UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., and

SAMSUNG ELECTRONICS AMERICA, INC.,

Petitioners,

v.

VASU HOLDINGS, LLC,

Patent Owner.

Case IPR2025-00450
Patent No. 10,419,996

PETITION FOR *INTER PARTES* REVIEW

TABLE OF CONTENTS

EXHIBIT LIST

Exhibit No.	DESCRIPTION
1001	U.S. Patent No. 10,419,996 ("'996")
1002	File History of U.S. Application No. 15/921,275 ("'996FH")
1003	Declaration of Mark Lanning in Support of Petition for *Inter Partes* Review of U.S. Patent No. 10,419,996 ("Lanning")
1004	U.S. Patent App. Pub. 2005/0048977 ("Dorenbosch")
1005	U.S. Patent App. Pub. 2005/0063348 ("Donovan")
1006	U.S. Patent App. Pub. 2003/0084056 ("DeAnna")
1007	U.S. Patent App. Pub. 2005/0282541 ("Iizuka")
1008	U.S. Patent App. Pub. 2002/0126654 ("Preston")
1009	U.S. Patent App. Pub. 2004/0002335 ("Pan")
1010	U.S. Patent App. No. 15/480,293 ("'293-App")
1011	Docket Control Order (Dkt. No. 28), Vasu Holdings, LLC v. Samsung Electronics Co., Ltd., No. 2:24-cv-00034-JRG-RSP (E.D. Tex.)
1012	Plaintiff Vasu Holdings, LLC's 5/15/2024 Infringement Contentions, Including Appx. F-1
1013	Plaintiff Vasu Holdings, LLC's Objections and Responses to Defendants Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc.'s First Set of Interrogatories (Nos. 1-25)
1014	Plaintiff Vasu Holdings, LLC's Supplemental Objections and Responses to Defendants Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc.'s Interrogatories (Nos. 1-5, 8, 9, 13-15, 19-22, 25)
1015	Plaintiff Vasu Holdings, LLC's Objections and Responses to Defendants Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc.'s Second Set of Interrogatories (No. 26)

Exhibit No.	DESCRIPTION
1016	Vern A. Dubendorf, Wireless Data Technologies (2003)
1017	Gregory P. Pollini, Trends in Handover Design (March 1996)
1018	U.S. Patent No. 6,567,383 (“Böhnke”)
1019	U.S. Patent No. 7,298,716 (“Abraham”)
1020	U.S. Patent No. 7,126,926 (“Bjorklund”)
1021	U.S. Patent App. Pub. 2007/0146475 (“Inoue”)
1022	Timer, The IEEE Standard Dictionary of Electrical and Electronics Terms (6th ed., 1996)
1023	Server, McGraw-Hill Dictionary of Computing & Communications (6th ed., 2003)
1024	Server, Modern Dictionary of Electronics (7th ed., 1999)
1025	Oscillator, McGraw-Hill Dictionary of Scientific and Technical Terms (6th ed., 2003)
1026	Declaration of Jonathan Bradford in Support of Petition for *Inter Partes* Review of U.S. Patent No. 10,419,996

TABLE OF ABBREVIATIONS

Abbreviation	DESCRIPTION
’996	U.S. Patent No. 10,419,996 (“’996”) (Ex. 1001)
’996FH	File History of U.S. Application No. 15/921,275 (Ex. 1002)
IPR	*Inter Partes* Review
Petitioners	Petitioners Samsung Electronics Co. Ltd. and Samsung Electronics America Inc.
PO	Patent Owner

Abbreviation	**DESCRIPTION**
POSITA	Person of Ordinary Skill in the Art
PTAB	Patent Trial and Appeal Board
USPTO	United States Patent and Trademark Office

LIST OF CHALLENGED CLAIMS

[1.pre] A device comprising:

[1.a] a switching system to switch operation between a first communication module and a second communication module,

[1.b] wherein if a context changes for known networks or a new network is detected with a more favorable context, a previously established communication automatically switches accordingly,

[1.c] wherein upon activation of a timer, the switching system causes the second communication module to change state from a sleep mode to a stand-by mode, and

[1.d] the switching system causes the second communication module to change state from the stand-by mode to an active mode before a communication is switched to the second communication module.

[12.pre] A method comprising:

[12.a] detecting a first context;

[12.b] detecting a second context; and

[12.c] automatically switching, with a server, a communication in progress via a wireless network to a communication via a network based on the second context,

[12.d] wherein automatically switching is based on detecting the second context being preferred over the first context within a set of known networks or from a newly discovered network,

[12.e] wherein upon activation of a timer, the server causes a communication module to change state from a sleep mode to a stand-by mode, and

[12.f] the server causes the communication module to change state from the stand-by mode to an active mode before a communication is switched to the communication module.

[23.pre] A method comprising:

[23.a] determining a first context;

[23.b] determining a second context; and

[23.c] automatically switching, with a server, a communication in progress via a first network to a communication via a second network based on the second detected context,

[23.d] wherein automatically switching is based on detecting the second context being preferred over the first context within a set of known networks or from a newly discovered network,

[23.e] wherein upon activation of a timer, the server causes a communication module to change state from a sleep mode to a stand-by mode, and

[23.f] the server causes the second communication module to change state from the stand-by mode to an active mode before the communication is switched to the communication module.

[25.pre] A method comprising:

[25.a] determining a first context;

[25.b] determining a second context; and

[25.c] automatically switching a communication in progress via a first device to a communication via a second device based on the second detected context,

[25.d] wherein automatically switching is based on detecting the second context being preferred over the first context within a set of known networks or from a newly discovered network,

[25.e] wherein upon activation of a timer, a communication module of the second device changes state from a sleep mode to a stand-by mode, and

[25.f] the communication module of the second device changes state from the stand-by mode to an active mode before the communication is switched to the communication module of the second device.

[34.pre] A server device comprising:

[34.a] a switching system to switch operation between a communication module and a Wi-Fi communication module, wherein based on a first context and a second context, a communication automatically switches accordingly,

[34.b] wherein automatically switching is based on detecting the second context being preferred over the first context within a set of known networks or from a newly discovered network,

[34.c] wherein upon activation of a timer, the switching system causes the Wi-Fi communication module to change state from a sleep mode to a stand-by mode, and

[34.d] the switching system causes the Wi-Fi communication module to change state from the stand-by mode to an active mode before the communication is switched to the Wi-Fi communication module.

[35.pre] A device comprising:

[35.a] a switching system to switch operation between a first communication module and a second communication module,

[35.b] wherein during an established communication if a preferable context is determined, the established communication is switched to a second communication over a network, wherein the preferable context is found in a set of known networks or in a newly discovered network,

[35.c] wherein upon activation of a timer, the switching system causes the second communication module to change state from a sleep mode to a stand-by mode, and

[35.d] the switching system causes the second communication module to change state from the stand-by mode to an active mode before a communication is switched to the second communication module.

[39.pre] A method comprising:

[39.a] establishing a first communication link between a mobile communication device and an end destination device, wherein the first communication link comprises a first wireless communication link between the mobile communication device and a first wireless network;

[39.b] monitoring a signal strength of the first wireless communication link;

[39.c] when the signal strength drops below a threshold, notifying an interface server and establishing a second communication link between the interface server and the end destination device without disrupting the first communication link;

[39.d] notifying the mobile communication device to terminate transmission over the first communication link; and

[39.e] re-directing the second communication link from the interface server to another mobile communication device, thereby establishing a second wireless communication link between the mobile communication device and a second wireless network,

[39.f] wherein upon activation of a timer, the mobile communication device causes a communication module to change state from a sleep mode to a stand-by mode, and

[39.g] the mobile communication device causes the communication module to change state from the stand-by mode to an active mode before a communication is switched to the communication module.

[41.pre] A method comprising:

[41.a] monitoring a context of a first wireless communication link;

[41.b] when a network is detected as available with a second wireless communication link with a context preferable to the first wireless communication link, notifying an interface and establishing the second communication link between the interface and an end destination device without disrupting the first communication link; and

[41.c] re-directing the second communication link from the interface to a mobile communication device, thereby establishing the second wireless communication link between the mobile communication device and a second wireless network,

[41.d] wherein upon activation of a timer, the interface causes a communication module to change state from a sleep mode to a stand-by mode, and

[41.e] the interface causes the communication module to change state from the stand-by mode to an active mode before a communication is switched to the communication module.

Pursuant to §§311-319 and §42.1,[1] Samsung Electronics Co. Ltd. and Samsung Electronics America Inc. ("Petitioners") respectfully petition for IPR of claims 1, 12, 23, 25, 34-35, 39, and 41 ("Claims") of U.S. Patent No. 10,419,996 ("'996"). There is a reasonable likelihood at least one challenged claim is unpatentable as explained herein. Petitioners request review of the Claims and judgment finding them unpatentable under §103.

I. INTRODUCTION

The '996 is directed to a mobile communication device performing wireless handover between networks. *See* '996, 2:14-38, 3:7-18. The device includes a **first communication module** (e.g., cellular), **second communication module** (e.g., Wi-Fi), and **network switch unit**. '996, Abstract, 2:47-53, 5:40-50. The **network switch unit** switches between the **first communication module** and the **second communication module** after detecting a change in context (e.g., measured signal strength). '996, 5:63-66, 6:41-50, 7:45-52. Lanning (Ex.1003), ¶37. The Claims were allowed after amended to recite, "upon activation of **a timer**," the **network**

[1] Section cites are to 35 U.S.C. or 37 C.F.R. as context indicates. All emphasis/annotations added unless noted. Figure annotations herein generally quote the Claims for reference. Citations herein are exemplary and not meant to be limiting.

switch unit causes the "**second communication module**" to "change state from a sleep mode to a stand-by mode," and from the "stand-by mode to an active mode before [a] communication is switched to" the **second communication module**. '996 File History ("'996FH, Ex.1002), 494-501. Lanning, ¶37.

But these concepts were not new. **Dorenbosch** discloses a "mobile subscriber device" including a "**transceiver for the WAN system**" and a "**transceiver…for the WLAN system**." Dorenbosch, Abstract, [0026], Fig. 4. The mobile subscriber device also includes "**handover manager 514**" to automatically switch between the **WAN transceiver** and **WLAN transceiver**. Dorenbosch, [0027], [0038], Figs. 4-5. Lanning, ¶38.

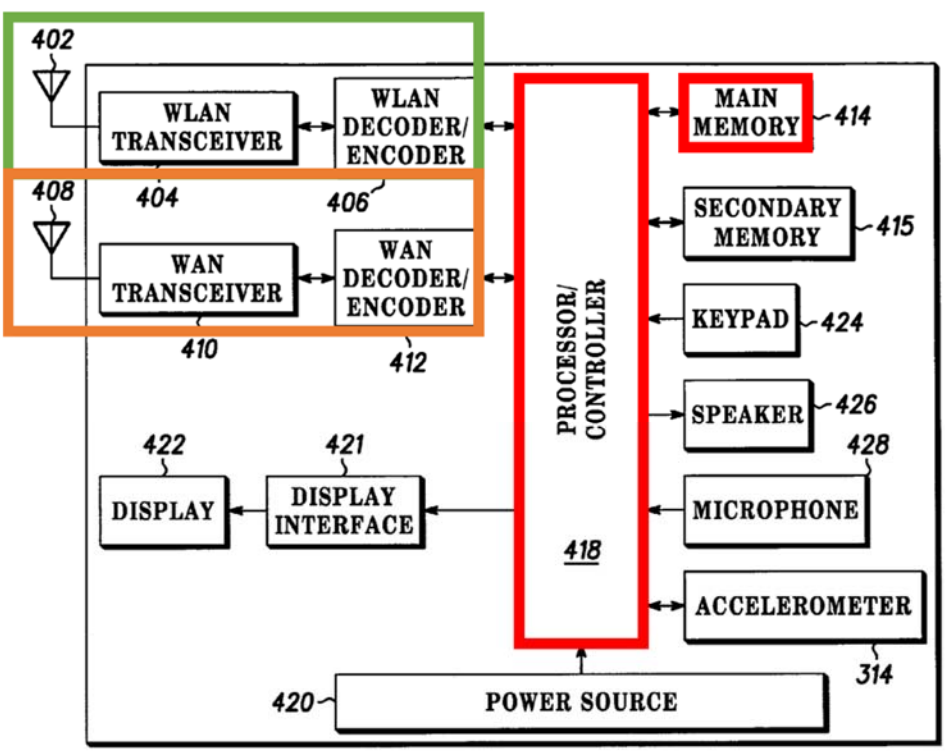


FIG. 4

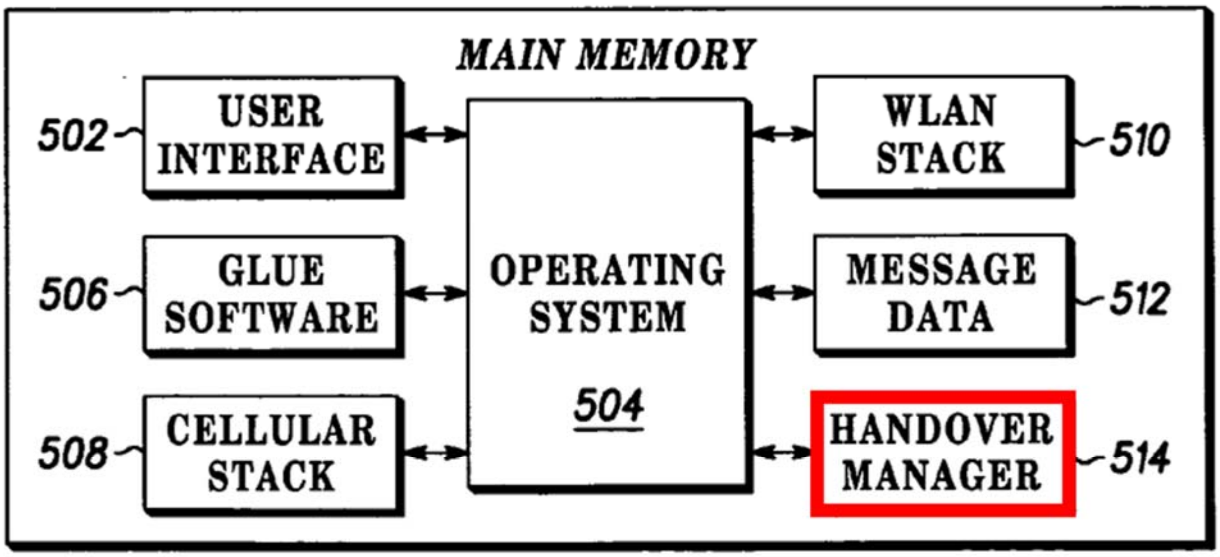


FIG. 5 414

Dorenbosch, Figs. 4-5. Lanning, ¶38.

Donovan discloses wireless network communications device 48 with **crystal oscillator 54 ("XOSC")**, which is a timer for calibrating low power oscillator 84. Wireless network communications device 48 exits a power save mode and enters a wake-up period upon activation of **XOSC 54**, before entering an active mode. Donovan, [0042], [0049], [0053].

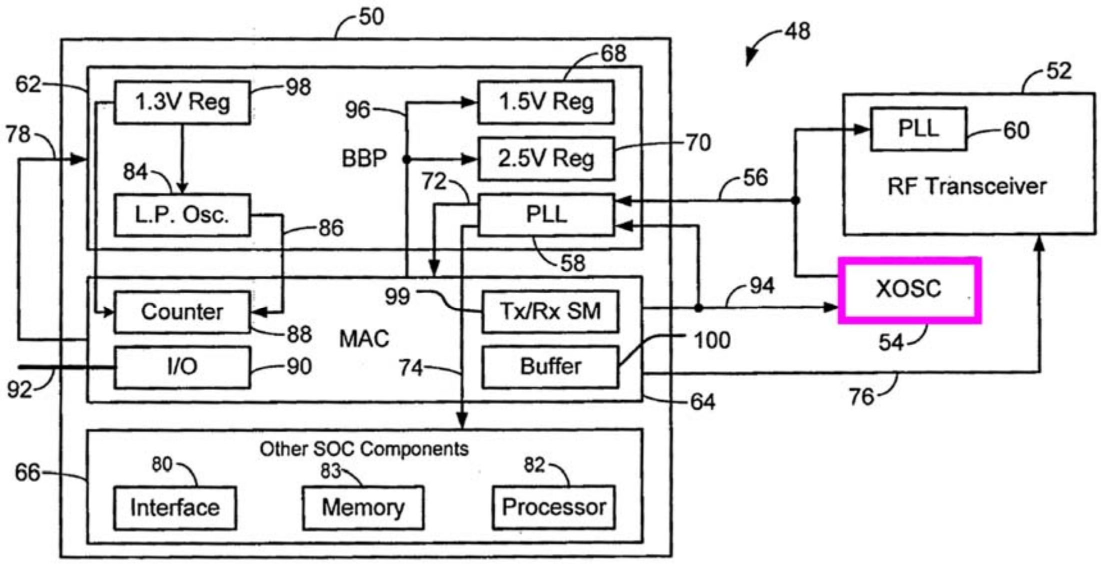

50
48
68
52
62
1.3V Reg
98
96
1.5V Reg
PLL
60
78
BBP
2.5V Reg
70
84
72
56
RF Transceiver
L.P. Osc.
86
PLL
58
99
Tx/Rx SM
94
XOSC
Counter
88
MAC
100
54
I/O
90
74
Buffer
92
64
76
Other SOC Components
66
80
83
82
Interface
Memory
Processor

FIG. 2

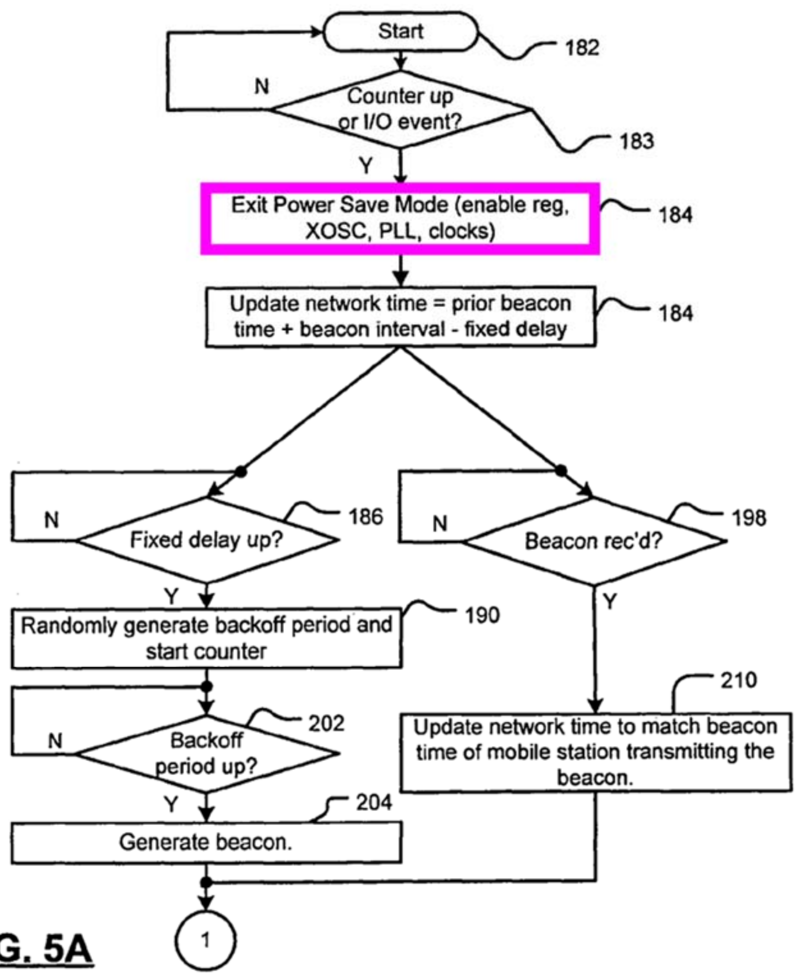

Start
182
N
Counter up or I/O event?
183
Y
Exit Power Save Mode (enable reg, XOSC, PLL, clocks)
184
Update network time = prior beacon time + beacon interval - fixed delay
184
N
Fixed delay up?
186
N
Beacon rec'd?
198
Y
Randomly generate backoff period and start counter
190
Y
210
N
Backoff period up?
202
Update network time to match beacon time of mobile station transmitting the beacon.
Y
204
Generate beacon.
1

FIG. 5A

Donovan, Figs. 2, 5A. **Donovan** teaches its sleep-to-wakeup mode transition upon enabling an oscillator saves battery and allows quick transition to an active mode. Donovan, [0053]. A POSITA would have been motivated to apply these teachings to **Dorenbosch**. Lanning, ¶¶39-41.

Accordingly, Petitioners request that the Board institute trial and find the Claims unpatentable.

II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

A. Real Parties-in-Interest

Petitioners Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. are the real parties-in-interest. No other party had access to or control over the present Petition, and no other party funded or participated in preparation of the present Petition.

B. Related Matters

The ’996 is the subject of the following co-pending civil action: *Vasu Holdings, LLC v. Samsung Electronics Co., Ltd. et al*, 2:24-cv-00034 (EDTX) (“Texas Case”).

C. Lead and Back-Up Counsel

Lead Counsel	**Backup Counsel**
James L. Davis, Jr. Reg. No. 57,325 **ROPES & GRAY LLP** 1900 University Avenue, 6th Floor East Palo Alto, CA 94303-2284 Phone: +1-650-617-4000 Fax: +1-617-235-9492 james.l.davis@ropesgray.com Samsung-Vasu-IPR-Ropes@ropesgray.com **Mailing address for all PTAB correspondence:** ROPES & GRAY LLP IPRM—Floor 43 Prudential Tower 800 Boylston Street Boston, Massachusetts 02199-3600	Alexander E. Middleton Reg. No. 75,285 **ROPES & GRAY LLP** 1211 Avenue of the Americas New York, NY 10036 Phone: 212-596-9000 Fax: 617-235-9492 alexander.middleton@ropesgray.com Christopher M. Bonny Reg. No. 63,307 **ROPES & GRAY LLP** 1900 University Avenue, 6th Floor East Palo Alto, CA 94303-2284 Phone: +1-650-617-4000 Fax: +1-617-235-9492 christopher.bonny@ropesgray.com

Petitioners consent to electronic service of documents to the email addresses of the counsel identified above.

