompatible embodiments (which they do not), it would have been obvious to a POSITA to combine such embodiments into a single device at least because such embodiments are described in the same prior art reference, are fully compatible with each other, and could be combined with minimal effort to achieve predictable results. EX1003, ¶290.

B. Claim 8

1. **[8pre] The portable terminal apparatus according to claim 1,**

See §VI.B.

2. **[8a] wherein the wireless communication interface is configured to communicate with the external device by implementing an encryption scheme.**

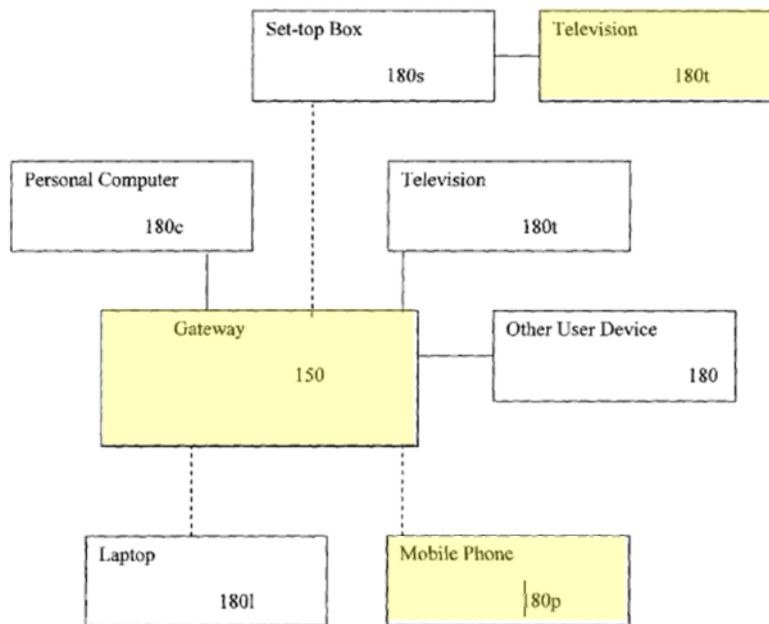
Sharif-Ahmadi discloses this limitation. EX1003, ¶¶292-295. As described above, Sharif-Ahmadi discloses “a network (or ‘micro-cloud’) of service nodes, referred to as gateways 150,” in which “[e]ach gateway acts as one node within a

content distribution network ('CDN' 15), and is used to forward content to one or more user devices 180 that are registered to use that particular gateway 150.”

EX1007, 6:63-7:8; EX1003, ¶292. Sharif-Ahmadi’s Figure 3 shows that “gateway 150 is connected to TV 180_t, mobile phone 180_p (which may be a smart phone),” where “wired connections are shown in solid lines and wireless in broken lines.”

EX1007, 7:9-30; EX1003, ¶292.

