

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 IPR2025-00449
Patent No. 10,368,281

PETITION FOR *INTER PARTES* REVIEW

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8.....	4
A. Real Parties-in-Interest	4
B. Related Matters.....	4
C. Lead and Back-Up Counsel.....	5
III. PAYMENT OF FEES	5
IV. REQUIREMENTS FOR <i>INTER PARTES</i> REVIEW	6
A. Grounds for Standing	6
B. Identification of Challenge.....	6
1. The Specific Art on Which the Challenge is Based	6
2. Statutory Grounds on Which the Challenge is Based.....	7
V. '281 Patent and Prosecution History	7
A. '281	7
B. Prosecution History	9
C. Priority Date of Claim 45	10
VI. §325(d) AND §314(a) DISCRETION SHOULD NOT BE EXERCISED	11
A. §325(d)	11
B. §314(a).....	12
VII. LEVEL OF ORDINARY SKILL IN THE ART.....	13
VIII. CLAIM CONSTRUCTION	14
IX. GROUNDS OF UNPATENTABILITY	14
A. Ground 1: Enzmann in view of Dorenbosch, Chaskar and Willhoff (Claim 23).....	14
1. Overview of Enzmann	15
2. Overview of Dorenbosch	18
3. Motivation to Apply Dorenbosch to Enzmann.....	21

4.	Overview of Chaskar	23
5.	Motivation to Apply Chaskar’s Teachings to Enzmann as Modified by Dorenbosch	25
6.	Overview of Willhoff.....	27
7.	Motivation to Apply Willhoff to Enzmann in view of Dorenbosch and Chaskar	28
8.	Claim Chart	31
B.	Ground 2: Iizuka in view of Chaskar and Willhoff (Claim 45).....	49
1.	Overview of Iizuka.....	49
2.	Motivation to Apply Chaskar’s Teachings to Iizuka.....	55
3.	Motivation to Apply Willhoff’s Teachings to Iizuka and Chaskar.....	58
4.	Claim Chart.....	60
C.	Grounds 3-4: Grounds 1-2 in further view of Donovan.....	78
X.	SECONDARY CONSIDERATIONS	82
XI.	CONCLUSION.....	84

EXHIBIT LIST

Exhibit No.	DESCRIPTION
1001	U.S. Patent No. 10,368,281 (“’281”)
1002	File History of U.S. Application No. 15/480,293 (“’281FH”)
1003	Declaration of Mark Lanning (“Lanning”)
1004	U.S. Patent App. Pub. No. 2004/0137902 (“Chaskar”)
1005	U.S. Patent App. Pub. No. 2005/0048977 (“Dorenbosch”)
1006	U.S. Patent No. 6,049,715 (“Willhoff”)
1007	U.S. Patent App. Pub. No. 2005/0063348 (“Donovan”)
1008	<i>Reserved</i>
1009	<i>Reserved</i>
1010	U.S. Patent App. Pub. No. 2005/0136927 (“Enzmann”)
1011	U.S. Patent App. Pub. No. 2005/0282541 (“Iizuka”)
1012	U.S. Patent App. No. 14/806,482 (“’482-App”)
1013	Docket Control Order (Dkt. No. 28), Vasu Holdings, LLC v. Samsung Electronics Co., Ltd., No. 2:24-cv-00034-JRG-RSP (E.D. Tex.)
1014	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)
1015	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)

U.S. Patent No. 10,368,281
Petition for *Inter Partes* Review

Exhibit No.	DESCRIPTION
1016	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)
1017	Gregory P. Pollini, Trends in Handover Design (March 1996)
1018	U.S. Patent App. Pub. No. 2003/0017842
1019	U.S. Patent App. Pub. No. 2002/0037715
1020	<i>Reserved</i>
1021	<i>Reserved</i>
1022	<i>Reserved</i>
1023	Timer, The IEEE Standard Dictionary of Electrical and Electronics Terms (6th ed., 1996).
1024	<i>Reserved</i>
1025	<i>Reserved</i>
1026	Declaration of Jonathan Bradford in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent No. 10,368,281