III. PAYMENT OF FEES

The undersigned authorizes the Office to charge the §42.15(a) fee and any additional fees to Deposit Account No. 18-1945, under Order No. 110797-0055-654.

IV. REQUIREMENTS FOR *INTER PARTES* REVIEW

A. Grounds for Standing

Pursuant to §42.104(a), Petitioners certify the ’996 is available for IPR.

Petitioners and any real parties-in-interest are not barred or estopped from requesting IPR challenging the Claims on the grounds herein.

B. Identification of Challenge

Pursuant to §§42.104(b)-(b)(1), Petitioners request IPR of the Claims and that the Board find the claims unpatentable.

1. Specific Art on Which Challenge Is Based

Petitioners rely upon the following art (Lanning, ¶¶8, 60-63):

Name	Exhibit	Publication	Filed	Published/ Issued	Prior art under at least
Dorenbosch	1004	US2005/0048977	8/26/2003	3/3/2005	§102(a)(2)
Donovan	1005	US2005/0063348	9/19/2003	3/24/2005	§102(a)(2)
DeAnna	1006	US2003/0084056	10/11/2002	5/1/2003	§102(a)(2)
Iizuka	1007	US2005/0282541	12/6/2004	12/22/2005	§102(a)(2)
Preston	1008	US2002/0126654	3/8/2001	9/12/2002	§102(a)(2)
Pan	1009	US2004/0002335	6/26/2002	1/1/2004	§102(a)(2)

Because claims 39 and 41 were added after 3/15/2013 (*see* §V.C), the AIA applies. **Dorenbosch**, **Donovan**, and **DeAnna** were each filed before the earliest

’996 priority date (1/6/2004).[2] **Iizuka**, **Preston**, and **Pan** were each published before the earliest priority date of claims 39 and 41 (3/14/2018).

2. Statutory Grounds on Which Challenge Is Based

Ground	Claims	Basis	References
1	1, 12, 23, 25, 34-35	§103	Dorenbosch in view of Donovan
2	12, 23, 34	§103	DeAnna in view of Ground 1
3	39	§103	Iizuka in view of Donovan
4	39	§103	Ground 3 in view Preston
5	41	§103	Iizuka in view of Donovan and Pan

V. ’996 PATENT AND PROSECUTION HISTORY

A. ’996

The ’996 discloses a “mobile communication device” including a “**cellular communication module**,” “**Wi-Fi communication module**,” and **network switch unit** to facilitate handover between the modules. ’996, 2:47-52, 5:28-46. Lanning, ¶¶42-43.

When the device communicates with a cellular network using the **cellular**

[2] If the AIA does not apply, these references are prior art under pre-AIA §102(a)/102(e).

communication module, if a "context" (e.g., "detected Wi-Fi signal level") is "greater than a predefined threshold value," the device "**activates [a] timer**" and the "**network switch unit**" "**automatically switch[es]** communication" from the **cellular communication module** to the **Wi-Fi communication module**. '996, 3:4-5, 5:62-64, 6:2-6. Before switching, the **Wi-Fi communication module** transitions from sleep mode (when the **Wi-Fi communication module** consumes little power), to stand-by mode (when the **Wi-Fi communication module** consumes intermediate power), before entering active mode. '996, 3:7-18. Lanning, ¶44.

The "mobile communication device" also "**automatically switch[es]** communication" from a "**Wi-Fi communication module**" to a "**cellular communication module**." '996, 6:52-58. When the device communicates "with a VoIP network," if a "context" is "below a second predefined threshold value," the device **activates the timer** and the "**network switch unit**" "**automatically switch[es]** communication" from the **Wi-Fi communication module** to the **cellular communication module**. '996, 4:4-5, 6:52, 55-58. Before switching, the **cellular communication module** transitions from sleep mode to stand-by mode, before entering active mode. '996, 3:39-50. Lanning, ¶45.

B. Prosecution History

The '275-App, which matured into the '996, was filed 03/14/2018. After a series of rejections and amendments, Examiner allowed the Claims and agreed with

Applicant that no cited art taught "'upon activation of a timer, the switching system causes the second communication module to change state from a sleep mode to a stand-by-mode.'" '996FH, 426-429, 494-501, 518-528, 562, 601; Lanning, ¶¶46-51.

C. Priority Date of Claims 39 and 41

Claims 39 and 41 cannot claim priority before the '275-App filing date (3/14/2018). The parent of the '275-App, Application No. 15/480,293 ("'293-App"), does not describe at least the following limitations of claims 39 and 41: (a) "notifying an [interface/interface server]"; (b) "establishing [a/the] second communication link between the [interface /interface server] and [the/an] end destination device without disrupting the first communication link"; and (c) "re-directing the second communication link from the [interface/interface server] to [a/another] mobile communication device." For example, the '293-App does not describe an interface/interface server. Even if any network components in the '293-App could be an "interface"/"interface server," the claimed "interface"/"interface server" functionality is not described. Ex.1010. Lanning, ¶¶52-53.

VI. §325(d) AND §314(a) DISCRETION SHOULD NOT BE APPLIED

A. §325(d)

There is no basis for discretionary denial under §325(d). The references in this Petition (§IV.B) were not raised during the '996's prosecution. Examiner also never considered Petitioners' expert's testimony (Ex.1003) regarding the scope/content of these documents and the art. The presented grounds are not cumulative of any art considered and are not the same/substantially the same as the art/arguments considered. Indeed, the references describe features Examiner found missing from the art during prosecution. *See* §IX. Lanning ¶¶64-300.

B. §314(a)

The Texas Case does not warrant exercising §314(a) discretion based on the *Fintiv* factors.

1: Following institution, Petitioners intend to seek a stay of the Texas Case pending this IPR's outcome, and IPRs challenging all asserted claims.

2-3: The Texas Case trial is scheduled for 11/3/2025 (Ex.1009), over three months after the institution deadline. The Texas Case is in its early stages; the court has issued no substantive orders related to the '996's validity, and the parties have just begun claim construction. Samsung diligently prepared and filed these IPRs.

4: The Texas Case involves multiple grounds of invalidity not addressed here, enabling the court to focus its trial time on different invalidity defenses, if the suit is not stayed.

5: The litigation and PTAB parties are the same.

6: The merits of this Petition are compelling. For example, **Dorenbosch** and **Donovan** disclose or render obvious every element of Claim 1.

VII. LEVEL OF ORDINARY SKILL IN THE ART

In this Petition, Petitioners assume Claims 39 and 41 are entitled to the '275-App filing date (3/14/2018), with the remaining Claims entitled to Provisional App. No. 60/534,466's filing date (1/6/2004) listed in the '996's priority claim.

On or before these respective dates, a POSITA would have had a Bachelor's degree in electrical engineering, computer engineering, computer science, or the equivalent thereof, and approximately two years of professional experience working with networking and wireless communications systems. Additional education could substitute for professional experience, or vice-versa. Lanning, ¶¶54-57.

VIII. CLAIM CONSTRUCTION

Claim terms subject to IPR are construed according to the *Phillips* standard. §42.100(b). Petitioners apply the plain and ordinary meanings of terms. Lanning, ¶¶58-59. Only terms necessary to resolve the controversy must be construed.

IX. GROUNDS OF UNPATENTABILITY

The Declaration of Mark Lanning, which describes the prior art's scope/content at the time of the '996, supports this Petition. The prior art renders the Claims unpatentable based on the below grounds. Lanning, ¶¶1-306.

A. <u>Ground 1: Dorenbosch in view of Donovan (Claims 1, 12, 23, 25, 34-35)</u>

1. Overview of Dorenbosch

Dorenbosch discloses a "mobile subscriber device" including a "**transceiver…for the WLAN system**," and a "**transceiver for the WAN system**," "each transceiver containing an antenna **402**, **408**, an RF front end **404**, **410**, and a decoder/encoder **406**, **412**." Dorenbosch, Abstract, [0026], Fig. 4. "The mobile subscriber [device] 306 also includes…main memory 414" with "**handover manager 514**" to facilitate handover between the transceivers. [0027], [0038], Figs. 4-5.

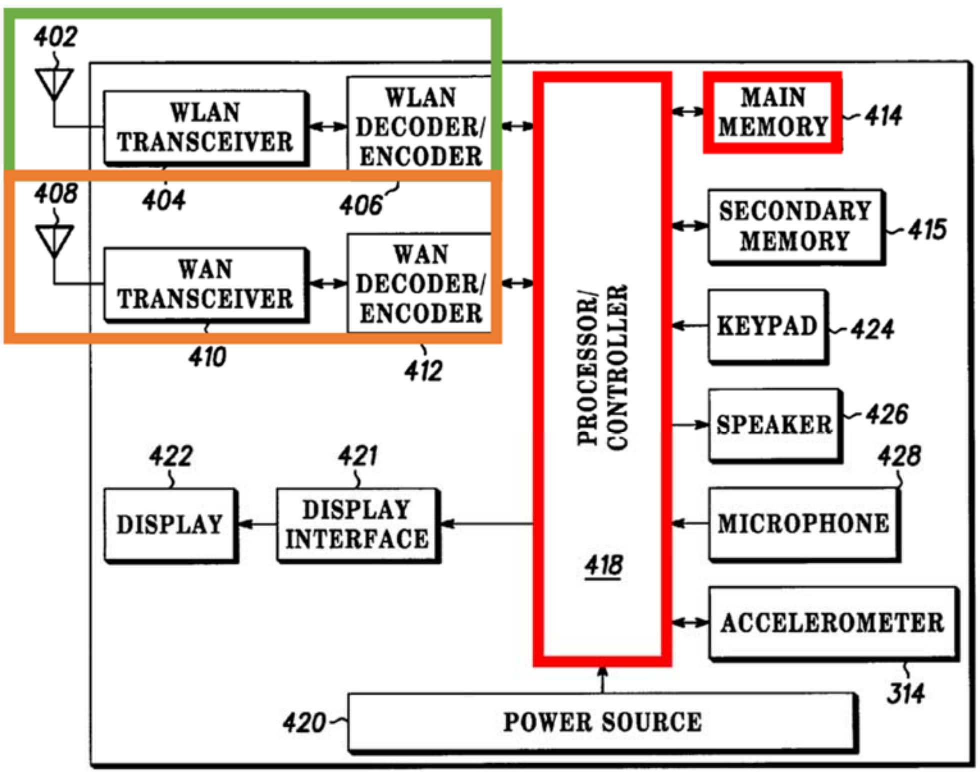


FIG. 4 306

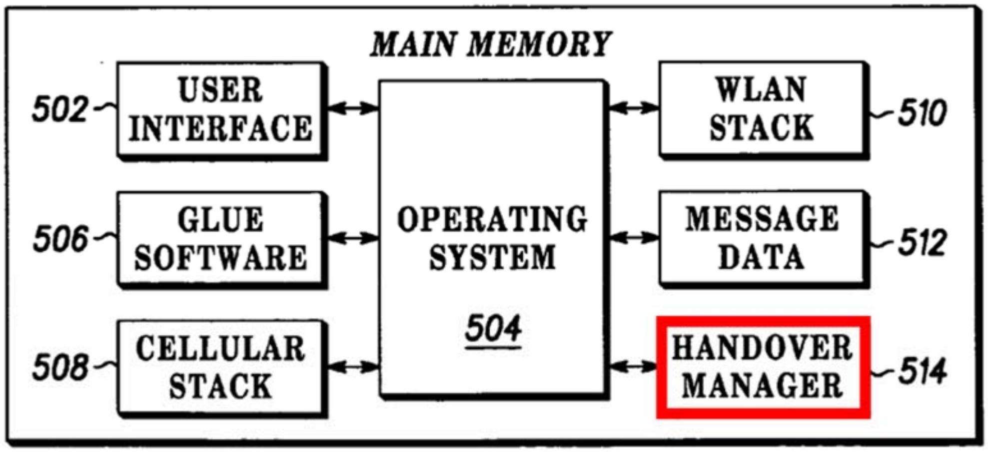


FIG. 5 414

Figs. 4-5. Lanning, ¶¶66-67.

When connected to a WAN using the **WAN transceiver**, the mobile subscriber device "terminate[s] running the **WLAN stack [510] and hardware [404, 406]**…[to] sav[e] battery life." [0037], Fig. 10 (below). Thus, the **WLAN transceiver** uses little power. Lanning, ¶68.

When **handover manager 514** detects a "**border cell**" and "**WLAN signal strength greater than a predetermined level**," the **WLAN transceiver** enters stand-by mode, including "steps necessary to bring up the corresponding hardware and software." [0045]. For this, the **WLAN transceiver** uses intermediate power. Lanning, ¶69.

Before **switching** to the **WLAN transceiver**, the **WLAN transceiver** enters active mode to receive/measure signal strength of WLAN signals. [0045]. In active mode, the device uses more power than stand-by mode because the **WLAN** transceiver actively receives signals. [0037]-[0038].

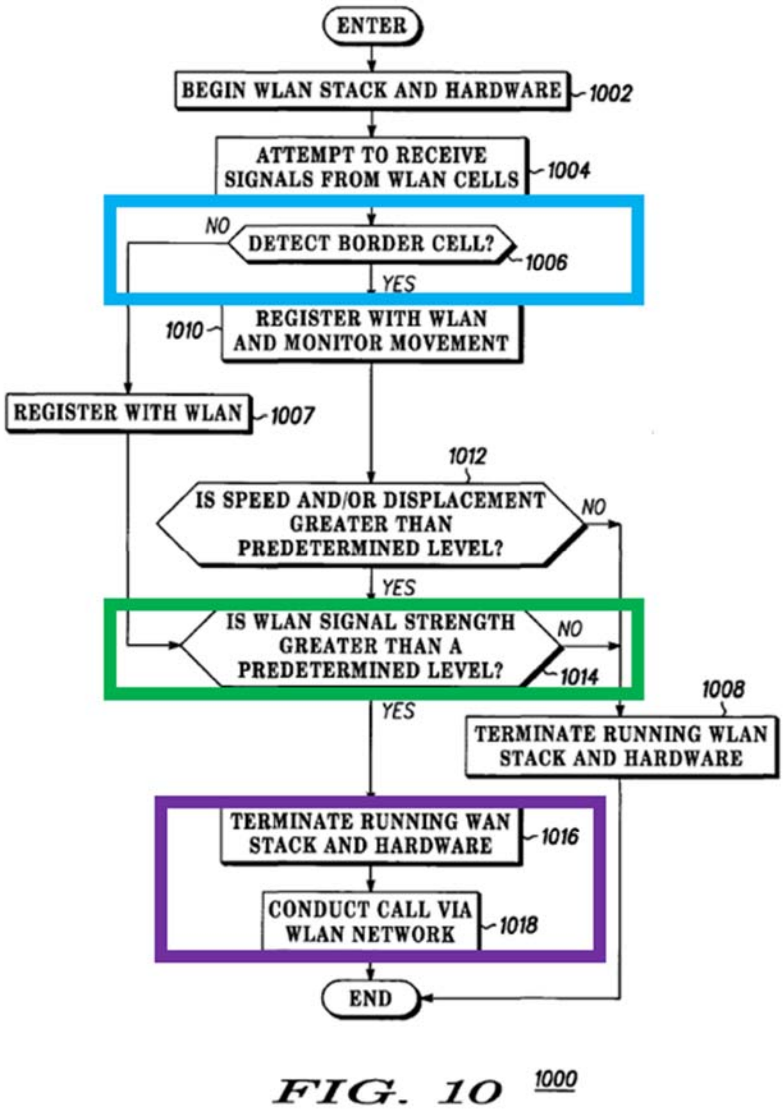


Fig. 10. Lanning, ¶¶70-71.

When connected to the WLAN using the **WLAN transceiver**, the device "terminate[s] running the **WAN stack 508 and hardware 410, 412**." [0037], [0045], Fig. 8 (below). Thus, the **WAN transceiver** uses little power. Lanning, ¶72.

When **handover manager 514** "detects…**degradation in signal quality of**

the WLAN coverage," and "**signal strength of the WAN signal is still good**," the **WAN transceiver** enters stand-by mode, including "steps necessary to bring up the corresponding hardware and software." [0038]. For this, the **WAN transceiver** uses intermediate power. Lanning, ¶73.

Before **switching** to the **WAN transceiver**, the **WAN transceiver** enters active mode to receive/measure signal strength of WAN signals. [0038]. In active mode, the device uses more power than stand-by mode because the **WAN transceiver** actively receives signals. [0037]-[0038]. Lanning, ¶74.

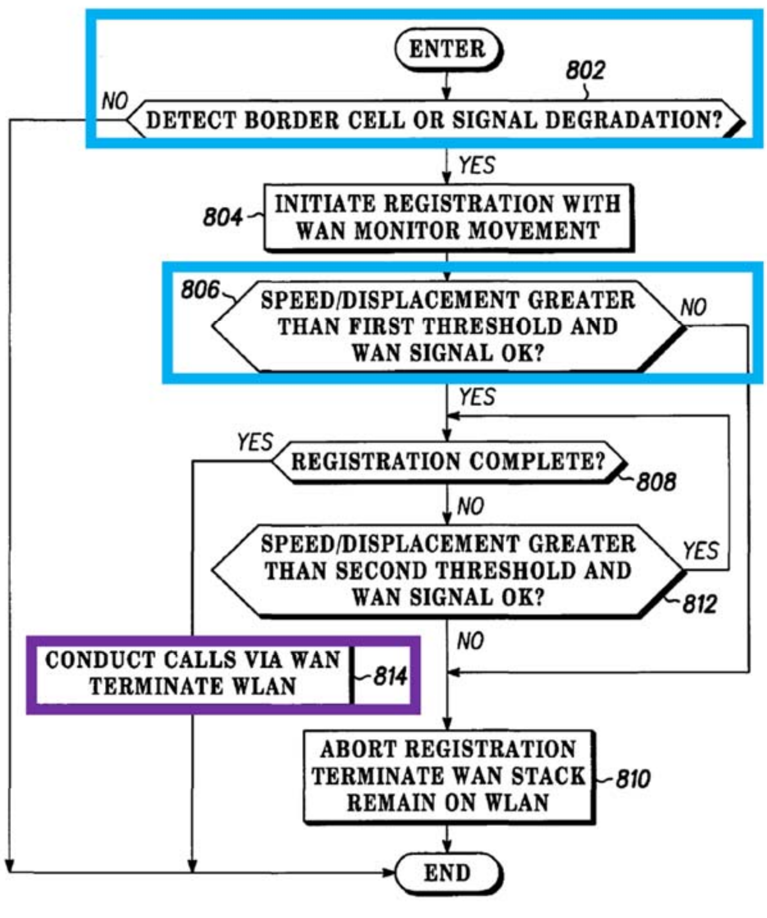


FIG. 8

Fig. 8.

2. Overview of Donovan

Donovan discloses a mobile station including "wireless network communications device 48," containing RF transceiver 52, and **crystal oscillator 54 ("XOSC")**. Donovan, [0042], Fig. 2. **XOSC 54** is a timer because processor 82 "calibrates" the timing of "low power oscillator 84 using the **XOSC 54**," ensuring low power oscillator properly tracks time itself. [0048]. Lanning, ¶78. **XOSC 54** also provides a reference signal to phase-locked loop (PLL) 60 within RF transceiver 52. [0042], [0049]. Upon enabling **XOSC 54**, wireless network communications device 48 exits sleep mode and enters wake-up period before activation. [0053]. Lanning, ¶75.

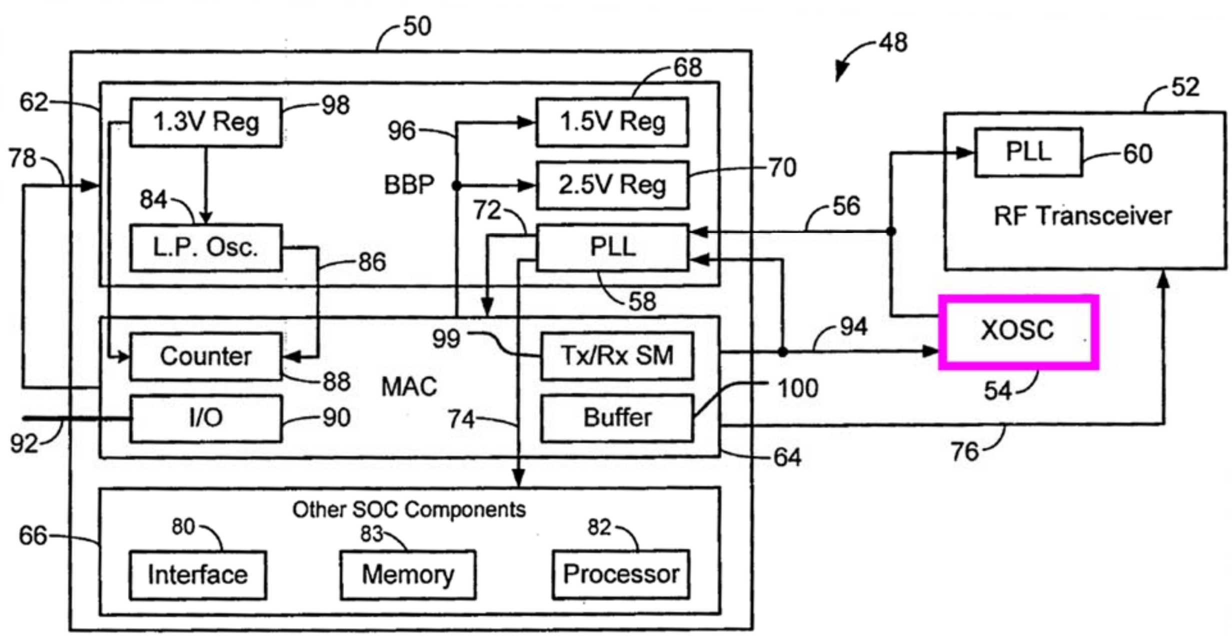


FIG. 2

Fig. 2.