FIG. 3

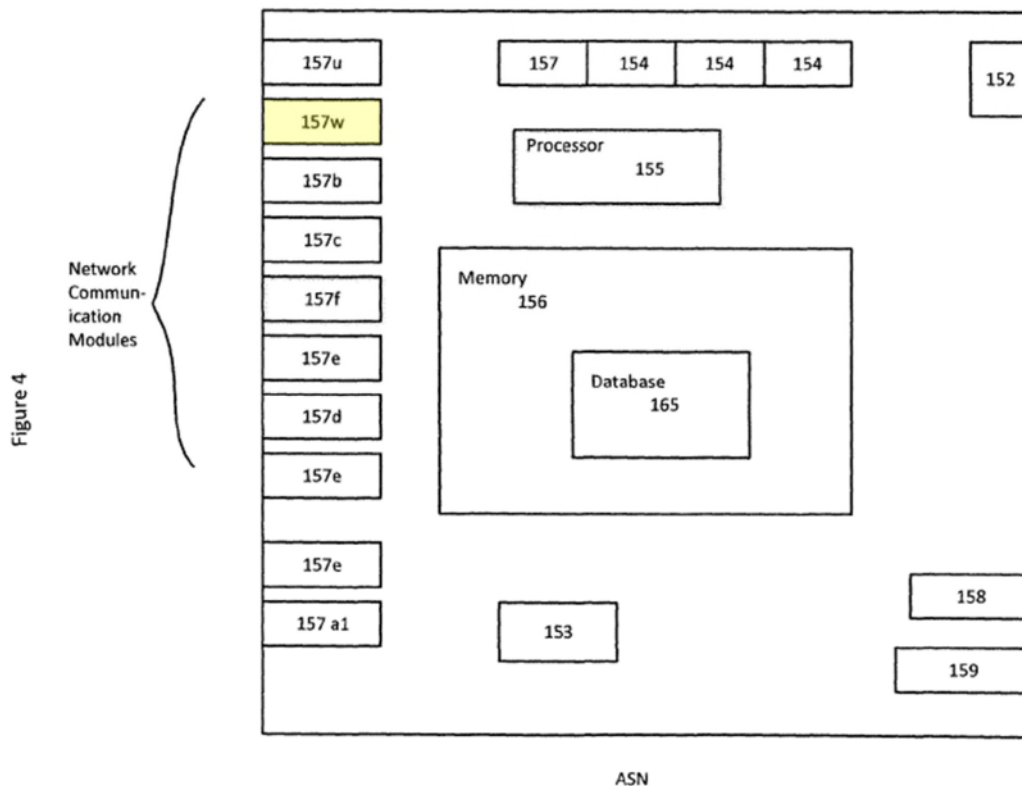


EX1007, Fig. 3.

Sharif-Ahmadi further discloses that in Figure 4, “[g]ateway 150 also includes network communication modules 157, such as Wi-Fi port 157w.”

EX1007, 7:34-62; EX1003, ¶293. Sharif-Ahmadi also discloses that “Wi-Fi port

157w should support 802.11b/802.11g and other features such as security (WEP, WPA, and WPA2). Gateway 150 will serve as a Wi-Fi access point.” EX1007, 8:22-26; EX1003, ¶294. A POSITA would understand Sharif-Ahmadi’s disclosure of “security” such as WEP, WPA, and WPA2 as a wireless communication encryption scheme. EX1003, ¶295.



EX1007, Fig. 4; EX1003, ¶295.

C. Claim 9

1. [9pre] The portable terminal apparatus according to claim 8,

See §VIII.B.

2. [9a] wherein the encryption scheme is WEP (Wired Equivalent Privacy).

As noted in §VIII.B.2., Sharif-Ahmadi discloses a WEP encryption scheme.

EX1007, 8:22-26; EX1003, ¶297.

D. Claim 10

1. [10pre] The portable terminal apparatus according to claim 8,

See §VIII.B.

2. [10a] wherein the encryption scheme is WPA (WiFi Protected Access).

As noted in §VIII.B.2., Sharif-Ahmadi discloses a WPA encryption scheme.

EX1007, 8:22-26; EX1003, ¶299.

E. Claim 11

1. [11pre] The portable terminal apparatus according to claim 8,

See §VIII.B.

2. [11a] wherein the encryption scheme is WPA (WiFi Protected Access) 2.

As noted in §VIII.B.2., Sharif-Ahmadi discloses a WPA2 encryption scheme. EX1007, 8:22-26; EX1003, ¶301.

F. Claim 20

1. [20pre] The method according to claim 14,

See §VI.B.

2. [20a] wherein performing the wireless communication with the external device includes implementing an encryption scheme.

See §VIII.B.2.

G. Claim 21

1. [21pre] The method according to claim 20,

See §VIII.F.

2. [21a] wherein the encryption scheme is WEP (Wired Equivalent Privacy).

See §VIII.C.2.

H. Claim 22

1. [22pre] The method according to claim 20,

See §VIII.F.

2. [22a] wherein the encryption scheme is WPA (WiFi Protected Access).

See §VIII.D.2.

I. Claim 23

1. [23pre] The method according to claim 20,

See §VIII.F.

2. [23a] wherein the encryption scheme is WPA (WiFi Protected Access) 2.

See §VIII.E.2.

IX. MANDATORY NOTICES UNDER 37 C.F.R. §§ 42.8(B)(1)-(4)

A. Real Party-In-Interest

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. are the real parties-in-interest.

B. Related Matters

The '646 patent is subject to the following actions: *Maxell, Ltd. v. Samsung Electronics Co., Ltd.*, Case No. 5-25-CV-00052 (E.D. Tex.).

C. Lead and Backup Counsel

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D. Service Information

Service information for lead and backup counsel is provided in the designation of lead and backup counsel above. Petitioner consents to electronic

service to lead and back-up counsel and to: DLA-Maxell-ITC

IPRs@us.dlapiper.com.

X. CONCLUSION

All Challenged Claims of the '646 patent should be found unpatentable for the reasons discussed in this Petition.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner certifies that this petition includes 13,970 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under § 42.8, certificates of service, word count, claim listing, and exhibits.

Date: July 17, 2025

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CERTIFICATE OF SERVICE

The undersigned certifies pursuant to 37 C.F.R. §§ 42.6(e) and 42.105 that on July 17, 2025, a true and correct copy of the Petition for *Inter Partes* Review of U.S. Patent No. 10,812,646 was served by emailing a copy of same (by agreement) to the following attorneys for the Patent Owner:

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Respectfully submitted,

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