TABLE OF ABBREVIATIONS

Abbreviation	DESCRIPTION
'281	U.S. Patent No. 10,368,281 (“’281”) (Ex. 1001)
'281FH	File History of U.S. Application No. 15/480,293 (Ex. 1002)
IPR	<i>Inter Partes</i> Review
Petitioners	Petitioners Samsung Electronics Co. Ltd. and Samsung Electronics America Inc.
PO	Patent Owner Vasu Holdings, LLC
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

[23.pre] A mobile communication device comprising:

[23.a] a first communication module adapted to communicate with a first wireless network;

[23.b] a second communication module adapted to communicate with an access point associated with a second network; and

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

[23.d] wherein if a context changes, the second communication module is activated and a second communication type is initiated,

[23.e] wherein if the context does not change, the second communication type is continued without switching,

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

[23.g] wherein upon activation of a timer, the switching system causes the second communication module to change state from a sleep mode to an active mode,

[23.h] wherein the timer is activated to establish a time window of a predefined size,

[23.i] wherein if a Wi-Fi signal monitor detects that a Wi-Fi signal level is below a second predefined threshold value V_{th2} , the timer is activated to establish a second time window of a second predefined size $T2$,

[23.j] wherein a third predefined threshold value V_{th3} is smaller than V_{th2} .

[45.pre] A method comprising:

[45.a] monitoring a context of a first communication link;

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

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

[45.d] wherein upon activation of a timer, a switching system causes a second communication module to change state from a sleep mode to an active mode, wherein the timer is activated to establish a time window of a predefined size,

[45.e] wherein if a Wi-Fi signal monitor detects that a Wi-Fi signal level is below a second predefined threshold value V_{th2} , the timer is activated to establish a second time window of a second predefined size $T2$,

[45.f] wherein a third predefined threshold value V_{th3} is smaller than V_{th2} .

Pursuant to §§311-319 and §42.1,¹ Samsung Electronics Co. Ltd. and Samsung Electronics America Inc. (“Petitioners”) respectfully petition for IPR of claims 23, and 45 (“Claims”) of U.S. Patent No. 10,368,281 (“’281”). There is a reasonable likelihood—and it is highly likely—that at least one challenged claim is unpatentable as explained herein. Petitioners request review of the Claims and judgment finding them unpatentable under §103.