Wireless network communications device 48 begins in sleep mode ("low power mode") where "the internal clocks are disabled and the PLLs, **the [crystal oscillator] XOSC** and the voltage regulators are shut down," but "low power voltage regulator 98 provides power for the low power oscillator 84 and the counter." [0052], [0056], Fig. 4. Lanning, ¶¶76-77.

Wireless network communications device 48 includes input/output (I/O) module 90, receiving a signal to trigger activation. [0050]. The transition ("wakeup") from sleep to active mode is not instantaneous—wireless network communications device 48 enters stand-by mode, which includes the time to "stabilize all circuitry." [0057]. This process commences upon "enabl[ing]…**XOSC 54**," which produces reference signals enabling other components of wireless network communications device 48, including PLL 58 and clocks 72/74, before "RF transceiver 52" "operate[s] in the active mode." [0053], [0044]. Lanning, ¶78.

In "sleep mode," wireless network communications device 48 uses little power because **XOSC 54** and other components are shut down. [0056]. During warmup, wireless network communications device 48 uses intermediate power because **XOSC 54**, PLL 56, and clocks 72/74, BBP 62 and transceiver 52 are successively activated. [0053]. And in active mode, wireless network communications device 48 uses more power because, "it will be put into receive mode, and will wait for a beacon to be received." [0058]. Lanning, ¶79.

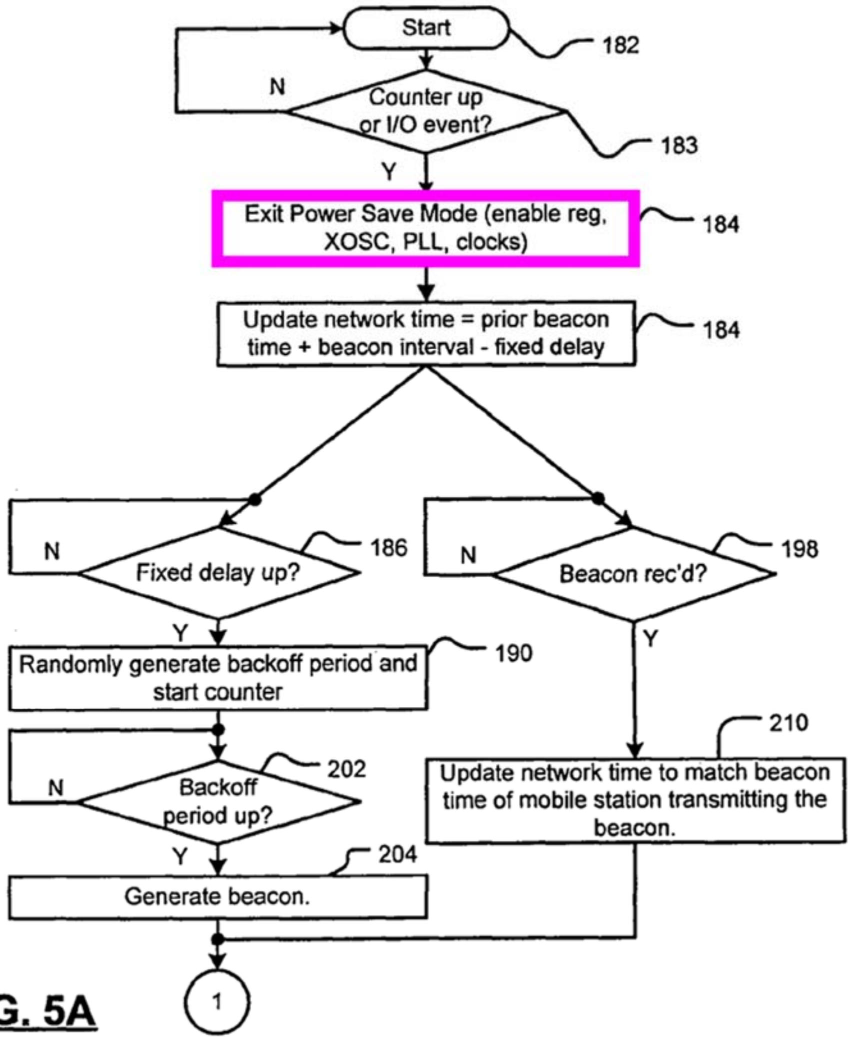


FIG. 5A

Fig. 5A.

3. Motivation to Apply Donovan's Teachings to Dorenbosch

Dorenbosch and **Donovan** are in the same field as the '996—which includes wireless communications—and are reasonably pertinent to the problems purportedly addressed by the '996—e.g., maintaining a strong network connection. *See* '996, 2:14-38, 3:7-18; Dorenbosch, [0006]-[0009], [0013]; Donovan, [0004], [0007],

[0010]-[0013]. Like the ’996, **Dorenbosch** and **Donovan** each contemplates wireless communication systems supporting seamless communications while minimizing operations of unnecessary components. *See* ’996, 6:51-63; Dorenbosch, [0037]; Donovan, [0050]-[0053]. Lanning, ¶80.

A POSITA would have been motivated to apply **Donovan’s** teachings of a communication module switching from sleep to stand-by mode upon activating an oscillator to **Dorenbosch’s** WAN/WLAN transceivers to advantageously optimize battery life while facilitating quick power-up during handover. Donovan, [0004], [0037]; Dorenbosch, [0008], [0037]-[0038]. **Donovan** explains in low power mode, the wireless network communications device “utilize[s] a small amount of power to ensure a quick transition from the low power mode to the active mode.” Donovan, [0045]. Lanning, ¶81.

Moreover, **Dorenbosch** discloses, when its transceivers are activated, the mobile device “bring[s] up” relevant WAN/WLAN hardware but does not explain the details. Dorenbosch, [0038]. A POSITA would have been motivated to look to **Donovan** for such a warm-up process and understood that first activating an oscillator followed by related circuitry (including necessary clocks and PLLs that depend on the oscillator) during the warm-up process, provides reduced power consumption while quickly warming-up to active mode. Donovan, [0004], [0037], [0045]; Dorenbosch, [0038]. Lanning, ¶81.

Moreover, a POSITA would have had a reasonable expectation of success applying **Donovan's** teachings to **Dorenbosch's** handover system. **Dorenbosch's** warm-up period is not instantaneous and already contemplates time to transition to an activated state—allowing time to "stabilize all circuitry" for wake-up. Dorenbosch, [0038]. Lanning, ¶82. **Donovan** explains how to implement a power oscillator to initiate a warmup process within a transceiver. Lanning, ¶82. While **Dorenbosch** does not explicitly disclose an "oscillator," a POSITA would have been motivated to apply **Donovan's** teachings to **Dorenbosch** because it was known that transceivers commonly included oscillators (like **Donovan's** XOSC) to effect the transmission/reception of wireless data at a desired frequency.[3] Lanning, ¶82.

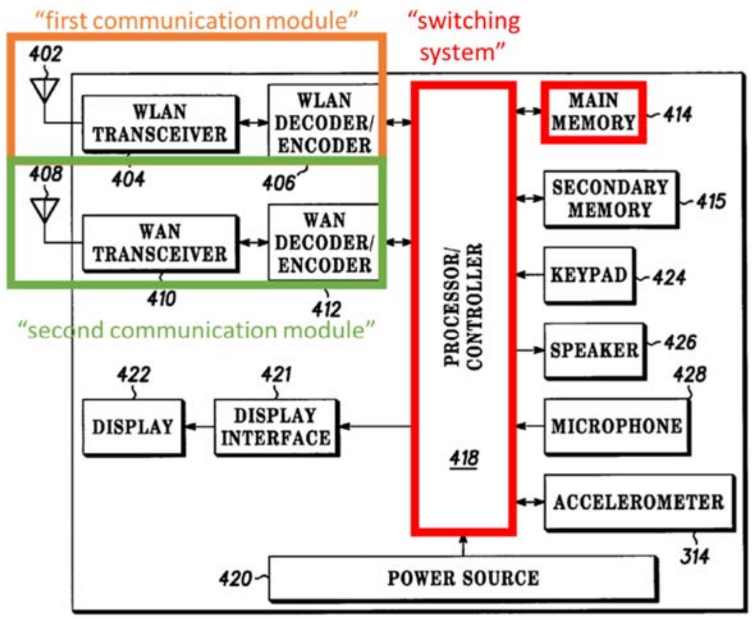
Accordingly, a POSITA would have had a reasonable expectation of success applying **Donovan's** teachings of waking up from a sleep period upon activating an oscillator to **Dorenbosch's** mobile device, and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶83.

[3] *See, e.g.*, Ex.1016, 9-13 (discussing using oscillators in wireless networks). Lanning, ¶82.

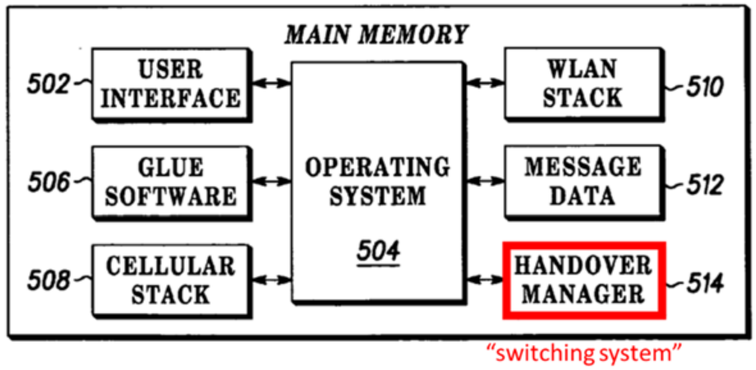
4. Claim Chart

’996 Claim	Dorenbosch in view of Donovan
[1.pre] A device comprising:	**To the extent the preamble is limiting, Dorenbosch discloses a device** (*e.g.*, “mobile subscriber device”). ***E.g.*, Dorenbosch** Dorenbosch discloses a “mobile subscriber device.” [0026]. Lanning, ¶¶84-87. • **[0026]**: “A block diagram of an exemplary ***mobile subscriber device (SU) 306*** is shown in FIG. 4 ….”
[1.a] a switching system to switch operation between a first communication module and a second communication module,	**Dorenbosch discloses a switching system** (*e.g.*, “processor[] 418” and “main memory 414” having “handover manager 514”) **to switch operation** (*e.g.*, “handover”) **between a first communication module** (*e.g.*, “WLAN” “transceiver”) **and a second communication module** (*e.g.*, “WAN” “transceiver”). ***E.g.*, Dorenbosch** **Dorenbosch** discloses mobile subscriber unit 306 “contains two sets of transceivers—one for the WLAN system” (*e.g.*, “IEEE Standard 802.11”) and “one for the WAN system,” each transceiver containing antenna 402, 408, RF front end 404, 410, and decoder/encoder 406, 412. [0026], Fig. 4.[4] Subscriber unit 306 includes “one or

[4] While **Dorenbosch** discloses WAN/WLAN transceivers including antennas, RF front ends, and decoders/encoders, the figures illustrate RF front ends 404 and 410 as “transceiver[s]” themselves. Fig. 4. Herein, “WAN system” “transceiver”/“WAN transceiver” refers to elements 408, 410 and 412, and “WLAN

’996 Claim	Dorenbosch in view of Donovan
	more processors 418” and “main memory 414” including “handover manager 514” for handover between the WLAN/WAN transceivers. [0021], [0027], Figs. 4-5. Lanning, ¶¶88-90. • **Fig. 4**:  *FIG. 4* • **Fig. 5**:

system” “transceiver”/“WLAN transceiver” refers to elements 402, 404 and 406. However, elements 404/410 alone would also satisfy the requirements for a communication module.

'996 Claim	**Dorenbosch in view of Donovan**
	 FIG. 5 414 • **[0021]**: "FIGS. 7, 8, 9, 10 and 11…illustrating portions of ***a handover process between a WLAN and a WAN***…." • **[0026]**: "…The SU 306 contains ***two sets of transceivers—one for the WLAN system and one for the WAN system***…" • **[0027]**: "The mobile subscriber unit…includes ***one or more processors 418***…***main memory*** 414"…and…"***handover manager***…." • *See also* **[0038].**
[1.b] wherein if a context changes for known networks or a new network is detected with a more favorable context, a previously established communication automatically switches accordingly,	**Dorenbosch discloses if a context changes** (*e.g.*, detecting "WLAN signal degradation" and "the strength of the WAN signal is…good") **for known networks** (*e.g.*, "WLAN" and "WAN") **or a new network is detected with a more favorable context** (*e.g.*, "signal strength of the WAN signal is still good" when "detect[ing]…WLAN signal degradation"), **a previously established communication** (*e.g.*, "present call" via WLAN) **automatically switches accordingly** (*e.g.*, switch to "conduct any present call…via the WAN system"). ***<u>E.g., Dorenbosch</u>***

’996 Claim	Dorenbosch in view of Donovan
	Dorenbosch discloses if handover manager 514 “detects…degradation in signal quality of the WLAN coverage,” and “signal strength of the WAN signal is still good,” handover manager 514 switches to WAN to conduct the “present call.” [0038]. Switching is performed without human intervention, thus occurring automatically. The WLAN and WAN are known networks: The WLAN is known because the device is connected to the WLAN; the WAN is known because handover manager 514 determined its signal strength “is *still* good.” [0038]. Lanning, ¶¶91-93. If the WAN is instead considered a new network, **Dorenbosch** discloses the WAN has a more favorable context than the WLAN when the WLAN signal is weak and the WAN signal is strong, prompting the switch from WAN to WLAN. Lanning, ¶94. If it is argued “automatically switches” requires switching to occur based on changed context regardless of other factors (like speed/displacement), a POSITA would have understood, or at least found obvious, to switch automatically (regardless of speed/displacement) if the signal quality degraded to where the call would drop so the call would continue without disruption. [0038]. Lanning, ¶95. • **Fig. 8**:

<table>
<tr><th>’996 Claim</th><th>Dorenbosch in view of Donovan</th></tr>
<tr><td></td><td>

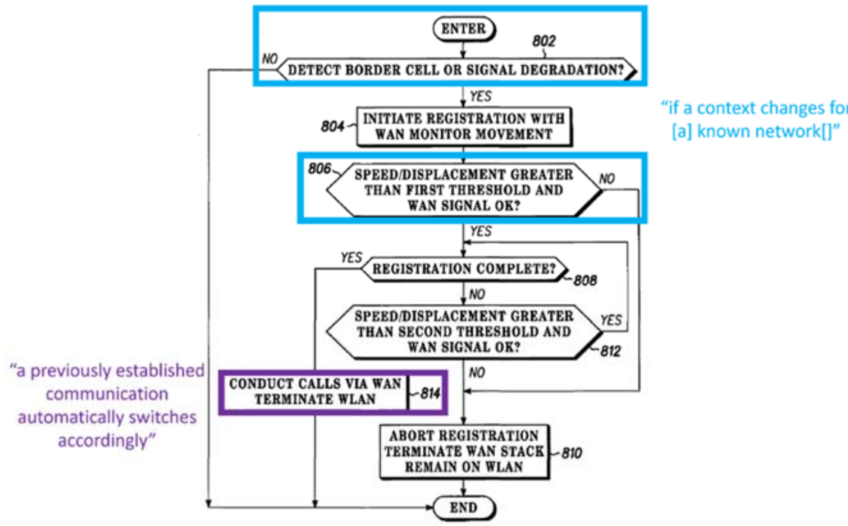


FIG. 8 800

- **[0038]**: “If…***WLAN signal degradation is detected, then the unit 306 initiates the registration sequence with the WAN system and begins to monitor the movement of the device***….***[I]f***…***the signal strength of the WAN signal is still good***,…***the unit will conduct any present***…and subsequent calls ***via the WAN***….”

</td></tr>
<tr><td>

[1.c] wherein upon activation of a timer, the switching system causes the second communication module to change state from a sleep mode to a stand-by mode, and

</td><td>

Dorenbosch discloses the switching system (*see* [1.a]) **causes the second communication module** (*see* [1.a]) **to change state to a stand-by mode** (*e.g.*, “steps necessary to bring up the corresponding hardware and software for” “WAN system”).

***<u>E.g.</u>*<u>, Dorenbosch</u>**

See **[1.a]**.

Dorenbosch further discloses, when using the WLAN transceiver, the device “terminate[s] running the WAN stack 508 and hardware 410, 412.” [0045]. Thereafter, if “WLAN signal degradation is detected,” a registration process initiates, “include[ing] the steps necessary to bring up the corresponding hardware and software” for

</td></tr>
</table>

’996 Claim	Dorenbosch in view of Donovan
	the WAN system. [0038]. When performing these steps, the WAN transceiver uses intermediate power and cannot receive/transmit signals. [0038]. A POSITA would have understood the device is in stand-by mode because it waits before it communicates, using intermediate power.[5] Lanning, ¶¶96-99. If “stand-by mode” requires the WAN transceiver be only capable of transmitting/receiving signals—but not communicating—a POSITA would have understood **Dorenbosch** teaches, or at least renders obvious—after bringing up the WAN hardware/software—a period when the WAN transceiver can receive signals, but waits for a signal’s arrival.[6] Lanning, ¶100. • **[0038]**: “***[T]he process of initiating the registration sequence***…includes the ***steps necessary to bring up the corresponding hardware and software for that system***.” • **[0041]**: “This presents further benefits to the phone battery life…in that ***the unit 306 does not even start the WAN stack 510 and hardware 410, 412, or burden the WAN system unnecessarily until sufficient movement has been detected***.” • **[0045]**: “If all the conditions are met (i.e. sufficient signal strength, necessary movement conditions within border cell coverage) then ***the unit 306 will terminate running the WAN stack 508 and hardware 410, 412***….”

[5] *See* ’996, 3:41-50 (stand-by uses intermediate power).

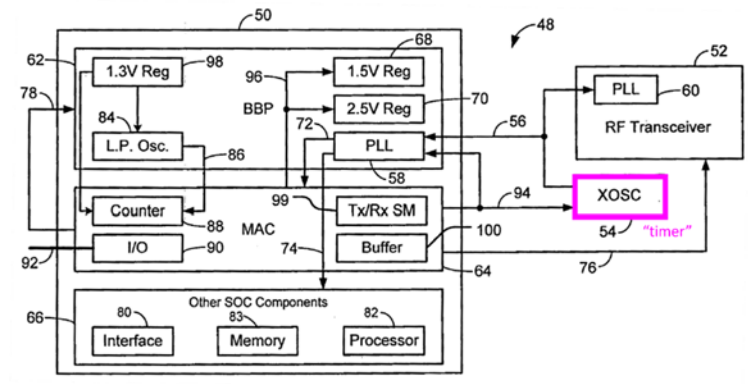
[6] Ex.1018, 2:29-34 (explaining a cellular base station intermittently transmits synchronization data). Lanning, ¶100.

’996 Claim	Dorenbosch in view of Donovan
	Donovan discloses upon activation of a timer (*e.g.*, “enables…the XOSC”), **the second communication module** (*e.g.*, “wireless network communication device”) **changes from a sleep mode** (*e.g.*, “transition from low power mode”) **to a stand-by mode** (*e.g.*, “wakeup” period). ***<u>E.g.</u>*****<u>, Donovan</u>** **Donovan** discloses “wireless network communications device 48” begins in “sleep mode” (or “low power mode”) where “internal clocks are disabled and the PLLs, the XOSC and the voltage regulators are shut down,” but “low power voltage regulator 98 provides power for the low power oscillator 84 and the counter.” [0052], [0056]-[0057], Fig. 4. Lanning, ¶¶101-102. The “wakeup” from sleep to active mode is not instantaneous—wireless network communications device 48 first enters stand-by mode to “stabilize all circuitry.” [0057]. This wakeup process includes first activating XOSC 54, which enables PLL 58, and internal clocks 72/74. [0053], [0044]. During this time, wireless network communications device 48 stands-by until entering active mode, wherein the device transmits/receives. [0058]. Lanning, ¶103. The XOSC is a timer because it tracks time. Processor 82 uses XOSC 54 to “calibrate the low power oscillator 84…to ensure that the lower power oscillator 84 ***accurately tracks the desired low power time period***.” [0048]. A POSITA would have understood this calibration involves processor 82 counting the number of oscillations of lower power oscillator 84 occurring in a fixed time determined by XOSC 54 oscillations, and at minimum renders using an oscillator as a reference timer for calibration of other components obvious particularly

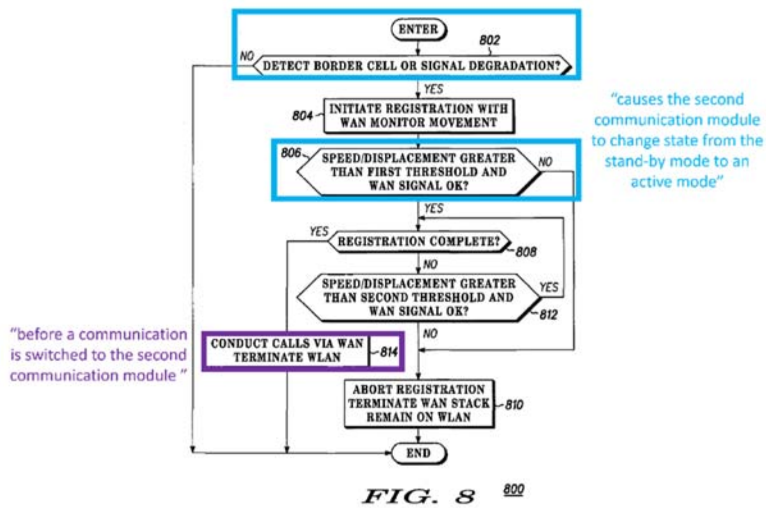
’996 Claim	Dorenbosch in view of Donovan
	after leaving the low power state in order to recalibrate. Lanning, ¶104. During the wakeup period, **Donovan’s** wireless network communications device uses intermediate power: More than sleep mode, because XOSX 54 and related circuitry are turned on, but less than active mode because wireless network communications device 48 is not transmitting/receiving. [0042], [0045], [0053].[7] Lanning, ¶105. If “stand-by mode” requires the WAN transceiver be capable of receiving signals—while not actually receiving signals—a POSITA would have understood **Donovan** teaches, or at least renders obvious, after stabilizing all circuitry, there exists a period when no signals are received, but the WAN transceiver is capable of receiving signals. **Donovan** explains, after the communication module wakes up, it “wait[s] for a beacon to be received,” thus waiting in stand-by mode.[8] [0058]. Lanning, ¶106. As discussed in §IX.A.3, a POSITA would have been motivated to apply **Donovan’s** sleep-to-wakeup mode transition teachings to **Dorenbosch’s** WAN transceiver. Lanning, ¶107. • **Fig. 2**

[7] *See* ’996, 3:41-50 (explaining “sleep mode…consumes relatively small amount of power”; “a stand-by mode…consumes an intermediate amount of power”). Lanning, ¶105.