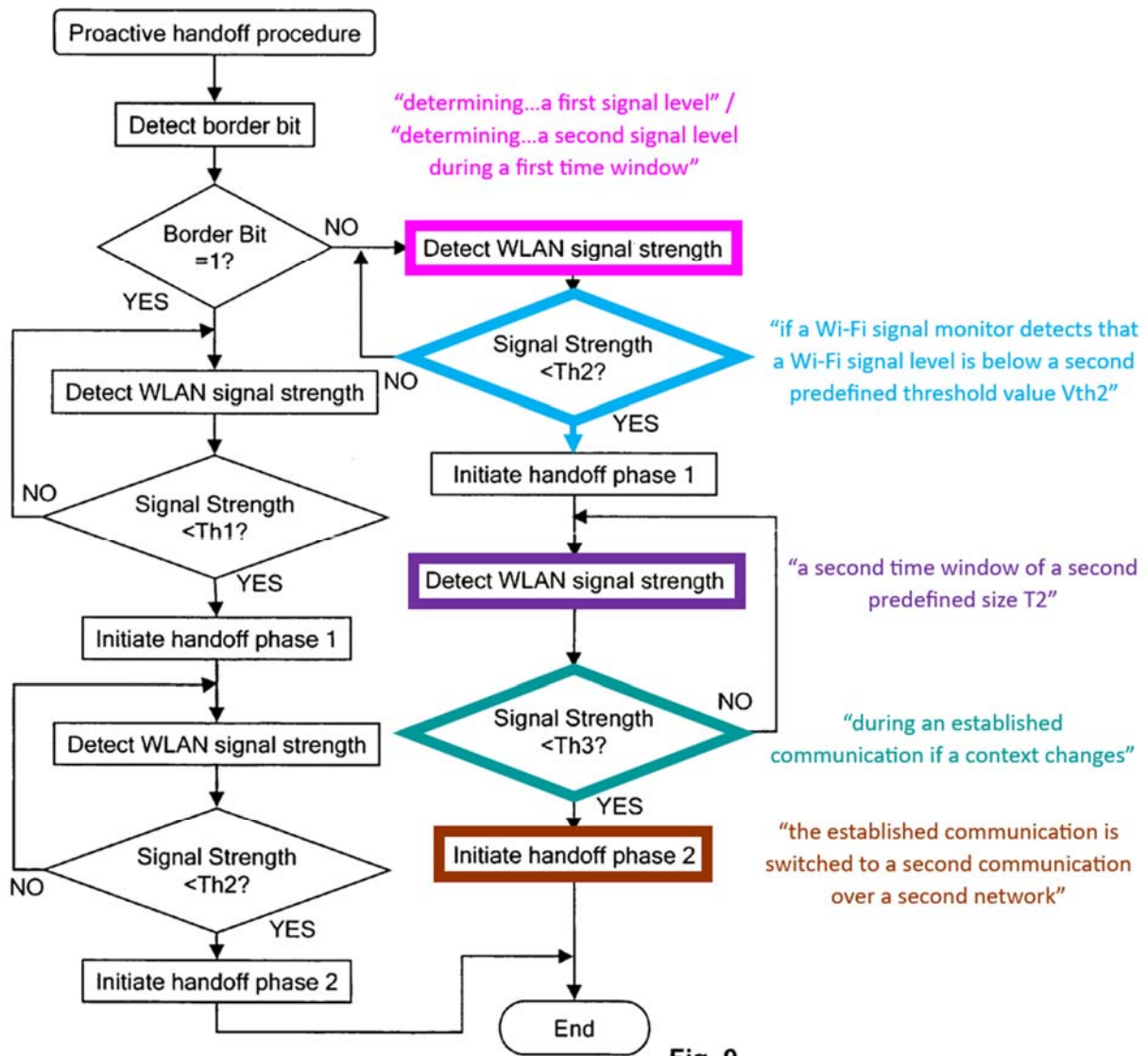
I. INTRODUCTION

The ’281 is generally directed to a mobile communication device that performs wireless handover between networks. ’281, 2:37-41. The device includes cellular and Wi-Fi communication modules and a network switch unit to automatically switch between them. ’281, 5:35-55, 6:20-27, 6:36-42. The alleged inventive concept that led to allowance is the network switch unit’s multi-step process for switching from the Wi-Fi to the cellular communication module. *See* ’281FH, at 732. First, the Wi-Fi signal strength is measured during a window of time measured by a timer and compared against a threshold V_{th2} . ’281, claim 1. If the Wi-

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.

Fi signal strength falls below V_{th2} , the Wi-Fi signal strength is again measured during a second time window measured by the timer, but compared against another, lower threshold V_{th3} . '281, 6:59-67. If the Wi-Fi signal strength again falls below V_{th3} , the network switch unit switches to the cellular communication module. *Id.* Lanning, ¶37.

But these concepts were not new. For example, **Chaskar**, discloses a method to control handover between wireless local area network (WLAN) and cellular networks. Chaskar, [0036]. In **Chaskar's** method, when a mobile node **detects a WLAN signal strength falls below a threshold (Th2)** during a signal strength averaging window, it initiates a first handoff phase, and thereafter, if the node **detects the WLAN signal strength falls below a threshold (Th3)** during a second signal strength averaging window, **the node switches communication networks**. Chaskar, [0072]-[0073]. Lanning, ¶38.