[8] *See, e.g.*, Ex.1018, 2:29-34. Lanning, ¶106.

’996 Claim	Dorenbosch in view of Donovan
	 FIG. 2 • **[0044]**: “***[F]irst PLL 58 generates*** one or more ***clock signals 72***…***based on the reference signal 56 from the XOSC 54***.” • **[0048]**: “***[P]rocessor 82 optionally calibrate[s] the low power oscillator 84 using the XOSC 54 to***…***accurately track[] the desired low power time period***.” • **[0050]**: “[When] I/O input 92 is triggered…***the wireless network communications device 48 returns to the active mode.***” • **[0052]**: “***The low power voltage regulator 98 provides power for the low power oscillator 84 and the counter during the low power mode***. The low power voltage regulator 98 also ***supplies power to registers and memories in the SOC circuit 50 so that the state of the SOC circuits 50 is retained, which is important for fast wake up time***.” • **[0053]**: “***In order to return to the active mode***,… the ***MAC device 64 enables*** the voltage regulators 68 and 70 and the ***XOSC 54***, respectively. ***The MAC device 64 activates the first PLL 58. The MAC device next enables the internal clocks 72 and 74***. ***Finally, the MAC device 64 instructs the***

’996 Claim	**Dorenbosch in view of Donovan**
	BBP 62 and the RF transceiver 52 to operate in the active mode.” • **[0056]**: “**[*T*]*he processor 82 optionally calibrates the low power oscillator 84 using signals generated by the XOSC 54***. In step 170, ***the RF transceiver and the BBP are transitioned to the low power state or mode***. In step 172, the ***internal clocks are disabled and the PLLs, the XOSC and the voltage regulators are shut down***..” • **[0057]**: “Upon entering ***sleep mode, all mobile stations time the duration of the sleep interval in order to wakeup and stabilize all circuitry***….” • **[0058]**: “***Once a mobile station has returned to the active state, it will be put into receive mode, and will wait for a beacon***….”
[1.d] the switching system causes the second communication module to change state from the stand-by mode to an active mode before a communication is switched to the second communication module.	**Dorenbosch discloses the switching system** (*see* [1.a]) **causes the second communication module** (*see* [1.a]) **to change state from the stand-by mode** (*see* [1.c]) **to an active mode** (*e.g.*, circuitry of “WAN” “transceiver” activated) **before a communication is switched to the second communication module** (*e.g.*, “conduct any present call…via the WAN system” using the WAN transceiver). ***<u>E.g.</u>*, <u>Dorenbosch</u>** *See* **[1.a]-[1.c]**. **Dorenbosch** discloses handing a call over to the WAN if the WLAN signal degrades and the WAN signal is strong. *See* [1.b]. After warm-up, and before handover, the device enters active mode to receive/measure WAN signal strength. [0038]. This process uses more power than the stand-by period because the WAN transceiver is

'996 Claim	**Dorenbosch in view of Donovan**
	actively receiving a signal. [0037]-[0038].[9] Lanning, ¶¶108-111. **Dorenbosch** further discloses, after determining the WAN signal strength is sufficient (thus the WAN transceiver is activated), handover manager 514 switches communication to the WAN. [0038]. Lanning, ¶112. • **Fig. 8**:  • **[0038]**: "When…registration…is completed, ***the unit will conduct any present call***…***via the WAN system***…." **Donovan discloses a stand-by mode** (*see* [1.c]). ***See* [1.c]** (also addressing motivation to apply **Donovan's** teachings to **Dorenbosch**). Lanning, ¶113.
[12.pre] A method comprising:	**To the extent the preamble is limiting, Dorenbosch discloses a method** (*e.g.*, "handover process").

[9] '996, 3:41-50 ("a full active mode" consumes "an amount of power larger than the intermediate amount of power"). Lanning, ¶111.

’996 Claim	**Dorenbosch in view of Donovan**
	E.g.*, Dorenbosch** • **[0021]**: Figs. 7-11…illustrating portions of a handover process between a WLAN and a WAN***. Lanning, ¶¶114-115.
[12.a] detecting a first context;	**Dorenbosch discloses detecting a first context** (*e.g.*, detecting “WLAN signal degradation”). ***See*** **[1.b]**. Lanning, ¶¶116-118.
[12.b] detecting a second context; and	**Dorenbosch discloses detecting a second context** (*e.g.*, detecting whether “the strength of the WAN signal is unacceptable” or “good”). ***See*** **[1.b]**. Lanning, ¶¶119-121.
[12.c] automatically switching, with a server, a communication in progress via a wireless network to a communication via a network based on the second context,	**Dorenbosch renders obvious automatically switching, with a server** (*e.g.*, “portable wireless device[]”), **a communication in progress via a wireless network** (*e.g.*, switching from a “present…call[]” via “WLAN”) **to a communication via a network** (*e.g.*, to “conduct any present call…via the WAN system”) **based on the second context** (*e.g.*, detecting whether “the strength of the WAN signal is unacceptable” or “good”). ***E.g.*, Dorenbosch** ***See*** **[1.b]**. **Dorenbosch** further discloses applicability “for dual-mode cellular communication systems (WLAN/WAN systems)” like “portable wireless devices.” [0030], [0049]. Lanning, ¶¶122-125. A POSITA would have understood, and at least found obvious, to implement **Dorenbosch’s** portable wireless device as the well-known concept of a server to advantageously allow portable service of data between

’996 Claim	**Dorenbosch in view of Donovan**
	devices, allowing, *e.g.*, one user to download information from another user’s device.[10] Lanning, ¶126. • **[0030]**: “[I]t will become ***apparent to a person of ordinary skill…how to implement the invention using other computer systems and/or computer architectures***.” • **[0049]**: “The novel system and related methods for ***improving WLAN handover behavior and phone battery life provide significant advantages for dual-mode cellular communication systems (WLAN/WAN systems)***…***Since portable wireless devices, cellular telephones, and two-Way radios, are incorporating motion detecting devices more frequently, these types of devices will particularly benefit from the preferred embodiments***….”
[12.d] wherein automatically switching is based on detecting the second context being preferred over the first context within a set of known networks or from a newly discovered network,	**Dorenbosch discloses automatically switching** (*see* [12.c]) **is based on detecting the second context being preferred over the first context** (*e.g.*, detecting “the strength of the WAN signal is” “good” preferred over “WLAN signal degradation”) **within a set of known networks** (*e.g.*, “WLAN” and “WAN”) **or from a newly discovered network** (*e.g.*, “the signal strength of the WAN signal is” “good”). ***E.g.*, Dorenbosch** ***See* [1.b]**.

[10] *See* **DeAnna** [0022] (disclosing implementing a portable wireless device as a server to advantageously allow “sharing and processing of data throughout a distributed organization”).

’996 Claim	**Dorenbosch in view of Donovan**
	As explained in [1.b], automatic switching between the WLAN and WAN occurs after detecting the WAN signal strength is good while the WLAN signal has degraded, so the WAN signal is preferred over the WLAN signal. [0038]. Lanning, ¶¶127-130.
[12.e] wherein upon activation of a timer, the server causes a communication module to change state from a sleep mode to a stand-by mode, and	**Dorenbosch renders obvious the server** (*see* [12.c]) **causes a communication module** (*e.g.*, “WAN” “transceiver”) **to change state to a stand-by mode** (*see* [1.c]). ***See* [1.a], [1.c], [12.c]**. Lanning, ¶¶131-133. **Donovan discloses upon activation of a timer** (*see* [1.c]) **causing a communication module** (*see* [1.c]) **to change state from a sleep mode** (*see* [1.c]) **to a stand-by mode** (*see* [1.c]). ***See* [1.c]** (also addressing motivation to apply **Donovan’s** teachings to **Dorenbosch**). Lanning, ¶¶134-136.
[12.f] the server causes the communication module to change state from the stand-by mode to an active mode before a communication is switched to the communication module.	**Dorenbosch renders obvious the server** (*see* [12.c]) **causes the communication module** (*see* [12.e]) **to change state from the stand-by mode** (*see* [1.d]) **to an active mode** (*see* [1.d]) **before a communication is switched to the communication module** (*see* [1.d]). ***See* [1.d], [12.c], [12.e]**. Lanning, ¶¶137-139. **Donovan discloses the stand-by mode** (*see* [1.c]). ***See* [1.c]** (also addressing motivation to apply **Donovan’s** teachings to **Dorenbosch**), **[12.e]**. Lanning, ¶¶140-141.

[23.pre]-[23.f]	***See* [12.pre]-[12.f]**. [23.pre]-[23.f] and [12.pre]-[12.f] are respectively identical, except [23.a]-[23.b] require "determining" first and second contexts, while [12.a]-[12.b] require "detecting" first and second contexts. Dorenbosch determines these contexts (WLAN signal degradation and whether the WAN signal is good) upon detecting them. Lanning, ¶¶142-148.

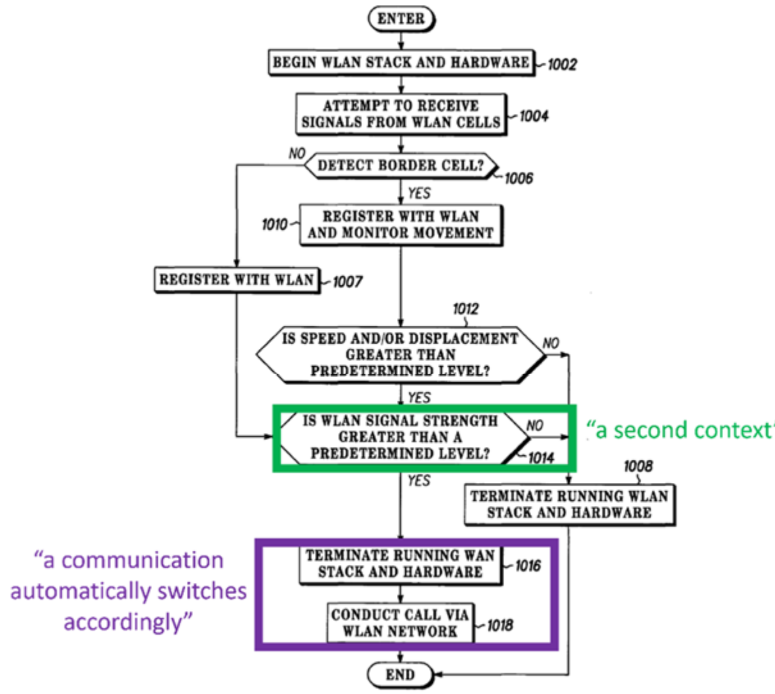
’996 Claim	**Dorenbosch in view of Donovan**
[25.pre]-[25.b]	***See* [12.pre]-[12.b]**. Lanning, ¶¶149-151.
[25.c] automatically switching a communication in progress via a first device to a communication via a second device based on the second detected context,	**Dorenbosch discloses automatically switching a communication in progress via a first device** (*e.g.*, switching from a “present…call[]” via “WLAN” “transceiver”) **to a communication via a second device** (*e.g.*, to a “present…call[]…conducted via” “WAN” “transceiver”) **based on the second detected context** (*e.g.*, detecting whether “the strength of the WAN signal is unacceptable” or “good”). ***See* [1.a]-[1.b], [12.c]**. **Dorenbosch** teaches the first and second devices, as discussed in [1.a]-[1.b], [12.c], where WAN/WLAN transceivers are devices. Lanning, ¶¶152-155.[11]
[25.d]	***See* [12.d]**. Lanning, ¶156.
[25.e] wherein upon activation of a timer, a communication module of the second	**Dorenbosch discloses a communication module of the second device** (*e.g.*, “WAN” “transceiver”) **changes state to a stand-by mode** (*see* [1.c]).

[11] Equating the second device to the communication module of the second device is consistent with Vasu’s infringement contentions in the Texas case, where Vasu identifies a “first communication module” as the “first device” and a “second communication module” as the “second device.” *See* Ex.1012, Appx.F-1, 86-88. Lanning, ¶155.

’996 Claim	**Dorenbosch in view of Donovan**
device changes state from a sleep mode to a stand-by mode, and	***See* [1.a], [1.c], [12.e], [25.c]**. Lanning, ¶¶157-159. Even if “communication module” is a sub-component of the “second device,” and not the “second device” itself (*e.g.*, **Dorenbosch’s** WAN transceiver), **Dorenbosch** discloses “transceiver 404” is a subcomponent of its WAN transceiver. As explained in [1.c], the WAN transceiver is in stand-by mode while performing the steps “necessary to bring up the corresponding hardware and software.” [0038]. The “corresponding hardware” includes transceiver 404, which therefore also enters stand-by mode. Lanning, ¶160. If “stand-by mode” requires the communication module be capable of actively transmitting/receiving signals—while not yet communicating—as explained in [1.c], a POSITA would have understood there is a period when the WAN transceiver—including transceiver 404 individually—is able to receive signals but is not yet doing so. Lanning, ¶161. **Donovan discloses upon activation of a timer** (*e.g.*, “enables…the XOSC”) **a communication module** (*e.g.*, “wireless network communication device”) **changes state from a sleep mode** (*e.g.*, “transition from low power mode”) **to a stand-by mode** (*e.g.*, a “wakeup” period). ***See* [1.c], [12.e], [25.c]**. Consistent with **Dorenbosch’s** transceiver 404 being the communication module, **Donovan** discloses RF transceiver 52 of wireless network communications device 48 enters “low power mode,” and after enabling XOSC 54, RF transceiver 52 is woken up. [0053]. Lanning, ¶¶162-164. As discussed in §IX.A.3, a POSITA would have been motivated to apply **Donovan’s** sleep-to-wakeup mode

'996 Claim	**Dorenbosch in view of Donovan**
	transition teachings to **Dorenbosch's** WAN transceiver. Lanning, ¶165. • **[0053]**: "***In order to return to the active mode***, the ***MAC device 64 enables*** the voltage regulators 68 and 70 and the ***XOSC 54***….Finally, ***the MAC device 64 instructs*** the BBP 62 and ***the RF transceiver 52 to operate in the active mode.***"
[25.f] the communication module of the second device changes state from the stand-by mode to an active mode before the communication is switched to the communication module of the second device.	**Dorenbosch discloses the communication module of the second device** (*e.g.*, "WAN" "transceiver") **changes state from the stand-by mode** (*e.g.*, "steps necessary to bring up the corresponding hardware and software for" "WAN system") **to an active mode** (*e.g.*, circuitry of "WAN" "transceiver" activated) **before the communication is switched to the communication module of the second device** (*e.g.*, "the present…call[] [is] conducted via the WAN system"). ***See* [1.a], [1.d], [12.f], [25.c], [25.e]**. If the "communication module" is a sub-component of the "second device," **Dorenbosch** as explained in [1.d], after warm-up, and prior to the communication handover, the device enters active mode to receive the WAN signal, and this includes transceiver 404. [0038]. Lanning, ¶¶166-169. **Donovan discloses the stand-by mode** (*see* [1.c]). ***See* [1.c]** (also explaining motivation to combine)**, [12.f], [25.e]**. Lanning, ¶¶170-171.
[34.pre] A server device comprising:	**To the extent the preamble is limiting, Dorenbosch renders obvious a server device** (*e.g.*, "portable wireless device[]"). ***See* [12.c]**, **[12.e]**. Lanning, ¶¶172-174.
[34.a] a switching system to switch operation between a	**Dorenbosch discloses a switching system** (*see* [1.a]) **to switch operation** (*e.g.*, "handover") **between a communication module** (*e.g.*, "WAN" "transceiver")

’996 Claim	**Dorenbosch in view of Donovan**
communication module and a Wi-Fi communication module, wherein based on a first context and a second context, a communication automatically switches accordingly,	**and a Wi-Fi communication module** (*e.g.*, “WLAN” “transceiver” implementing “IEEE Standard 802.11”), **wherein based on a first context** (*e.g.*, WAN signal for which a user must pay a “cost”) **and a second context** (*e.g.*, “WLAN signal strength greater than a predetermined level”)**, a communication automatically switches accordingly** (*e.g.*, switching from a “present…call[]” via “WAN” to a call via “WLAN”). ***E.g.*, Dorenbosch** ***See* [1.a]-[1.b]**. **Dorenbosch** further discloses handover manager 514 performs a “routine during a call.” Fig. 10. When handover manager 514 is connected to a WAN signal, for which a user must pay a “cost,” and detects a “WLAN signal strength greater than a predetermined level” while the speed or displacement of the device exceeds a threshold (*e.g.*, not relatively stationary), handover manager 514 switches to the WLAN to conduct the “present call.” [0045], [0049]. The 802.11 Wi-Fi WLAN is preferable because it has sufficient signal strength and does not charge for using the network. [0049]. Switching is performed automatically because there is no human intervention. Lanning, ¶¶175-178. • **Fig. 10**:

’996 Claim	**Dorenbosch in view of Donovan**
	 FIG. 10 1000 • **[0045]**: “***If the unit detects a WLAN border cell…then the unit 306 registers with the WLAN and begins to monitor its movement.…For a unit 306 that detects a border cell…the unit will check the signal strength of the WLAN signal….If all the conditions are met (i.e. sufficient signal strength…then the unit 306…conducts any present and/or subsequent calls via the WLAN system.…***” • *See also* **[0008], [0049]**.
[34.b] wherein automatically switching is based on detecting the second context being preferred over the first context within a	**Dorenbosch discloses automatically switching** (*e.g.*, switching from a “present…call[]” via “WAN”) **is based on detecting the second context being preferred over the first context** (*e.g.*, “WLAN signal strength greater than a predetermined level” is preferred over associated “cost” for WAN network) **within a set of known networks** (*e.g.*, “WLAN” and “WAN”) **or from a newly**

’996 Claim	**Dorenbosch in view of Donovan**
set of known networks or from a newly discovered network,	**discovered network** (*e.g.*, the WLAN has “sufficient signal strength”). ***E.g.*, Dorenbosch** ***See* [1.b]**, **[12.d]**, **[34.a]**. **Dorenbosch** further discloses the WAN is known because the device is connected to the WAN. A POSITA would have understood the WLAN would have been known (*e.g.*, a user’s home WLAN) or unknown (*e.g.*, when first entering a location with an WLAN and determining signal strength). Lanning, ¶¶179-182.
[34.c] wherein upon activation of a timer, the switching system causes the Wi-Fi communication module to change state from a sleep mode to a stand-by mode, and	**Dorenbosch discloses the switching system** (*see* [1.a]) **causes the Wi-Fi communication module** (*see* [34.a]) **to change state to a stand-by mode** (*e.g.*, “steps necessary to bring up the corresponding hardware and software for” “WLAN system”). ***E.g.*, Dorenbosch** ***See* [1.c]**, **[34.a]**. **Dorenbosch** further discloses, while communicating over the WAN, if a “border cell” is detected, a registration process is initiated, which “includes the steps necessary to bring up the corresponding hardware and software” for the WLAN system. [0038], [0045]. As explained in [1.c], a POSITA would have understood, during this period when the hardware/software is brought up, the device is standing by before communicating. Lanning, ¶¶183-186. Further, for the same reasons described in [1.c] for the WAN transceiver, a POSITA would have understood **Dorenbosch** teaches, or at least renders obvious, a stand-by mode for the WLAN transceiver if stand-by mode requires the transceiver be capable of transmitting/receiving signals—but not yet communicating. **Dorenbosch** discloses the process in Fig. 10 is run “from time to time,” where the first step

’996 Claim	**Dorenbosch in view of Donovan**
	involves “begin[ning] running the LAN stack 510 and its associated hardware 404, 406.” [0045]. Because the device does not know the proximity of a WLAN access point when the WLAN transceiver wakes up, the WLAN transceiver will be capable of receiving for a period of time (stand-by period) before a WLAN signal is received. Lanning, ¶187. • **[0038]**: “***[T]he process of initiating the registration sequence…***be it a cellular (WAN) system or ***a local area (WLAN) system, includes the steps necessary to bring up the corresponding hardware and software***….” • **[0045]**: “***From time to time, while on the WAN network, the unit 306 will execute this process***…to check for coverage of the WLAN system….***If the unit detects a WLAN border cell…then the unit 306 registers with the WLAN and begins to monitor its movement….***” **Donovan discloses upon activation of a timer** (*see* [1.c]) **causing the second communication module** (*see* [1.c]) **to change state from a sleep mode** (*see* [1.c]) **to a stand-by mode** (*see* [1.c]). ***See* [1.c]** (also addressing motivation to apply **Donovan’s** teachings to **Dorenbosch**, which teaches the second communication module is the Wi-Fi communication module). Lanning, ¶¶188-190.
[34.d] the switching system causes the Wi-Fi communication module to change state from the stand-by mode to an active mode before the communication is	**Dorenbosch discloses the switching system** (*see* [1.a]) **causes the Wi-Fi communication module** (*see* [34.a]) **to change state from the stand-by mode** (*see* [34.c]) **to an active mode** (*e.g.*, circuitry of “WLAN” “transceiver” activated) **before the communication is switched to the Wi-Fi communication module** (*e.g.*, “conducts any present…call[] via the WLAN system” and WLAN transceiver).

’996 Claim	Dorenbosch in view of Donovan
switched to the Wi-Fi communication module.	***E.g.*, Dorenbosch** ***See* [1.d], [34.a], [34.c]**. **Dorenbosch** further discloses the WLAN transceiver is fully activated before communicating over the WLAN system, because the WLAN transceiver is used to receive the WLAN signal to measure its strength. Lanning, ¶¶191-194. **Donovan discloses the stand-by mode** (*see* [1.c]). ***See* [1.c]** (also addressing motivation to apply **Donovan’s** teachings to **Dorenbosch**). Lanning, ¶¶195-196.
[35.pre]-[35.a]	***See* [1.pre]-[1.a]**. Lanning, ¶¶197-198.
[35.b] wherein during an established communication if a preferable context is determined, the established communication is switched to a second communication over a network, wherein the preferable context is found in a	**Dorenbosch discloses during an established communication** (*e.g.*, “present…call[]” via “WLAN”; *see* [1.b]) **if a preferable context is determined** (*e.g.*, detecting “the WAN signal is” “good” preferred over “WLAN signal degradation”; *see* [1.b])**, the established communication** (*e.g.*, “present call” via WLAN; *see* [1.b]) **is switched to a second communication over a network** (*e.g.*, switched to “present…call[]…conducted via the WAN system”; *see* [1.b]), **wherein the preferable context is found in a set of known networks** (*e.g.*, “WLAN” and “WAN”; *see* [12.d]) **or in a newly**

’996 Claim	**Dorenbosch in view of Donovan**
set of known networks or in a newly discovered network,	**discovered network** (*e.g.*, “the signal strength of the WAN signal is” “good”; *see* [12.d]). ***See* [1.b], [12.d]**. Lanning, ¶¶199-201.
[35.c]-[35.d]	***See* [1.c]-[1.d]**. Lanning, ¶¶202-203.

B. Ground 2: DeAnna in view of Ground 1 (Claims 12, 23, 34)

Claims 12, 23, and 34 require a “server”/“server device.” To the extent it is argued **Dorenbosch** does not render obvious a server based on the knowledge of a POSITA, **DeAnna discloses a** “**ZeoSphere server**”—“a lightweight server operable on portable devices such as remote, wireless and handheld hardware devices." DeAnna, [0022]. **DeAnna's** server allows the device to "make" and "process[]" requests on wireless networks, e.g., via a "Radio Tower." [0026], [0114], [0120], [0124], Figs. 1-2A. Moreover, **DeAnna** teaches the server is handheld. DeAnna, [0007], [0121]. Lanning, ¶204.

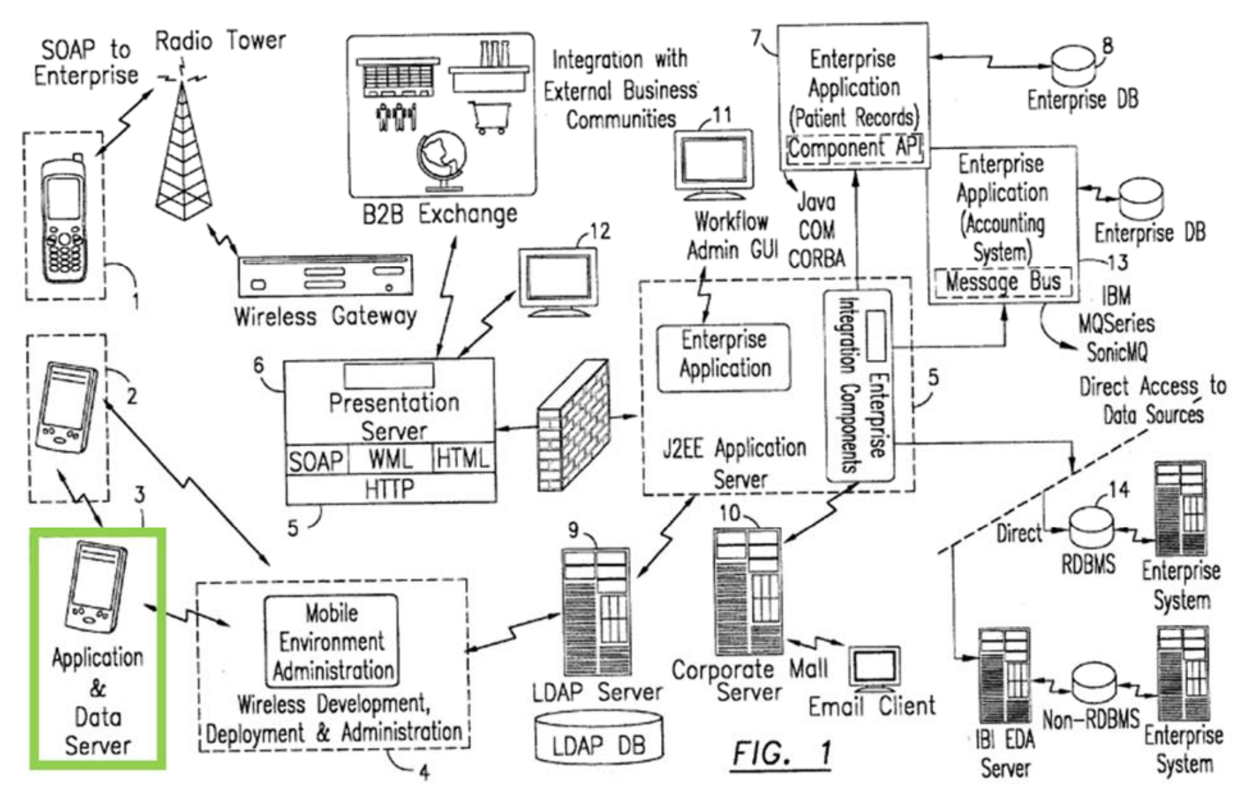


FIG. 1

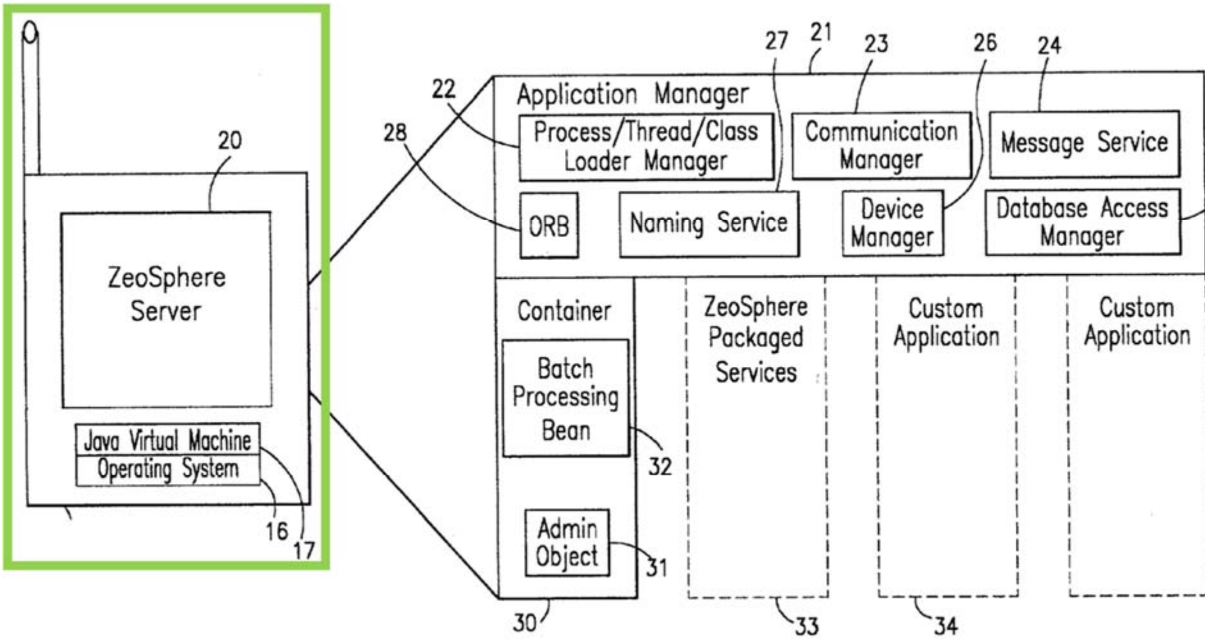


FIG. 2A

Like **Dorenbosch** and **Donovan**, **DeAnna** is in the same field as the ’996—which includes wireless communications—and is reasonably pertinent to the problems purportedly addressed by the ’996—e.g., maintaining a strong network connection. *See* DeAnna, Abstract, [0022], [0024], [0121]; *see* §IX.A.3. **DeAnna** teaches “a platoon could stay tightly linked carrying ZeoSphere-enabled wireless PDAs, and rescue parties or firefighters in remote areas could use a variety of platforms like 3G cell phones and PDAs with ZeoSphere servers…to carry out their mission with previously unattainable speed and accuracy of information sharing.” DeAnna, [0121]. Lanning, ¶205.

A POSITA would have been motivated to apply **Dorenbosch’s** teachings (as modified by **Donovan**) to **DeAnna's** handheld wireless server to seamlessly transfer between networks. A POSITA would have recognized the advantages of fast transitions between WANs/WLANs to maintain connectivity would be applicable when implementing **DeAnna's** server. DeAnna, [0121] (describing desirable instances for fast/accurate network transfers with no interruption); Dorenbosch, [0005] (describing handover "without a noticeable consequence to the end user."). Lanning, ¶206.

A POSITA would have had a reasonable expectation of success applying **Dorenbosch's** teachings (as modified by **Donovan**) to **DeAnna's** handheld wireless server to perform network switching. **DeAnna's** handheld wireless server is a standard device, operable for known WANs/WLANs, so any WAN/WLAN techniques—like the switching techniques of **Dorenbosch** (as modified by **Donovan**)—would be applicable to **DeAnna's** server. For example, **DeAnna's** server is implemented in "3G cell phones and PDAs." DeAnna, [0121]; *see also* [0024]. Lanning, ¶207. **Dorenbosch** discloses its system is implementable "using other computer systems and/or computer architectures," including "portable wireless devices, cellular telephones, and two-Way radios." Dorenbosch, [0030], [0049]. Lanning, ¶207.

Accordingly, a POSITA would have had a reasonable expectation of success applying **Dorenbosch's** handover teachings (as modified by **Donovan**) to

DeAnna's handheld wireless server, and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶208.

C. Ground 3: Iizuka in view of Donovan (Claim 39)

1. Overview of Iizuka

Iizuka discloses a **mobile terminal** roaming between **different networks**, like a **WLAN** and a **wireless telephone network**. [0010], [0014], [0057]. **Iizuka's** Figures 1-2 illustrate the **mobile terminal** connected to **call-management server 200**, which functions as an interface server, through **wireless LAN 3** (via wireless LAN access point 23) and **mobile telephone network 10**. [0057]-[0059], Figs. 1-2. The **mobile terminal** calls a **IP telephone 21** through one of the networks, e.g., the **wireless LAN**. [0061]-[0062]. If the call "deteriorates and deviates from a predetermined criterion during a call through the wireless LAN, the call is switched…[to] a **wireless telephone network**." [0212]. This allows the system to "dynamically switch the call between…the wireless LAN and…the wireless telephone network." [0212]. Lanning ¶¶209-210.

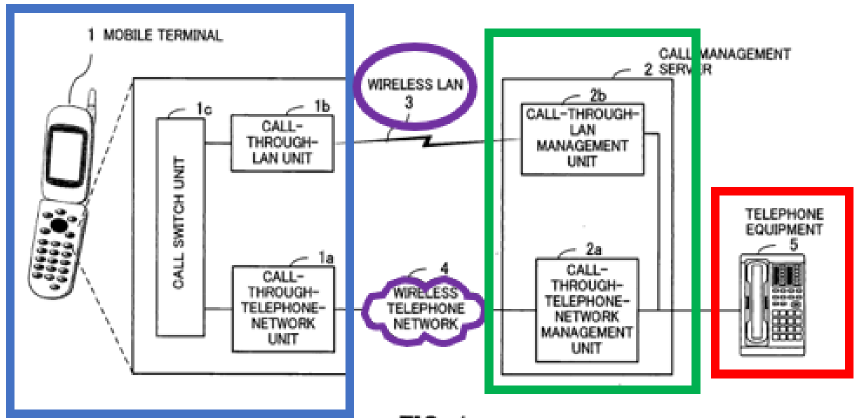


FIG. 1

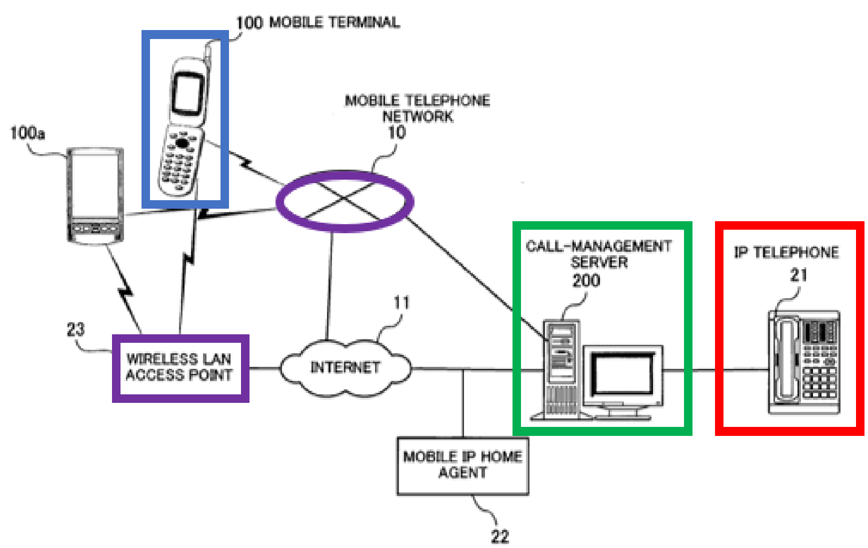


FIG. 2

When switching a call from a wireless LAN to a wireless telephone network,[12] **Iizuka's** **mobile terminal** calls **IP telephone 21** (i.e., a **first communication**

[12] **Iizuka** describes this in connection with Figure 13—illustrating functional units of the mobile terminal and call-management server—and Figure 14—illustrating a sequence diagram for the switching process. [0033]-[0034], [0157]-[0162], [0163]-

link)—a Voice over Internet Protocol (VoIP) call made "through the **wireless LAN**," connected to the internet. [0039], [0061]-[0062], [0109], [0204], Fig. 13; *see also* [0158], [0169]. This establishes "wireless communication" (i.e., **first wireless communication link**) between the **mobile terminal** and the **wireless LAN** (via the **wireless LAN access point**). [0061], [0064], Fig. 14 ("S76"); *see also* [0158], [0169]. Lanning ¶¶211-212.

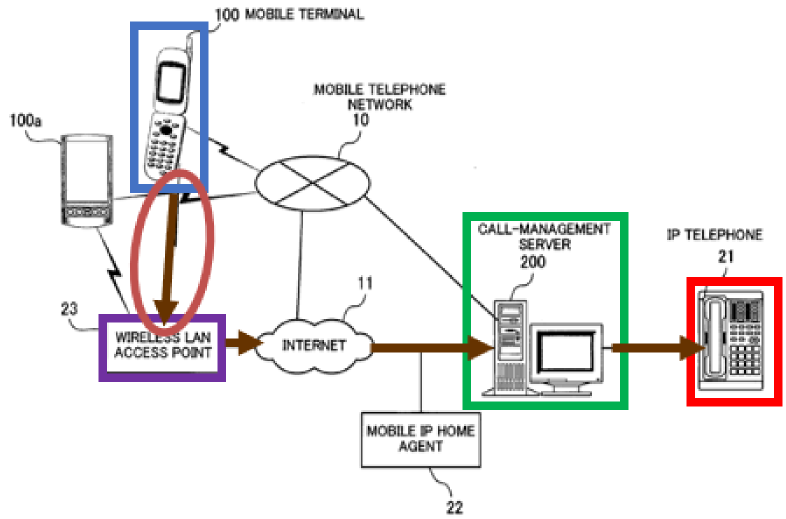


FIG. 2

[0176]; Lanning ¶¶211-212. Accordingly, this Petition includes parallel citations to the relevant disclosures for Figures 13-14. If it is argued that these figures pertain to different embodiments, it would have been obvious to a POSITA to apply both disclosures because they describe compatible teachings for **Iizuka's** process of "switching (roaming) from a VoIP call to a voice call through the mobile telephone network." [0033]-[0034]; Lanning ¶¶211-212.

Iizuka's **mobile terminal** includes **medium monitor unit 117** that "monitors the conditions of the network mediums," including **monitoring "intensity of a radio wave"** received from the wireless LAN access point (i.e., the **first wireless communication link**). [0045], [0078], [0105], Fig. 4. During the call, radio wave intensity is monitored to determine "when the condition of the communication deviates from a predetermined criterion." [0060]-[0061], [0159], Fig. 13; *see also* [0159]-[0160], [0170]. Lanning ¶213.

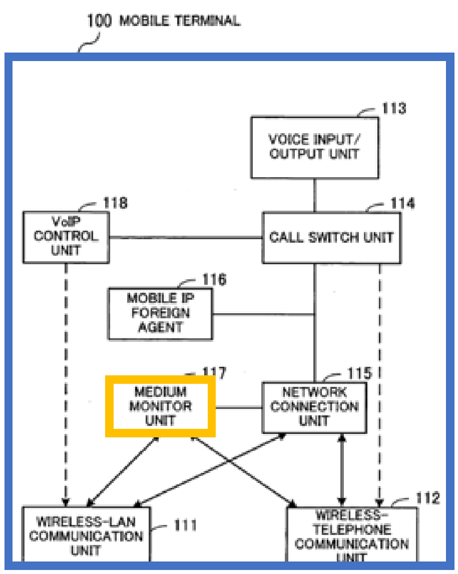


FIG. 4

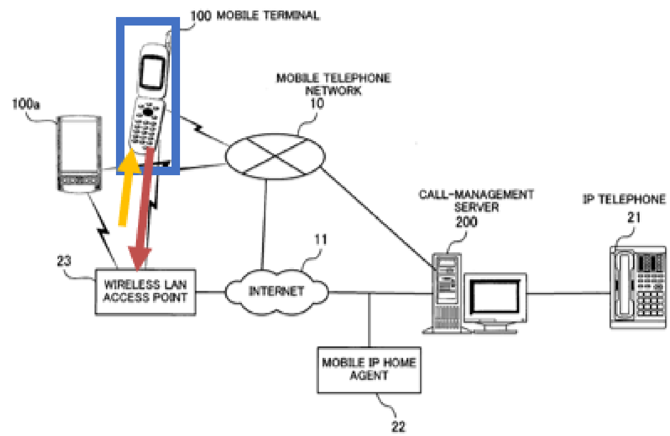


FIG. 2

If signal strength "deviates from a predetermined criterion," the **mobile terminal notifies** the **call-management server** by "originat[ing] a call to switching processing unit 212." [0159]-[0160]; *see also* [0162], [0170]. Lanning ¶214.

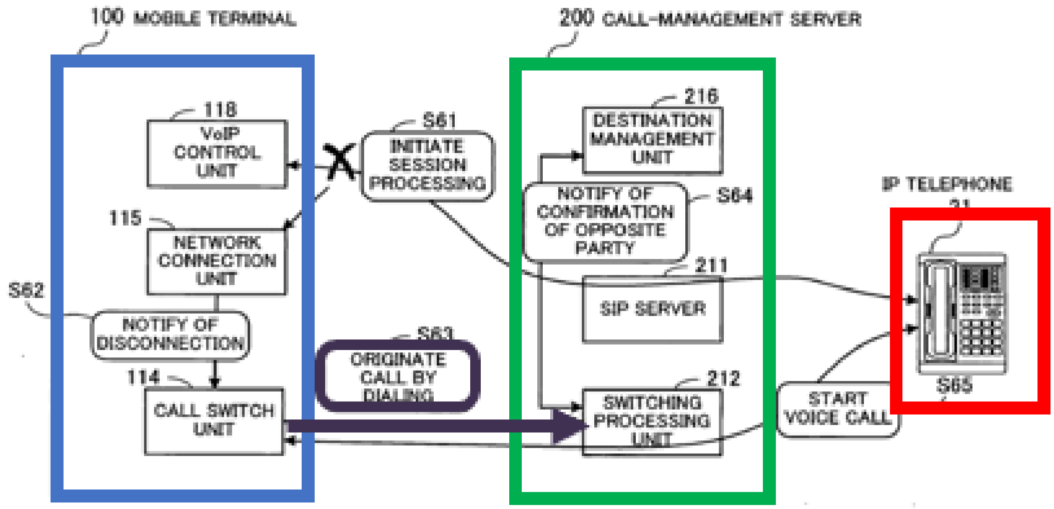


FIG. 13

The **call-management server** then establishes a voice call through the mobile telephone network while the VoIP call (over the **first communication link**) "continues." [0160]-[0162], [0170]-[0176]. Establishing a voice call proceeds in stages. First, an RTP (Real-time Transport Protocol) connection (i.e., **second communication link**) is established between the **call-management server** (interface server) and the **IP telephone** (end destination device). Fig. 14, [0175]. Lanning ¶215.