Further, **Willhoff** discloses “a long term RSSI [(Received Signal Strength Indication)] average to determine when a handoff condition is to be checked,” using a timer to establish time windows of “milliseconds” or “seconds” in length over which a signal strength is averaged. Willhoff, 2:33-37, 9:54-61. A POSITA would have applied **Willhoff’s** implementation details for measuring signal strength over a particular time window to **Chaskar’s** signal strength averaging windows to

advantageously ensure consistency of measurements. Lanning, ¶¶39-40.

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 '281 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 fee required by §42.15(a) and any additional fees that might be due to Deposit Account 18-1945, under Order No. 110797-0055-653.

IV. REQUIREMENTS FOR *INTER PARTES* REVIEW

A. Grounds for Standing

Pursuant to §42.104(a), Petitioners certify the '281 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 identified herein.

B. Identification of Challenge

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

1. The Specific Art on Which the Challenge is Based

Petitioners rely upon the following art (Lanning, ¶¶8, 55-59):

Name	Exhibit	Publication	Filed	Published/ Issued	Prior art under at least
Enzmann	1010	US2005/0136927	12/19/2003	6/23/2005	§102(a)(2)
Dorenbosch	1005	US2005/0048977	8/26/2003	3/3/2005	§102(a)(2)
Chaskar	1004	US2004/0137902	11/13/2003	7/15/2004	§102(a)(2)
Willhoff	1006	US6049715	2/20/1997	4/11/2000	§102(a)(2)
Iizuka	1011	US2005/0282541	12/6/2004	12/22/2005	§102(a)(2)
Donovan	1007	US2005/0063348	9/19/2003	3/24/2005	§102(a)(2)

Because claim 45 is not entitled to a priority date before 4/5/2017, the filing date of the '293-App (*see* §V.C), the AIA applies. **Iizuka** was filed before the earliest

priority date of claim 45 (4/5/2017). Each of **Enzmann**, **Dorenbosch**, **Chaskar**, **Willhoff**, and **Donovan**, was filed before the earliest '281 priority date (1/6/2004).²

2. Statutory Grounds on Which the Challenge is Based

Ground	Claim(s)	Basis	References
1	23	§103	Enzmann in view of Dorenbosch, Chaskar, and Willhoff
2	45		Iizuka in view of Chaskar and Willhoff
3-4	23, 45		Grounds 1-2 in further view of Donovan

V. '281 PATENT AND PROSECUTION HISTORY

A. '281

The purported “invention” of the '281 relates to a “mobile communication device” for handover between networks. '281, 2:36-41. As shown in Fig. 1, “mobile communication device 100” includes “**a cellular communication module**” and “**a Wi-Fi communication module**.” '281, 5:35-45. **Network switch unit** facilitates handover between the **cellular communication module** and **Wi-Fi communication module**. '281, 5:35-45, 6:20-27, 6:36-42. Lanning, ¶41.

² Even if the AIA did not apply, these references are still prior art under pre-AIA §102(a), (b), (e).