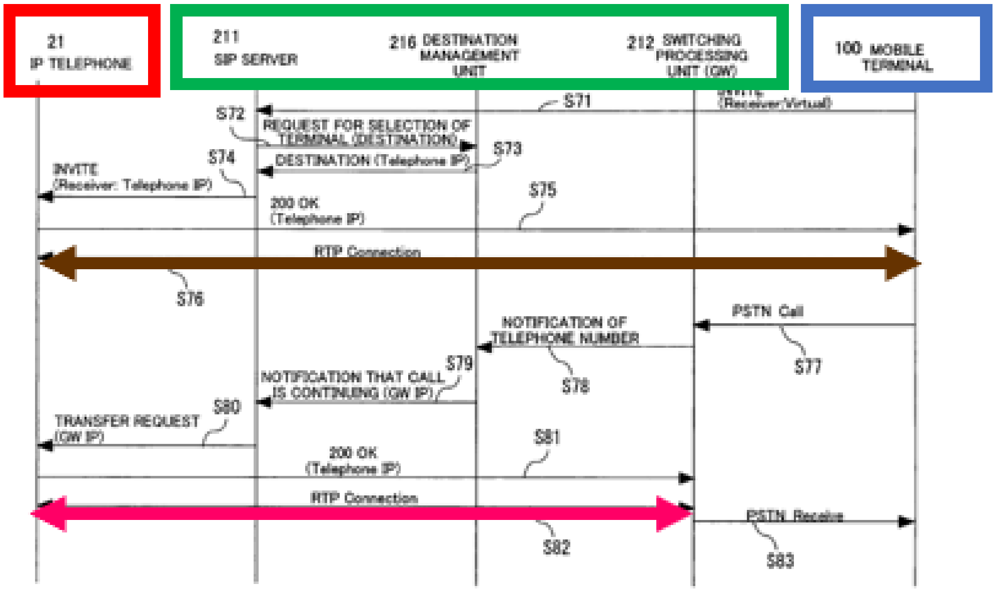


FIG. 14

Next, switching processing unit 212 of call-management server 200 responds to mobile terminal 100. [0176]; *see also* [0162]. This **"establishes a connection through the mobile telephone network 10"** between the **call-management server** and **mobile terminal,** thereby establishing a "voice call" between the mobile terminal and IP telephone. [0162], [0176]. Lanning ¶216.

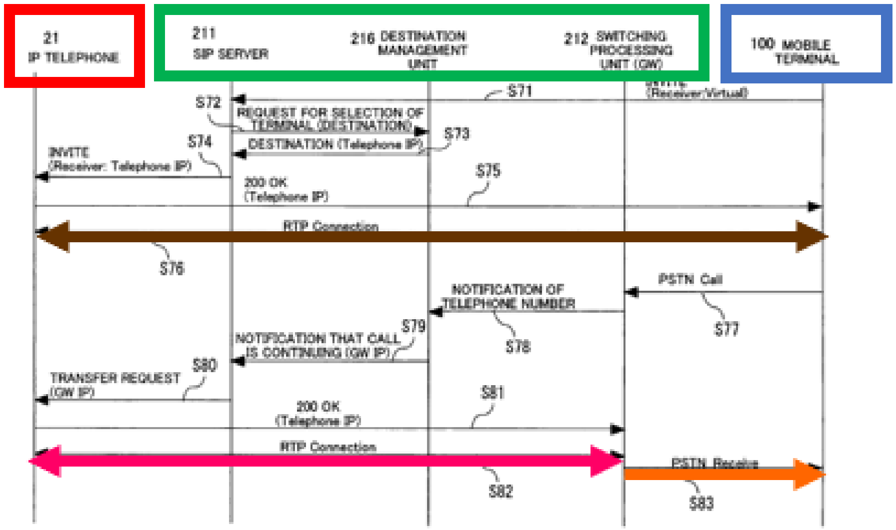


FIG. 14

Next, SIP server 211, located within call-management server 200, "disconnects the session which has been established through the Internet 11 between the mobile terminal 100 and the call-management server 200" (i.e., terminates transmission over the **first communication link**) to allow the voice call to continue. [0162]; *see also* [0176]. Lanning ¶217.

2. Motivation to Apply Donovan's Teachings to Iizuka

Like **Donovan**, **Iizuka** is in the same field as the '996—which includes wireless communications—and is reasonably pertinent to the problems purportedly addressed by the '996—e.g., maintaining a strong network connection. *See* Iizuka, [0008], [0013], [0093], [0205]; *see* §IX.A.3. Lanning, ¶218. For example, **Iizuka** contemplates wireless communication systems operable for seamless communications. *See* Iizuka, [0011]-[0012], [0055], [0204]; *see* §IX.A.3. Lanning,

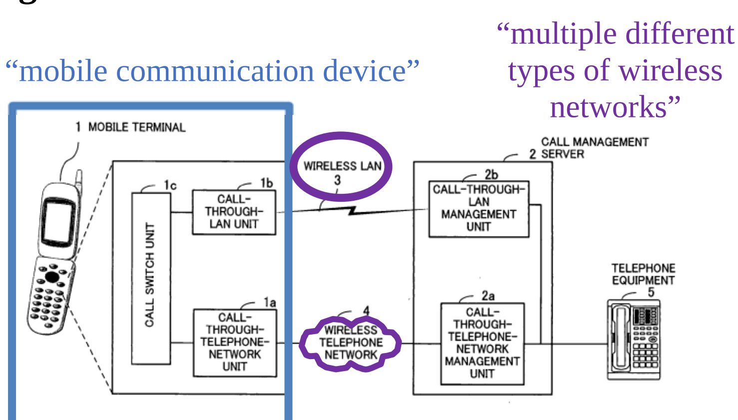
¶218.

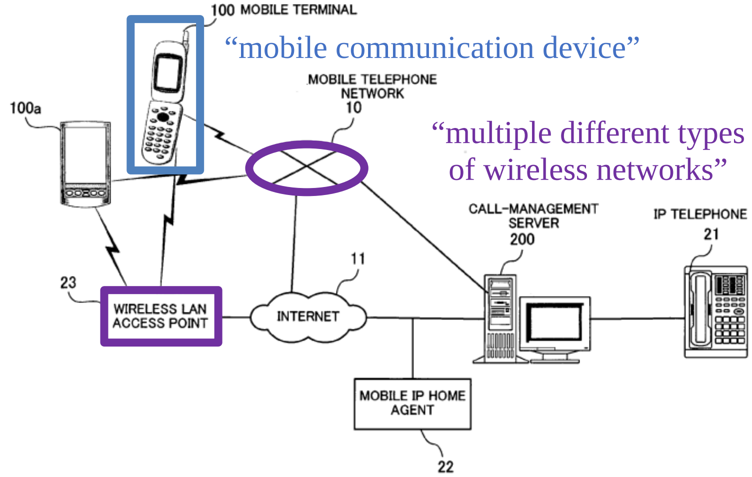
A POSITA would have been motivated to apply **Donovan's** sleep-to-wakeup mode transition teachings to **Iizuka's** wireless-telephone communication unit with similar motivation as applying these teachings to **Dorenbosch**, including to minimize power consumption without negatively impacting handover. *See* § IX.A.3; *see also* Iizuka, [0203]. Lanning, ¶219.

A POSITA would have had a reasonable expectation of success applying **Donovan's** teachings to **Iizuka's** wireless-telephone communication unit. **Iizuka** and **Donovan** use traditional devices, so the techniques taught in **Donovan** are interoperable with **Iizuka's** wireless-telephone communication unit. Iizuka, [0005], [0039] (describing existing telephone equipment); Donovan, [0004], [0014] (describing existing wireless devices). A POSITA would have understood **Donovan's** wake-up procedure causes the wireless network communications device to activate, so the module may communicate, allowing **Iizuka's** mobile terminal to communication over the cellular network. Iizuka, [0047]-[0048], [0051], [0053], [0110]-[0111]; Donovan, [0004], [0037]. Moreover, as noted in §IX.A.3, the use of oscillators in transceivers was common. Lanning, ¶220.

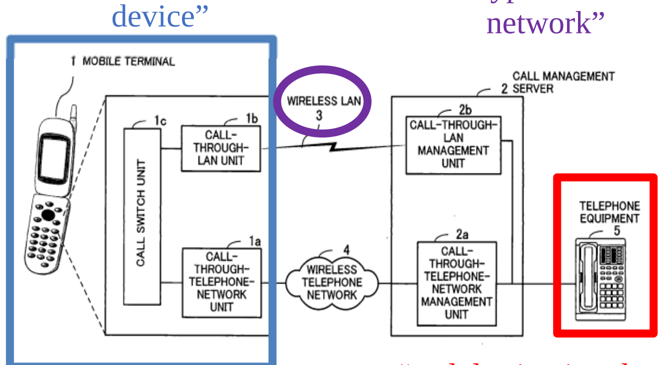
Accordingly, a POSITA would have had a reasonable expectation of success applying **Donovan's** sleep-to-wakeup mode transition teachings to **Iizuka's** mobile device, and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶221.

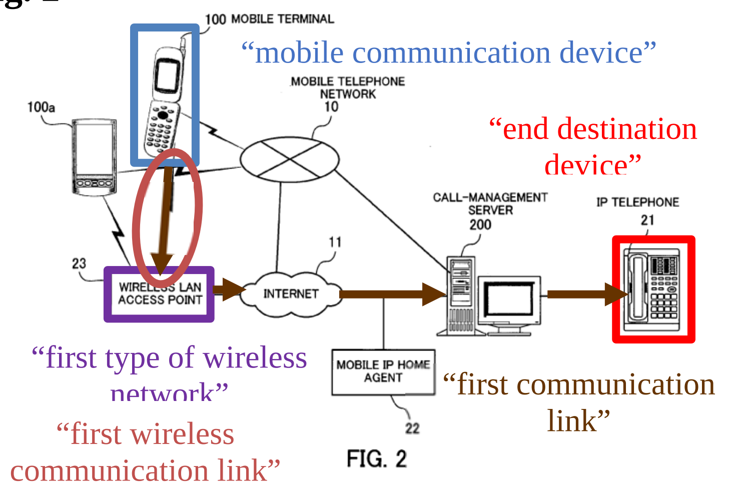
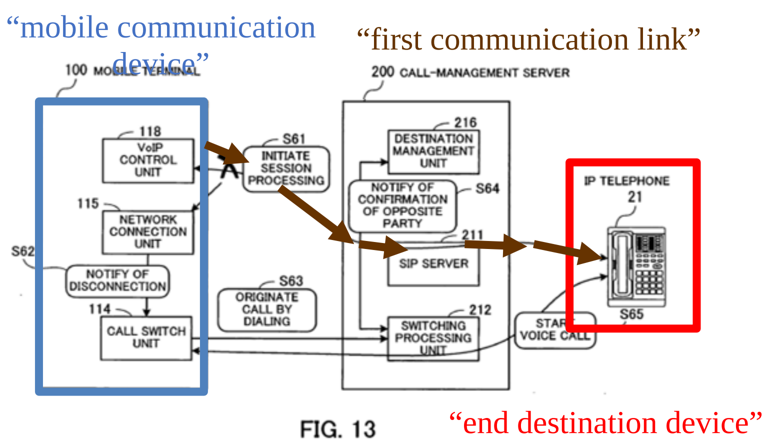
3. Claim Chart

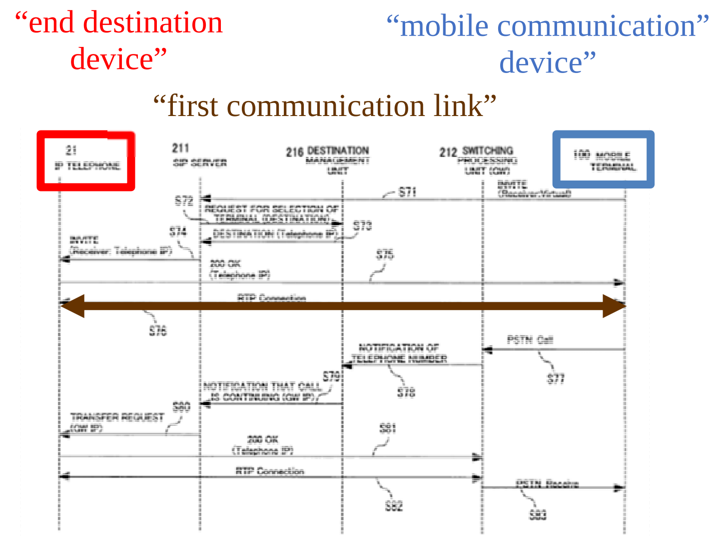
’996 Claim	Iizuka in view of Donovan
[39.pre] A method comprising:	**To the extent the preamble is limiting, Iizuka discloses a method** (*e.g.*, providing “wireless communication”)**.** ***E.g.*, Iizuka:** **Iizuka** discloses a method enabling a mobile terminal (including “mobile terminal [1, 100]”) to roam between a wireless local area network (LAN) (including “wireless LAN [3],” which contains “Internet 11”) and a wireless telephone network (including “wireless telephone network 4” and “mobile telephone network 10”). [0014], [0057]. A call initiated over a wireless LAN may “switch[] from a connection through the wireless LAN to a connection through a wireless telephone network.” [0015], [0212]. Lanning ¶¶222-225. • **Fig. 1**  FIG. 1

’996 Claim	Iizuka in view of Donovan
	• **Fig. 2**  FIG. 2 • **[0014]**: “[T]he present invention…provide[s] a mobile terminal…***for performing wireless communication which are able to use a plurality of communication mediums enabling a wireless call, by dynamically switching between the plurality of communication mediums during a call***.” • **[0057]**: “FIG. 2 is a diagram illustrating…**a *mobile telephone network 10 and the Internet 11 containing a wireless LAN are provided as the communication mediums through which calls can be made.***” • **[0015]**: “…***The mobile terminal comprises***:…a call switch unit which…***switches from a first call through the call-through-LAN unit to a second call through the call-through-telephone-network unit***….” • **[0212]**: “[W]hen the condition of communication through a wireless LAN deteriorates…***during a call through the wireless LAN, the call is switched from a connection through the wireless***

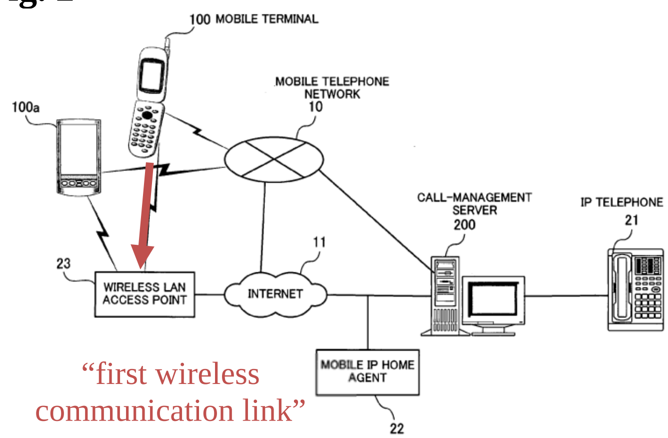
’996 Claim	**Iizuka in view of Donovan**
	LAN to a connection through a wireless telephone network*….” • **[0157]**: “FIG. 13…illustrat[es]…switching (roaming)*** from a VoIP call to a voice call through the mobile telephone network.” • **[0039]**: “FIG. 1 [illustrates]…a mobile terminal…and a call-management server…communicat[ing] with each other through…a wireless LAN 3 and a wireless telephone network 4.” • ***See also*** **[0043], [0157]-[0176]**
[39.a] establishing a first communication link between a mobile communication device and an end destination device, wherein the first communication link comprises a first wireless communication link between the mobile communication device and a first wireless network;	**Iizuka discloses establishing a first communication link** (*e.g.*, establishing a “VoIP call”) **between a mobile communication device** (*e.g.*, between “mobile terminal [1, 100]”) **and an end destination device** (*e.g.*, and “telephone equipment 5,” “IP telephone 21”)**, wherein the first communication link comprises a first wireless communication link between the mobile communication device and a first wireless network** (*e.g.*, “VoIP call” includes “wireless communication” between “mobile terminal [1, 100]” and “wireless LAN”)**.** ***E.g.*, Iizuka:** **Iizuka** discloses establishing a first communication link between the mobile terminal and a telephone, by establishing a VoIP call between a mobile terminal (including mobile device 1 and mobile device 100) and an IP telephone (including “telephone equipment 5” and “IP telephone 21”). [0039], [0158], [0169]. Lanning, ¶¶226-228. **Iizuka** further discloses the VoIP call includes a first wireless communication link between the mobile terminal and a first type of wireless network (a wireless LAN). The VoIP call is “through the wireless LAN.”

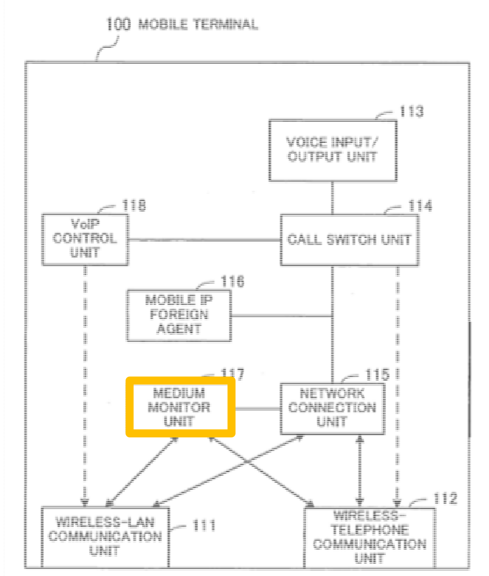
’996 Claim	Iizuka in view of Donovan
	Iizuka, [0109], [0204], Fig. 2. And when the mobile terminal makes a VoIP call, it “performs wireless communication” with “wireless LAN access point 23” of the wireless LAN. [0061]; *see also* [0064]. Lanning, ¶229. To initiate the VoIP call, a Session Initiation Protocol (SIP) session is established between the mobile terminal and a call-management server (including “call-management server 2” and “call-management server 200”). [0049], [0061], [0088], [0158]; *see also* [0169]. Next, the call management server completes the connection with IP telephone, establishing the SIP session between the mobile terminal and the IP telephone. [0058]. The VoIP call is started after this SIP session has been established. [0158]; *see also* [0169]; Figs. 13-14. Lanning ¶230. • **Fig. 1** “mobile communication” device” “first type of wireless network”  FIG. 1 “end destination device”

’996 Claim	Iizuka in view of Donovan
	• **Fig. 2**  FIG. 2 • **Fig. 13**  FIG. 13 • **Fig. 14**

’996 Claim	Iizuka in view of Donovan
	 FIG. 14 • **[0039]**: “***[A] call can be made between a user of the telephone equipment 5 and a user of the mobile terminal 1***.” • **[0049]**: “[T]he call-through-LAN management unit…***establishes a session between the call-management server…and the mobile terminal…through the wireless LAN….***” • **[0058]**: “…***[C]all-management server 200 establishes and switches connections between the IP telephone 21 and the mobile terminals 100 and 100 a***.” • **[0061]**: “…***When each of the mobile terminals…makes a call through the Internet 11, the mobile terminal performs wireless communication with the wireless LAN access point 23***.” • **[0064]**: “The wireless-LAN communication circuit 101 ***performs wireless data communication with the wireless LAN access point 23***….”

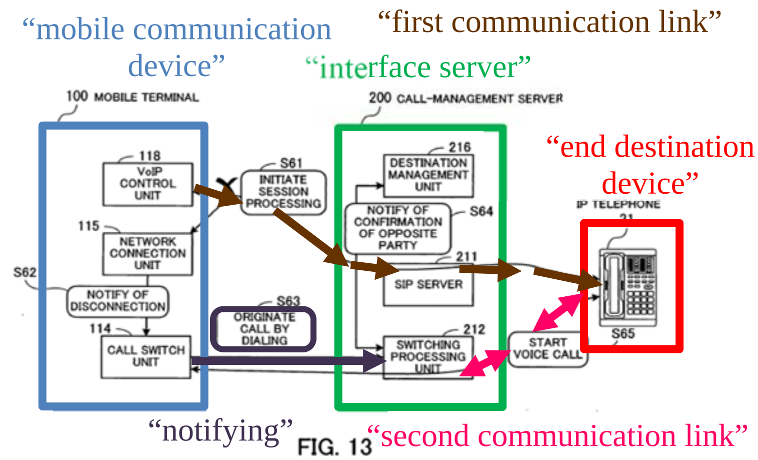
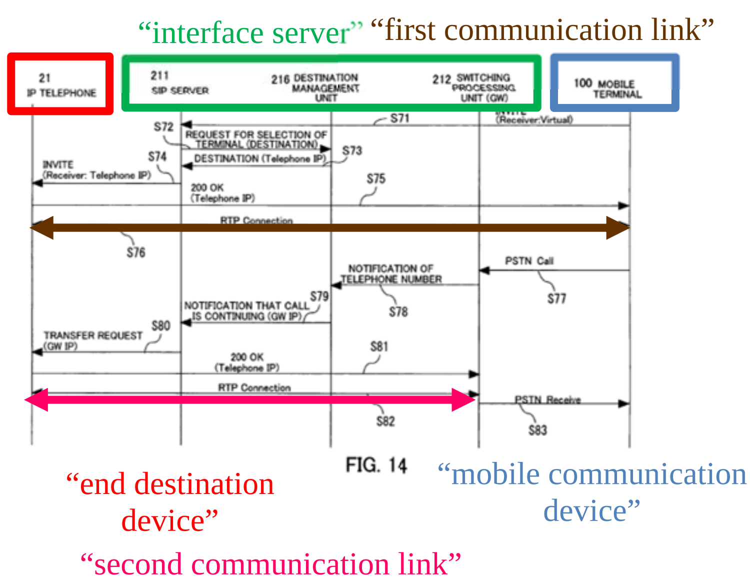
’996 Claim	**Iizuka in view of Donovan**
	• **[0158]**: “[Step S61] ***After an SIP session is initiated between the mobile terminal 100 and the IP telephone 21, a VoIP call is started.***” • **[0169]**: “[Step S76] ***A VoIP call between the mobile terminal 100 and the IP telephone 21 is started.***” • **[0088]**: “The SIP server 211 manages communication through the Internet 11 using the SIP (Session Initiation Protocol),…where each of the sessions is formed with a series of VoIP messages.” • **[0109]**: “[Step S14] The call switch unit 114 initiates ***a VoIP call through the wireless LAN.***” • **[0204]**: “***[A] VoIP call is placed by establishing a connection to a network such as a wireless LAN with a network device***….” • **[0169]**: “[Step S76] A VoIP call between the mobile terminal 100 and the IP telephone 21 is started.”
[39.b] monitoring a signal strength of the first wireless communication link;	**Iizuka discloses monitoring a signal strength of the first wireless communication link** (*e.g.*, monitoring “intensity of a radio wave” transmitted from wireless LAN to mobile terminal 100)**.** ***E.g.*, Iizuka:** ***See* [39.a]. Iizuka** further discloses mobile terminal 100 includes medium monitor unit 117 “monitor[ing] the conditions of the network mediums” by detecting the “intensity of a radio wave” received from wireless LAN access point 23. [0045], [0078], [0105]. Radio wave intensity is measured by signal strength, and it would have been obvious to measure signal strength as part of “intensity” in determining whether to switch networks. Lanning ¶¶231-233.

’996 Claim	Iizuka in view of Donovan
	During the VoIP call (*see* [39.a]), mobile terminal 100 communicates with wireless LAN access point 23 through the wireless LAN, receiving radio waves from wireless access point 23. [0060]-[0061], [0159]; *see also* [0170]. Medium monitor unit 117 measures the signal strength of these radio waves to determine “when the condition of the communication deviates from a predetermined criterion.” [0159]; *see also* [0170]. Lanning ¶234. • **Fig. 2**  FIG. 2 • **Fig. 4**

’996 Claim	Iizuka in view of Donovan
	 FIG. 4 • **[0045]**: “The condition of the connection…can be determined based on…***the intensities of signals received from an access point, to which the LAN is to be connected***.” • **[0060]**: “A wireless LAN access point 23 is connected to the Internet 11, and performs communication with the mobile terminals….” • **[0061]**: “[T]he mobile terminal performs wireless communication with the wireless LAN access point 23…establish[ing] a connection between the mobile terminal and the call-management server 200 through the wireless LAN access point 23.” • **[0078]**: “[M]edium monitor unit 117 ***monitors the conditions of the wireless-LAN communication unit 111…and passes to the network connection unit 115 information on the conditions of the connections connected to the wireless-LAN communication unit 111***….”

’996 Claim	**Iizuka in view of Donovan**
	• **[0105]**: “***[T]he network connection unit 115 receives from the medium monitor unit 117 information indicating the conditions of communication at the wireless-LAN communication unit 111….For example, the medium monitor unit 117 passes…information indicating the intensity of a radio wave…receive[d] from the wireless LAN access point 23***.” • **[0159]**: “[Step S62]…[W]hen ***communication through the wireless LAN becomes impossible (*[e.g.]*, when the condition of the communication deviates from a predetermined criterion)***, the network connection unit 115 notifies the call switch unit 114 of the condition of the communication.” • **[0170]**: “[Step S77] Thereafter, the mobile terminal 100 detects the condition of the radio wave.….” • ***See also* [0106].**
[39.c] when the signal strength drops below a threshold, notifying an interface server and establishing a second communication link between the interface server and the end destination device without disrupting the first communication link;	**Iizuka discloses when the signal strength drops below a threshold** (*e.g.*, when “intensity of signal[]” is below “predetermined criterion” or “threshold value” such that “communication through the wireless LAN becomes impossible”)**, notifying an interface server** (*e.g.*, “originat[ing] a call to the switching processing unit 212 in the call-management server 200”) **and establishing a second communication link between the interface server and the end destination device** (*e.g.*, establishing “voice call through the mobile telephone network 10” between call-management server 200 and IP telephone 21) **without disrupting the first communication link** (“VoIP call” (*see* [39.a]) “still continues” while voice call is being established)**.**

’996 Claim	Iizuka in view of Donovan
	***E.g.*, Iizuka:** **Iizuka** discloses the mobile terminal informs an interface server when the signal strength drops below a threshold. Mobile terminal 100 monitors the signal strength of the communication through the wireless LAN (*see* [39.b]) to determine when the communication becomes “impossible.” [0159], [0170]. This occurs when the mobile terminal detects a sufficiently weakened signal strength, and, thus, “deviates from a predetermined criterion.” [0159]; *see also* [0170], [0146]. Then, mobile terminal 100 notifies call-management server 200 by “originat[ing] a call to switching processing unit 212 in the call-management server by dialing.” [0159]-[0160]; *see also* [0170]. Call-management server 200 is an interface server because it interfaces with the wireless LAN and mobile telephone network (*see* [39.pre]). [0057]-[0058]. Lanning, ¶¶235-238. **Iizuka** discloses establishing a second communication link between the interface server and the end destination device without disrupting the first communication link. The switching processing unit 212 in call-management server 200 establishes a voice call through the mobile telephone network 10 to IP telephone 21. [0160]-[0162], [0170]-[0175]. This voice call is established while the VoIP call (*see* [39.a]) “still continues.” [0162]. Lanning, ¶239. As part of this process of establishing a voice call, the method proceeds in stages. A second communication link (an RTP (Real-time Transport Protocol) connection for real-time audio streams) is established between the interface server and the end destination device as depicted in Iizuka’s Fig. 14. [0175]. The subsequent step that redirects this link to the mobile terminal is discussed below in connection with [39.e]. Lanning ¶240.

’996 Claim	Iizuka in view of Donovan
	• **Fig. 13**  • **Fig. 14** 

<table>
<tr><th>'996 Claim</th><th>Iizuka in view of Donovan</th></tr>
<tr><td></td><td>

- **Fig. 5**

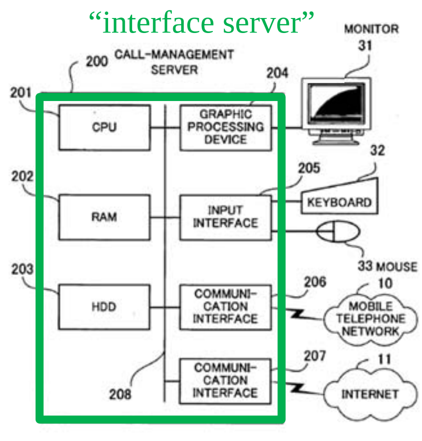


FIG. 5

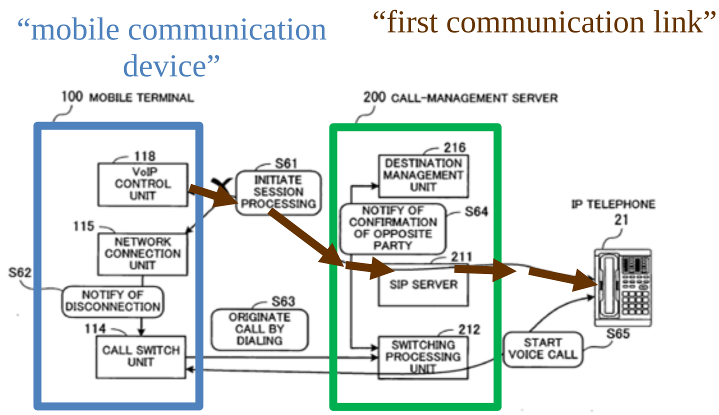
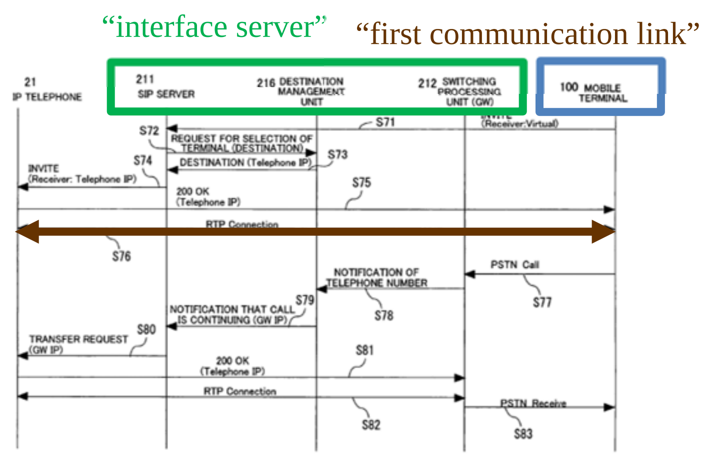
- **[0159]**: "[Step S62]…[*W*]***hen communication through the wireless LAN becomes impossible ([e.g.], when the condition of the communication deviates from a predetermined criterion), the network connection unit 115 notifies the call switch unit 114 of the condition of the communication.***"
- **[0160]**: "[Step S63] ***The call switch unit 114 originates a call to the switching processing unit 212 in the call-management server….***"
- **[0175]**: "[Step S82] A ***connection for originated call is established between the IP telephone 21 and the switching processing unit….***"
- **[0146]**: "[Step S56]…[T]he mobile terminal 100 detects that ***the condition of the radio wave is not sufficiently good to perform communication (i.e., connection through the wireless LAN is impossible)***…"

</td></tr>
</table>

’996 Claim	**Iizuka in view of Donovan**
	• **[0057]**: “***An IP telephone 21 is connected through a call-management server 200 to the mobile telephone network 10 and the Internet….***” • **[0058]**: “***The call-management server 200 is connected to the mobile telephone network 10 and the Internet 11*** performs medium conversion…and transfers call data.” • **[0073]**: “***[T]he call switch unit 114 switches calls between the wireless LAN and the wireless telephone network according to the conditions of a connection through the wireless LAN*** and…the wireless telephone network.” • **[0170]**: “[Step S77]…When the mobile terminal 100 determines that use of the wireless LAN is impossible, the mobile terminal 100 originates a PSTN call to the switching processing unit….” • **[0175]**: “[Step S82] A connection for originated call is established between the IP telephone 21 and the switching processing unit….” • ***See also*** [0084]-[0085], **[0171]-[0174]**
[39.d] notifying the mobile communication device to terminate transmission over the first communication link; and	**Iizuka renders obvious notifying the mobile communication device to terminate transmission over the first communication link** (*e.g.*, notifying mobile terminal to terminate transmission before “SIP server 211” of “call-management server 200” disconnects session that was established through Internet 11 between mobile terminal 100 and call-management server 200)**.** ***E.g.*, Iizuka:** **Iizuka** discloses terminating transmission over the first communication link (the VoIP call; *see* [39.a]). Iizuka discloses SIP server 211, located within call-management server 200, “disconnects the session which has been established through the Internet 11 between the

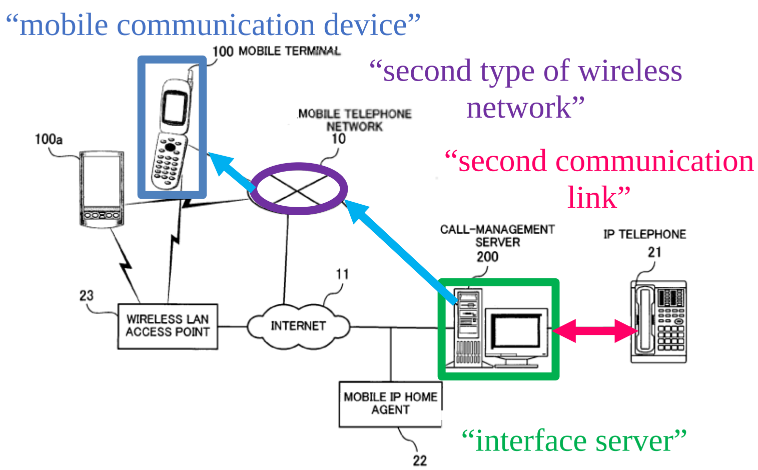
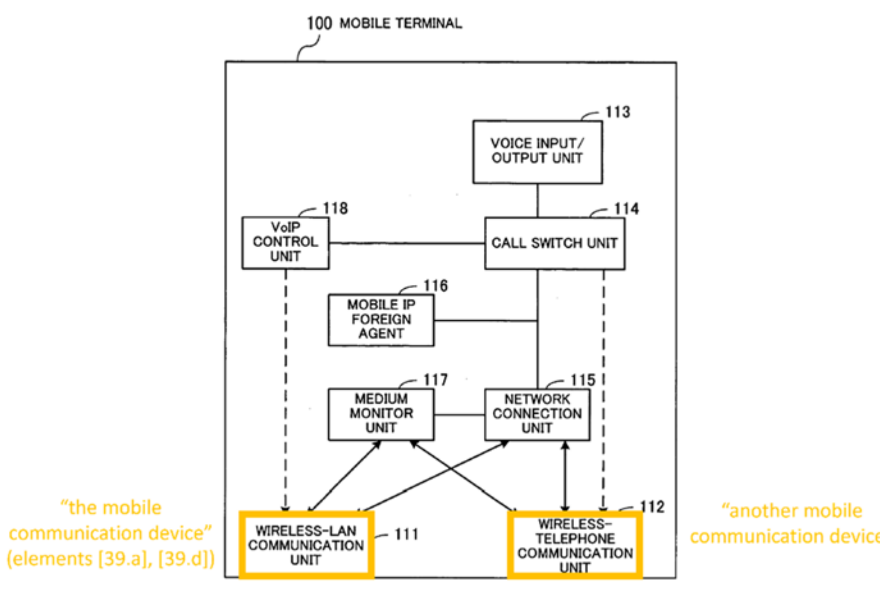
’996 Claim	Iizuka in view of Donovan
	mobile terminal 100 and the call-management server 200.” [0162]; *see also* [0176]. Iizuka further discloses the mobile terminal is involved in the termination process: “call-through-LAN management unit 2b [of mobile terminal] disconnects a corresponding session which has been established between” the mobile terminal and call-management server through the wireless LAN. [0052]. The disconnected session formed one leg of the complete SIP session established between the mobile terminal 100 and the IP telephone 21, as part of the VoIP call. [0158]. By disconnecting the session between the mobile terminal 100 and the call-management server 200, the transmission over the VoIP call is terminated. Lanning ¶¶241-243. A POSITA would have understood, or at minimum found obvious, to disconnect (and thereby terminate transmission over) a SIP session with the mobile terminal—the server thus notifies the mobile terminal by sending a message a SIP BYE message so the mobile phone knows to disconnect the session. Lanning ¶244.[13] Therefore, **Iizuka** renders obvious notifying the mobile terminal to terminate transmission over the first communication link. Lanning ¶244. • **Fig. 13**

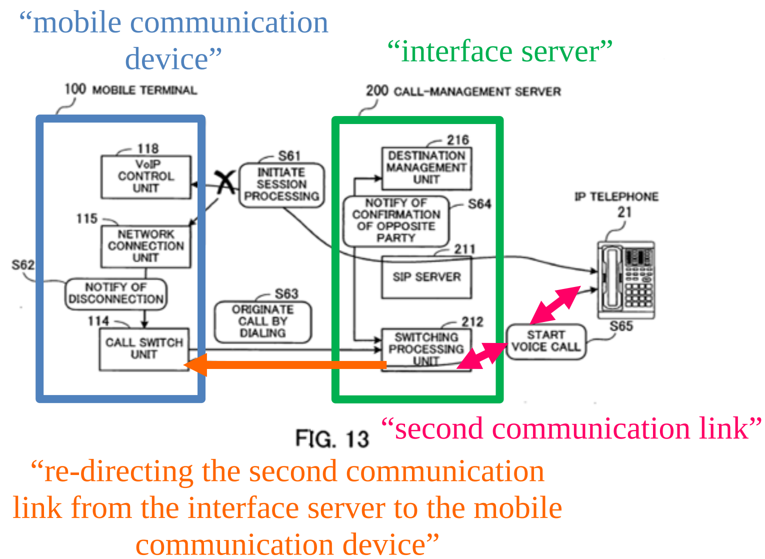
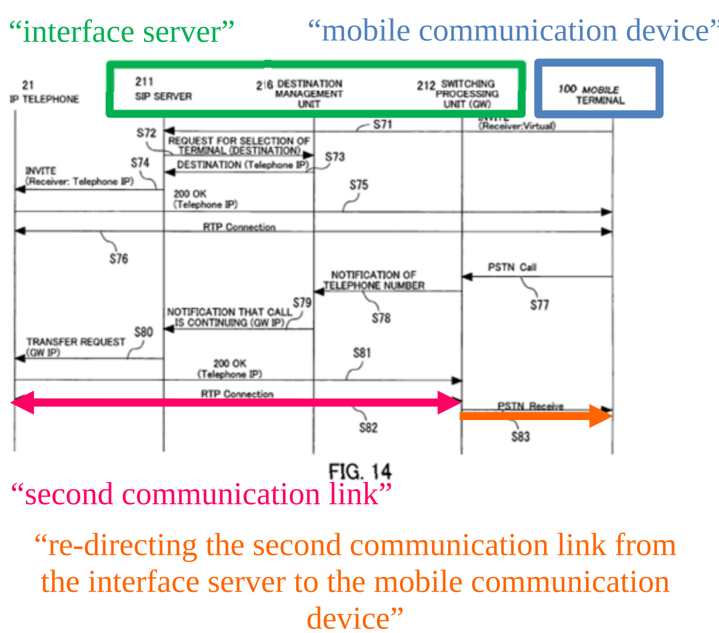
[13] *See* Preston, [0043] (disclosing termination of a SIP session by transmitting a “SIP BYE message” to the phone, and the phone replies with an “OK” message before the server “officially end[s] the communication”); Ex.1021, [0103]-[0104], [0119] (disclosing transmitting a “BYE request signal” to “wireless communication terminal (10B)” followed by a response to finish the connection).

’996 Claim	Iizuka in view of Donovan
	 FIG. 13 • **Fig. 14**  FIG. 14 • **[0162]**: “**[Step S65] [*T*]*he SIP server 211 disconnects the session which has been established through the Internet 11 between the mobile terminal 100 and the call-management server*….**” • **[0158]**: “[Step S61] After an SIP session is initiated between the mobile terminal 100 and the IP telephone 21, a VoIP call is started.”

’996 Claim	**Iizuka in view of Donovan**
	• **[0052]**: “**[*T*]*he call-through-LAN management unit…disconnects a corresponding session which has been established between the mobile terminal 1 and the call-management server 2 through the wireless LAN…*.**” • **[0176]**: “The switching processing unit 212 returns to the mobile terminal 100 a response to the origination of the call….Thus, a call between the IP telephone 21 and the mobile terminal 100 becomes possible.”
[39.e] re-directing the second communication link from the interface server to another mobile communication device, thereby establishing a second wireless communication link between the mobile communication device and a second wireless network,	**Iizuka discloses re-directing the second communication link** (*e.g.*, voice call over RTP connection; *see* [39.c]) **from the interface server** (*e.g.*, from “call-management server 200”) **to another mobile communication device** (*e.g.*, to “mobile terminal 100” by providing response)**, thereby establishing a second wireless communication link between the mobile communication device and the second type of wireless network** (*e.g.*, providing response “establishes a connection” to mobile terminal 100 “through the mobile telephone network 10”)**.** ***E.g.*, Iizuka:** **Iizuka** discloses re-directing the second communication link from call-management server 200 to mobile terminal 100. After the second communication link between call-management server 200 and IP telephone 21 is established by making a voice call to IP telephone 21 over an RTP link (*see* [39.c]), switching processing unit 212 of call-management server 200 returns a response to mobile terminal 100. [0176]; *see also* [0162]. This response “establishes a connection through the mobile telephone network 10” between call-management server 200 and mobile terminal 100. [0176]; *see also* [0162]. Thus, this response, labeled “PSTN Receive” in Fig. 14, establishes the second communication link between the

’996 Claim	Iizuka in view of Donovan
	call-management server 200 and mobile terminal 100. Fig. 14, [0176]; *see also* [0162]. As illustrated in Figure 2, the “PSTN receive” process passes through mobile telephone network 10, so a wireless connection for this communication link is established between mobile terminal 100 and mobile telephone network 10, enabling a voice call between IP telephone 21 and mobile terminal 100 through mobile telephone network 100. [0176]; *see also* [0162]. Lanning ¶¶245-247. If it is argued “another mobile communication device” requires a different mobile communication device than the “mobile communication device” referenced in [39.a] and [39.d], wireless-LAN communication unit 111 is the mobile communication device because wireless-LAN communication unit 111 communicates with IP telephone 21 (*see* [39.a]) and communicates with call-management server 200 to receive notifications therefrom (*see* [39.d]). [0070], Fig. 4. Wireless-telephone communication unit 112 is “another mobile communication device” to which communication from call-management server 200 described above is re-directed. [0071]. Moreover, wireless-telephone communication unit 112 causes itself to perform the steps of [39.f]-[39.g] below. Lanning, ¶¶248-249.

’996 Claim	Iizuka in view of Donovan
	• **Fig. 2**  FIG. 2 “second wireless communication link between the mobile communication device and the second type of wireless network” • **Fig. 4**  FIG. 4 • **Fig. 13**

’996 Claim	Iizuka in view of Donovan
	FIG. 13 • **Fig. 14** FIG. 14 • **[0070]**: “***The wireless-LAN communication unit 111 performs communication with the call-management server 200 through the wireless LAN or the Internet 11***.”