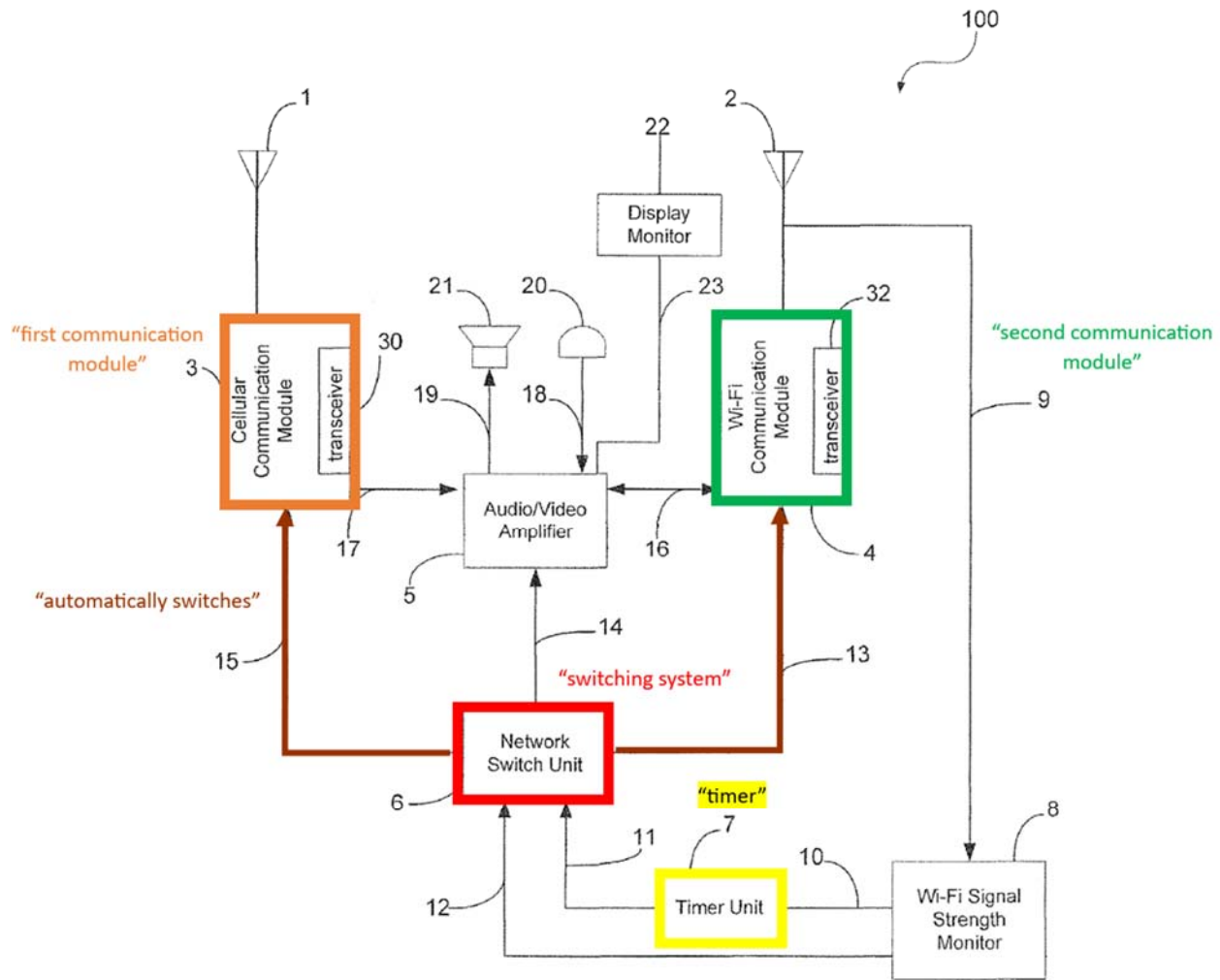


FIG. 1

While the mobile communication device is communicating via its **cellular communication module**, and the device detects a Wi-Fi signal having a first predefined level (strength) V_{th1} , a **timer** is activated to establish a first time window of a first predefined size. '281, 4:43-49, 5:58-6:5, 6:15-20. If the Wi-Fi signal level remains equal to or greater than V_{th1} during the window, **network switch unit automatically switches** the communication to the **Wi-Fi communication module**.

'281, 4:49-56, 6:20-45. Further, when the **timer** is activated, the **Wi-Fi communication module** changes from a sleep mode to an active mode, before the communication is switched to the **Wi-Fi communication module**. '281, 4:4-10, 4:57-67, 5:33-36, 5:58-6:5. Lanning, ¶42.

While the mobile communication device is communicating via its **Wi-Fi communication module**, and the device detects the level of the received Wi-Fi signal falls below a second predefined value V_{th2} , the **timer** is activated to establish a second time window of a second predefined size. '281, 6:46-60. The device continues monitoring signal strength during the second time window, and if the Wi-Fi signal level detected during the second time window is equal to or greater than a third predefined value V_{th3} , the communication via the **Wi-Fi communication module** is maintained. '281, 6:61-67. V_{th3} is less than V_{th2} . '281, 6:63-67. If the detected Wi-Fi signal strength remains below V_{th3} , the **switching circuit switches** the communication to the **cellular communication module**. '281, 7:1-14. Lanning, ¶43.

B. Prosecution History

U.S. Patent Application 15/480,293 ("293-App"), which matured into the '281, was filed 04/05/2017. The Examiner issued multiple office actions rejecting the as-filed claims over prior art. '281FH, 433-44, 492-501, 598-605. Through several amendments, Applicant amended the independent claims to require

activation of “a timer” to establish a “time window” and various limitations relating to threshold values. ’281FH, 16-22, 456-64, 542-50, 567-75, 640-48, 710-18. The Examiner allowed the claims, determining that, for issued claims 23 and 45, the prior art fails to teach “wherein if a Wi-Fi signal monitor [detects] that a Wi-Fi signal level is below a second predefined threshold value V_{th2} ; the timer is activated to establish a second time window of the second predefined size T_2 , wherein a third predefined threshold value V_{th3} is smaller than V_{th2} .” *Id.*, 732. Lanning, ¶¶44-47.

C. Priority Date of Claim 45

Claim 45 is not entitled to a priority date before 4/5/2017, the filing date of the ’293-App. The parent of the ’293-App, Application No. 14/806,482 (“’482-App”), provides no written description support for at least the following limitations of claim 45: (a) “notifying an interface server,” (b) “establishing the second communication link between the interface server and an end destination device without disrupting the first communication link,” and (c) “re-directing the second communication link from the interface server to a mobile communication device.” Ex.1012. For example, the ’482-App does not describe an interface server (or any server). To the extent any network components in the ’482-App could be an “interface server,” there is no description of any of the claimed interface server functionality. Lanning, ¶48.

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

A. §325(d)

Under the two-part *Advanced Bionics* framework, the Board should not exercise discretion.

The Grounds raised by this Petition are not the same or substantially the same as the art or arguments raised during '281's prosecution. Enzmann, Dorenbosch, Willhoff, Donovan, and Iizuka, were not considered during prosecution. Though the Examiner identified Chaskar, the Examiner did not consider this in combination with newly-identified references. '281FH, 438-43; Sony v. MZ Audio Scis., LLC, IPR2022-01544, Pap. 12, *7 (§325(d) discretion improper where "Examiner did not consider the specific combination of references asserted"). For example, unlike Willhoff, the cited art did not teach a timer that establishes a time window during a signal strength measurement, which would naturally motivate combination with Chaskar's disclosures of signal strength measuring time windows. Moreover, with respect to Grounds 2 and 4, unlike Iizuka, the cited art did not teach establishing a second communication link between an interface server and an end communication device without disrupting a first communication link. Lanning, ¶¶82-89, 154-162, 168-170.

Even if the art or arguments were substantially the same, the Examiner erred in a manner material to the patentability of the Claims. Because the

Examiner did not consider **Enzmann, Dorenbosch, Willhoff, Donovan, and Iizuka** as prior art, “[i]t is...difficult, if not impossible, to discern exactly why the Examiner allowed the claims of the [’281] patent, or how the Examiner might have considered the arguments presented in the Petition, had they been presented to the Examiner.” *Bowtech, Inc. v. MCP IP, LLP*, IPR2019-00379, Pap. 14, *19-20 (declining to exercise §325(d) discretion where Petitioner did not “even attempt[] to explain how the Examiner erred in any way”). To the extent art considered by the USPTO was substantially the same as references identified in the Grounds, the Examiner erred by not rejecting the Claims for the reasons discussed in §IX.

B. §314(a)

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

1: Following institution, Petitioners intend to seek a stay of the Texas Case pending the outcome of this IPR, along with other IPRs collectively challenging all asserted claims.

2-3: The Texas Case trial is currently set for 11/3/2025,³ more than three months after the deadline for institution. The Texas Case is in its early stages; the court has not issued any substantive orders related to the validity of the ’281, and the parties have only just begun the claim construction process. Samsung has diligently

³ Ex.1013.

prepared and filed these IPRs.