’996 Claim	**Iizuka in view of Donovan**
	• **[0071]**: “***The wireless-telephone communication unit 112 performs communication with the call-management server 200 through the mobile telephone network 10***.” • **[0160]**: “[Step S63] The call switch unit 114 originates a call to the switching processing unit 212 in the call-management server 200….” • **[0176]**: “[Step S83] The switching processing unit 212 ***returns to the mobile terminal 100 a response*** to the origination of the call by dialing, and ***establishes a connection through the mobile telephone network 10. Thus, a call between the IP telephone 21 and the mobile terminal 100 becomes possible***.” • **[0162]**: “[Step S65] The switching processing unit 212 ***realizes a voice call through the mobile telephone network 10*** while the VoIP call…continues.”
[39.f] wherein upon activation of a timer, the mobile communication device causes a communication module to change state from a sleep mode to a stand-by mode, and	**Iizuka discloses the mobile communication device** (*e.g.*, “mobile terminal 100”) **and a communication module** (*e.g.*, “wireless-telephone communication unit 112”). ***See* [39.a]-[39.e]**. Lanning, ¶¶250-252. **Donovan discloses upon activation of a timer** (*see* [1.c]) **causing a communication module** (*see* [1.c]) **to change state from a sleep mode** (*see* [1.c]) **to a stand-by mode** (*see* [1.c]). ***See* [1.c]**. Lanning, ¶¶253-254. As discussed in §IX.C.2, a POSITA would have been motivated to apply **Donovan’s** sleep-to-wakeup mode transition teachings to **Iizuka’s** wireless-telephone communication unit. Lanning, ¶255.

’996 Claim	**Iizuka in view of Donovan**
[39.g] the mobile communication device causes the communication module to change state from the stand-by mode to an active mode before a communication is switched to the communication module.	**Iizuka discloses the mobile communication device** (*see* [39.a]) **causes the communication module** (*see* [39.f]) **to change state to an active mode** (*e.g.*, “activates the wireless-telephone communication unit 112”) **before a communication is switched to the communication module** (*e.g.*, “wireless-telephone communication unit 112” fully activated before call is handed over in S83). ***E.g.*, Iizuka:** ***See* [39.pre]-[39.e]**. As explained in [39.c], mobile terminal 100 “originate[s] a call” to call-management server 200 over a wireless network, which involves “activat[ing]” wireless-telephone communication unit 112 before mobile device 100 completes handover in S83. [0105], [0114]. Lanning, ¶¶256-259. • [0105]: “[N]etwork connection unit 115 ***activates the wireless-telephone communication unit 112***….” **Donovan discloses the stand-by mode** (*e.g.*, “wakeup” period). ***See* [39.f]**. As discussed in §IX.C.2, a POSITA would have been motivated to apply **Donovan’s** stand-by mode teachings to **Iizuka’s** wireless-telephone communication unit. Lanning, ¶¶260-261.

D. Ground 4: Ground 3 in view of Preston (Claim 39)

If further disclosure of “notifying the mobile communication device to terminate transmission over the first communication link” (limitation [39.d]) is required, **Iizuka** in view of **Donovan** and **Preston** renders obvious this limitation.

Lanning, ¶262.

Preston discloses a "SIP proxy server" transmits a "SIP BYE message" to "SIP telephone 38," which confirms reception, and SIP proxy server "officially end[s] the communication." Preston, [0043]. Lanning, ¶263.

Like **Iizuka** and **Donovan, Preston** is in the same field as the '996—which includes wireless communications systems—and is reasonably pertinent to the problems purportedly addressed by the '996—e.g., maintaining a strong network connection. *See* Preston, [0008], [0018]-[0021], [0025], [0040]-[0042], [0044]; *see* §IX.C.3. Lanning, ¶264. For example, **Iizuka** and **Preston** disclose optimal wireless communication sessions with no interruption. Iizuka, [0010], [0033], [0093], [0099], [0162]; Preston, [0020]-[0021], Fig. 1. Lanning, ¶264.

A POSITA would have been motivated to apply **Preston's** teachings of transmitting a SIP BYE message to **Iizuka's** roaming method to inform a mobile communication device to cease transmitting over the first communication link. Lanning, ¶265. **Iizuka's** call-management server 200 includes SIP server 211, which manages VoIP communications. Iizuka, [0087]-[0088], [0093]. **Iizuka** aims to "smoothly" switch an ongoing VoIP call between a mobile terminal and an IP telephone to a voice call to "prevent [any] interruption[s] of [this] communication," and further teaches "disconnect[ing] the [SIP] session which has been established through the Internet 11 between the mobile terminal 100 and the call-management server 200," but does not provide all details for terminating the SIP session. Iizuka, [0010], [0033], [0093], [0099], [0162]. A POSITA would have looked to **Preston**, which teaches how to terminate a SIP session, to terminate **Iizuka's** VoIP call, which uses a SIP session managed by a SIP server. Lanning, ¶265. A POSITA would have understood explicitly signaling to the mobile terminal to cease communication over that link would have advantageously prevented the mobile terminal from erroneously sending signals that would otherwise be lost, avoiding call disruptions. Lanning, ¶265.

A POSITA would have thus had a reasonable expectation of success and found the application of this functionality in **Iizuka's** method to be a straightforward modification, as **Iizuka** already describes the mobile terminal using the SIP protocol to communicate with a call-management server including a SIP server. Iizuka, [0087]-[0088], [0158], [0162]. Lanning, ¶266. Applying **Preston's** teachings would have involved the simple step of adding the transmission of a SIP control signal to the overall SIP communication protocol (to the extent **Iizuka** does not already include it), and a POSITA would have known such a combination would predictably work and provide the expected functionality. Lanning, ¶266.

E. Ground 5: Ground 3 in view of Pan (Claim 41)

1. Overview of Pan

Pan discloses **media gateway 210** manages calls carried over communication network 206 (e.g., "WLAN") and second network 214 with a base station (a cellular network). [0030], [0032]. **Media gateway 210** detects **mobile station 202** has reached outer boundary 208 of communication network 206 by "measuring the radio signal strength" from **mobile station 202** at access point 212. Pan, [0040]. If communication network 206 (via **Media gateway 210**) detects "the radio signal strength from **mobile station 202**" reaches "a second predetermined minimum threshold value," handover begins, and "media gateway 210 commands the mobile station 202 to **place a second call" via communication link 306**. [0040]-[0042]. Lanning, ¶267.

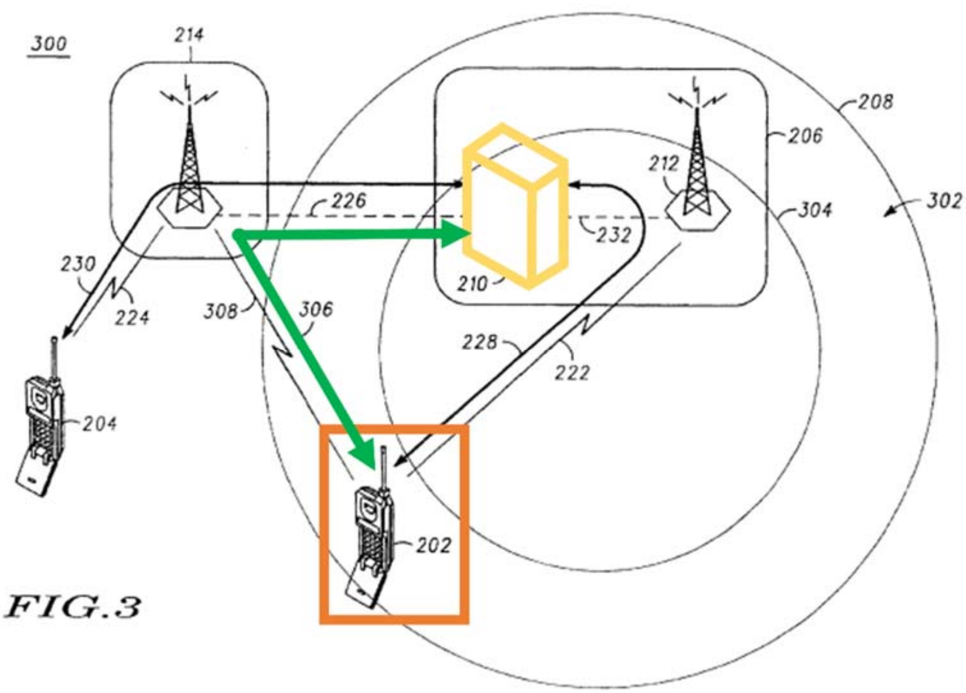


FIG.3

2. Motivation to Apply Pan's Teachings to Iizuka and Donovan

Like **Iizuka** and **Donovan, Pan** is in the same field as the '996—which includes wireless communications systems—and is reasonably pertinent to the problems purportedly addressed by the '996—e.g., maintaining a strong network connection. *See* Pan, [0026]; *see* §IX.C.3. Lanning, ¶268. For example, both **Iizuka** and **Pan** disclose communication interfaces in communications handover systems. Iizuka, [0084]-[0085]; Pan, [0027]. Lanning, ¶268.

A POSITA would have been motivated to apply **Pan's** teachings of interface-controlled handover to **Iizuka's** wireless-telephone communication unit (as modified by **Donovan**), causing the wireless-telephone communication unit to wake up to maintain a connection when the mobile device signal strength is weak as received by the network. Lanning, ¶269. But relying on the mobile device's detected signal strength alone would not indicate a weak connection—e.g., the mobile device signal may be weak at the network, while the network signal received at the mobile device is strong. Pan addresses this problem by allowing the network to instruct handover considering signal strength received at the network. Lanning, ¶269.

A POSITA would have had a reasonable expectation of success and found applying **Pan's** teachings of a network controlling handover to **Iizuka's** system (as modified by **Donovan**) straightforward. **Iizuka** already provides a mechanism for call management server 200 to communicate with mobile terminal 100, because call management server 200 includes communication interface 206—operable to "exchange[] data with the mobile terminals…through the mobile telephone network" and "through the Internet." Iizuka, [0081], [0084]-[0085]. Lanning, ¶270. And **Iizuka** already teaches reliance on signal strength to determine when to switch networks. Iizuka, [0045], [0105], [0159]-[0160]; *see also* [39.b]-[39.d] (§IX.C.3). Lanning, ¶270.

Accordingly, a POSITA would have had a reasonable expectation of success applying **Pan's** interface-controlled handover teachings to **Iizuka** (as modified by **Donovan**), and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶271.

3. Claim Chart

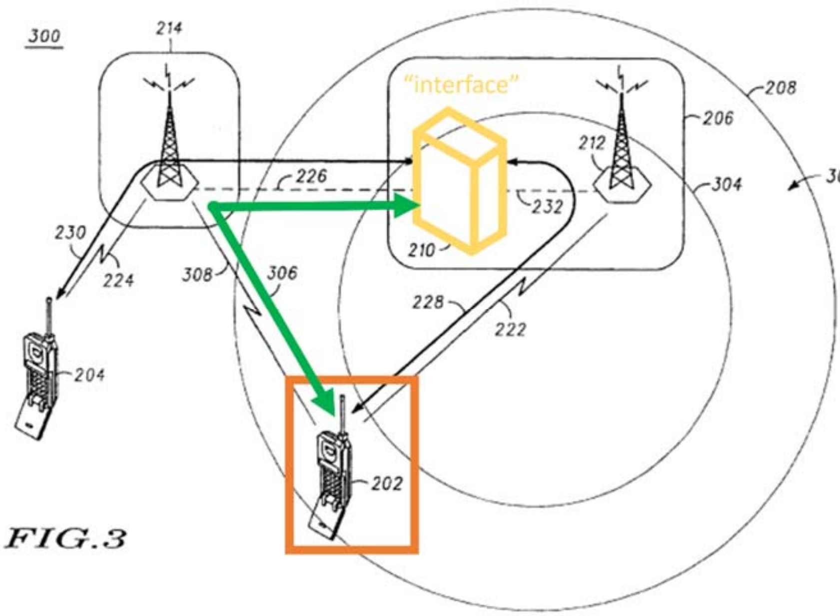
'996 Claim	**Iizuka in view of Donovan and Pan**
[41.pre] A method comprising:	***See* [39.pre]**. Lanning, ¶¶272-273.
[41.a] monitoring a context of a first wireless communication link;	***See* [39.b]**. Lanning, ¶274.
[41.b] when a network is detected as available with a second wireless communication link with a context preferable to the first wireless communication link, notifying an interface	**Iizuka discloses when a network** (*e.g.*, "wireless LAN") **is detected as available** (*e.g.*, "communication…is possible") **with a second wireless communication link** (*see* [39.c]) **with a context preferable to the first wireless communication link** (*e.g.*, "use of the wireless LAN is impossible")**, notifying an interface** (*see* [39.c]) **and establishing the second communication link between the interface and an end destination device**

’996 Claim	**Iizuka in view of Donovan and Pan**
and establishing the second communication link between the interface and an end destination device without disrupting the first communication link; and	**without disrupting the first communication link** (*see* [39.c]). ***E.g.*, Iizuka:** ***See* [39.c]**. **Iizuka** discloses the mobile terminal determines whether “communication through each communication medium is possible” based on detected radio wave intensity (*see* [39.c]). Iizuka, [0107]. A POSITA would have understood (or at minimum found it obvious) **Iizuka’s** mobile terminal does not initiate the voice call to re-direct the ongoing VoIP call through the mobile telephone network (the second network) unless it detects communication is possible over the mobile telephone network. Lanning, ¶¶275-278. **Iizuka** discloses the mobile terminal determines the availability of the mobile telephone network is preferred over the wireless LAN, because the mobile terminal determines “use of the wireless LAN is impossible” based on the radio wave condition, and then starts the switching process. [0170], *see also*, [0159]. Lanning, ¶279. • **[0107]**: “[T]he network connection unit 115 notifies the call switch unit 114 ***whether or not communication through each communication medium is possible***.” • **[0170]:** “[Step S77] Thereafter, ***the mobile terminal 100 detects the condition of the radio wave. When the mobile terminal 100 determines that use of the wireless LAN is impossible***, the mobile terminal 100 ***originates a PSTN call*** to the switching processing unit 212 by dialing.”
[41.c] re-directing the second communication link	***See* [39.e]**. Lanning, ¶280.

’996 Claim	**Iizuka in view of Donovan and Pan**
from the interface to a mobile communication device, thereby establishing the second wireless communication link between the mobile communication device and a second wireless network,	
[41.d] wherein upon activation of a timer, the interface causes a communication module to change state from a sleep mode to a stand-by mode, and the interface causes the communication module to change state from the stand-by mode to an active mode before a communication is switched to the communication module.	**Iizuka discloses the interface** (*e.g.*, “call-management server 200”) **and a communication module changes state to an active mode** (*e.g.*, “activates the wireless-telephone communication unit 112”) **before a communication is switched to the communication module** (*e.g.*, “wireless-telephone communication unit 112” fully activated before the call is handed over in S83). ***See* [39.f]-[39.g]**. Lanning, ¶¶281-283. **Donovan discloses upon activation of a timer** (*e.g.*, “enables…the XOSC”) **causing the communication module** (*e.g.*, “wireless network communication device”) **to change state from a sleep mode** (*e.g.*, “transition from low power mode”) **to a stand-by mode** (*e.g.*, a “wakeup” period). ***See* [39.f]** (also addressing motivation to combine with **Iizuka**). Lanning, ¶¶284-285. **Pan discloses an interface** (*e.g.*, “media gateway”) **causes a communication module to communicate** (*e.g.*, “commands” “mobile station” to initiate handover to “second network” using “transceiver”).

’996 Claim	Iizuka in view of Donovan and Pan
	***E.g.*, Pan**: Pan discloses media gateway 210 interfaces with communication network 206 (*e.g.*, “WLAN”) and second network 214. [0030], [0032]. When mobile station 202 is connected to communication network 206, media gateway 210 makes a handover decision based on signal strength measured at access point 212. [0040]. Once media gateway 210 determines to perform handover, it “commands” “mobile station 202 to place a second call” with second network 214 using “second transceiver circuit 604.” [0042]. Lanning, ¶¶286-287. As discussed in §IX.A.3, a POSITA would have been motivated to apply **Pan’s** interface-directed switching teachings to **Iizuka’s** system (as modified by **Donovan**). Lanning, ¶288. When applying these teachings to **Iizuka** in view of **Donovan**, **Iizuka’s** call-management server 200 would command mobile terminal 100 to perform the “voice call” (*see* [39.c]) in response to call-management server 200 determining handover is required (based on **Pan’s** teachings). Then, a timer in **Iizuka’s** wireless-telephone communication unit 112 would activate (based on **Donovan’s** teachings),[14] and the wireless-telephone communication unit 112 would change state from sleep mode to stand-by mode, and then to active mode. *See* [1.c]. Lanning, ¶289.

[14] While claim 41 does not specify the location of the timer, the ’996 discloses it only in the phone—thus, consistent with the ’996, the claimed interface at least covers causing the communication module to change state upon activation of the timer in the phone. ’996, 4:52-54, Fig. 1.

’996 Claim	Iizuka in view of Donovan and Pan
	To the extent it is argued that activating the timer must correlate with the interface command, it would have been obvious to use the well-known concept of activating a timer (*see* Pan, [0040] (disclosing using a “timer” for avoiding undesired handovers)) before instructing the mobile terminal to handover (causing the activation of wireless-telephone communication unit 112), such that a subsequent handover instruction cannot issue before the timer expires. This advantageously and predictably avoids undesired handovers (*see id.*) and “a condition in which a wireless device…keeps switching back and forth between [networks].” Dorenbosch, [0044]. Lanning, ¶290. • Fig. 3:  FIG.3 • **[0030]**: “[T]he communication network 206 may employ…a WLAN based air interface….” • **[0032]**: “***The second network 214 includes one or more base stations*** that provide ***communication between the media gateway 210*** and the remote station 204, and ***the communication network 206***

’996 Claim	**Iizuka in view of Donovan and Pan**
	includes one or more access points 212 that ***provide communication between the media gateway*** and the mobile station 202.…” • **[0040]**: “***[M]edia gateway 210 determines whether the mobile station 202 will move back toward the access point 212***….Once the communication network 206 ***detects that the radio signal strength from mobile station 202 has reached a second predetermined minimum threshold value***…handover procedures are initiated.” • **[0042]**: “***[M]edia gateway 210 commands the mobile station 202 to place a second call*** to the media gateway. In response, ***the mobile station 202 calls a predetermined number to establish*** the second call and, thus, ***the third connection line***, to the media gateway 210.” • **[0041]**: “…[A] third connection line, ***i.e., the outer mobile line 306***…” • **[0055]**: “***[M]obile station 202 includes…second transceiver circuit 606 communicat[ing] with a second network***….”

X. SECONDARY CONSIDERATIONS

The Challenged Claims of the ’996 are overwhelmingly demonstrated as obvious by the grounds presented herein. The strength of these grounds cannot be overcome by any alleged objective indicia.

Although PO raises allegations of secondary considerations in the district court litigation (Ex.1014, 36-47; Ex.1015, 11-12), those allegations are unavailing because PO cannot demonstrate the required nexus between its allegations and the purported invention.

In addition, PO's allegations are conclusory and ostensibly relate to four patents, with no explanation of nexus to any patent, let alone the '996 claims. Lanning, ¶¶291-300.

If these general arguments are understood as particular to the '996, PO's conclusory allegations fail for the reasons set forth below.

Commercial success: While PO asserts success "will be shown" based on Samsung's own products (Ex.1014 at 37), the success of Samsung's own products has no nexus to the Claims because Samsung does not infringe and because the accused phone and tablet products include many unrelated features driving their success.

Long-felt need: PO cites U.S. Patent 8,886,181 as purported evidence of long-felt need, but does not show any need was "long-felt." Ex.1014, 38-39.

Industry recognition: PO cites an award Samsung received for Wi-Fi Innovation, but there is no nexus between that award and the Claims. *Id*., 39. PO also argues based on Vasu patents cited during prosecution of other patents, but mere citation during prosecution is not recognition, and no nexus to the Claims is shown. *Id*., 40-47.

Skepticism in the industry: PO argues unidentified contemporaneous publications acknowledged the difficulty of developing the claimed invention, but does not explain how purported challenges show "skepticism" and no nexus is shown. *Id*., 47.

Copying: PO argues that Samsung copied PO's technology, but PO's argument is conclusory and based only on alleged knowledge of "patents and application that Vasu had filed because they were cited as prior art against [Samsung's] own patent applications"—PO does not even allege Samsung was aware of the '996 specifically, as opposed to other Vasu patents and application, and does not allege knowledge of the '996 before Samsung developed its products. Ex.1014, 37, 47-53; Ex.1013, 21-26, 76-77; Ex.1015 at 11-12. In addition, there is no nexus because Samsung does not infringe.

XI. CONCLUSION

Substantial, new, and noncumulative technical teachings have been presented for each Challenged Claim, which are rendered obvious for the reasons set forth above. Lanning, ¶¶301-306. There is a reasonable likelihood Petitioners will prevail as to each of these Claims. IPR of Claims 1, 12, 23, 25, 34-35, 39, and 41 of the ’996 is accordingly requested.

Dated: January 24, 2025

Respectfully submitted,

By: *<u>/James L. Davis, Jr./</u>*
Name: James L. Davis, Jr.
Registration No. 57,325
ROPES & GRAY LLP

Lead Counsel for Petitioners

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(a) and (d), the undersigned hereby certify that the Petition For *Inter Partes* Review complies with the type-volume limitation of 37 C.F.R. § 42.24(a)(i) because, exclusive of the exempted portions, it contains 13,920 words as counted by the word processing program used to prepare the paper.

Dated: January 24, 2025

/James L. Davis, Jr./
Name: James L. Davis, Jr.
Registration No. 57,325
ROPES & GRAY LLP

CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b) on the Patent Owner by FedEx of a copy of this Petition for Inter Partes Review and supporting materials at the correspondence address of record for the ’996 patent:

HAVERSTOCK & OWENS, A LAW CORPORATION
162 NORTH WOLFE ROAD
SUNNYVALE, CA 94086

Dated: January 24, 2025

Respectfully submitted,

By: /*James L. Davis, Jr.*/
Name: James L. Davis, Jr.
Registration No. 57,325
ROPES & GRAY LLP

Lead Counsel for Petitioners