4: The Texas Case will involve multiple grounds of invalidity not at issue here, enabling the court to focus its limited 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 as shown herein. Indeed, the concept of comparing a Wi-Fi signal strength against multiple thresholds, using a timer to establish multiple time windows and a communication changing state from a sleep mode to an active mode when switching between communication networks was well-known in the field. See §§I, IX.

VII. LEVEL OF ORDINARY SKILL IN THE ART

For purposes of this Petition only, Petitioners assume Claim 45 is entitled to the benefit of the 4/5/2017 filing date of the '293-App, while Claim 23 is entitled to the benefit of the 1/6/2004 filing date of App. No. 60/534,466 listed in the '281'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, ¶¶49-52.

VIII. CLAIM CONSTRUCTION

Claim terms subject to IPR are to be construed according to the *Phillips* standard applied in district court. §42.100(b). Petitioners apply the plain and ordinary meanings of terms. Lanning ¶¶53-54. Only terms necessary to resolve the controversy must be construed. *Nidec Motor v. Zhongshan Broad Ocean Motor*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

IX. GROUNDS OF UNPATENTABILITY

This Petition is supported by the Declaration of Mark Lanning, which describes the prior art's scope and content at the time of and well before the '281. See Ex.1003. The prior art renders the Claims unpatentable based on the below grounds. Lanning ¶¶1-237.

A. Ground 1: Enzmann in view of Dorenbosch, Chaskar and Willhoff (Claim 23)

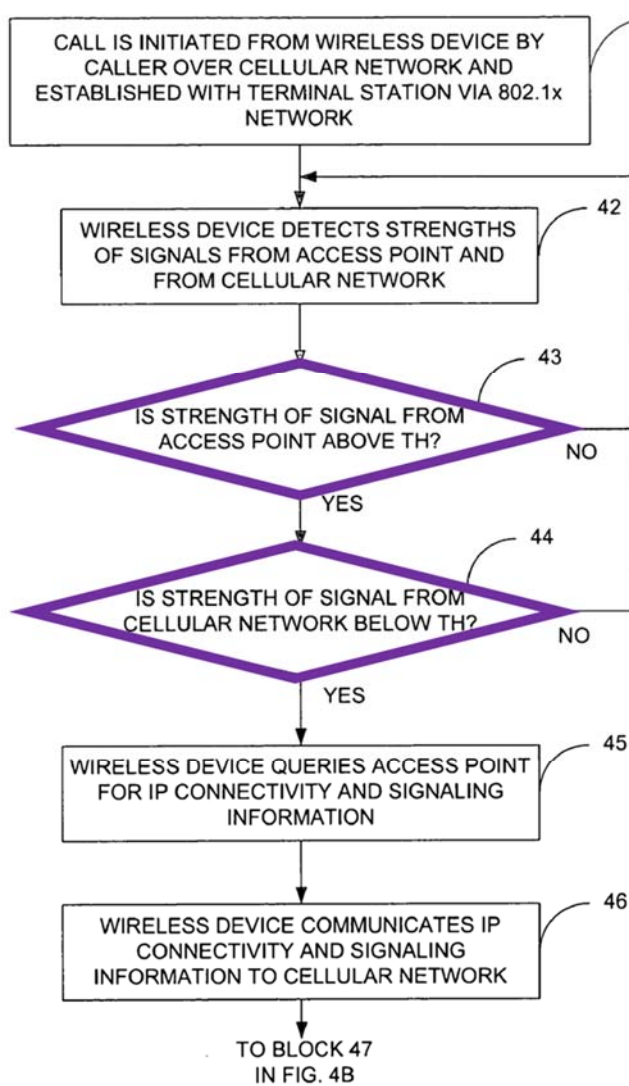
As explained below, this ground involves the use of **Enzmann's** switching process from cellular to an 802.1x network (see §IX.A.1), to which **Dorenbosch's** teachings of device components that are switched to sleep mode when not in use (see §IX.A.2) are applied. **Chaskar's** teachings of a multi-threshold comparison process for switching from Wi-Fi (802.1x) to cellular (see §IX.A.4) are applied for operations after the device is connected to the 802.1x network. **Willhoff's** teaching of using a timer for measuring signal strength (see §IX.A.6) is applied to each signal strength measurement involved in these switching processes. Lanning ¶¶60-61, 90-

91.

1. Overview of Enzmann

Enzmann discloses a wireless device implementing call handoff “from an 802.1x network to a cellular network, and vice versa.” Enzmann, Abstract. **Enzmann’s** method is illustrated in two sets of figures: Figures 3A-3B illustrate handoff from the 802.1x to the cellular network, while Figures 4A-4B illustrate handoff from the cellular to 802.1x network. Enzmann, [0025], [0027]. Lanning, ¶62.

As illustrated in Figures 4A-4B, **Enzmann’s** cellular-to-802.1x handoff procedure begins with a call “initiated by the wireless device 1 on the cellular network 6.” Enzmann, [0027]. During the call, if wireless device 1 **determines “the strength of the signal from the cellular network 6 has dropped below a certain threshold level,”** it then **determines “whether the strength of the signal from the 802.1x network 2 is at or above a certain threshold level.”** Enzmann, [0027]. “If the answer to both of these questions is yes,” wireless device 1 **“establishes the new IP connection for the wireless device 1 on the 802.1x network 2.”** Enzmann, [0028]. Lanning, ¶63.



“switching is based on detecting a second context being preferred over the context within a set of known networks or from a newly discovered network”

FIG. 4A

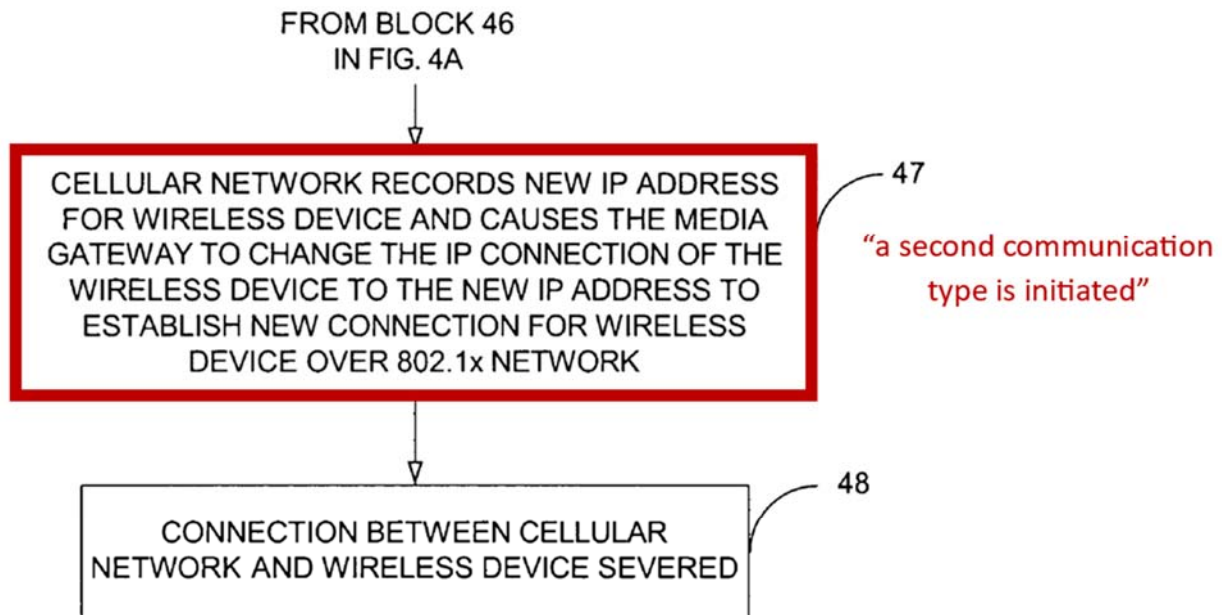
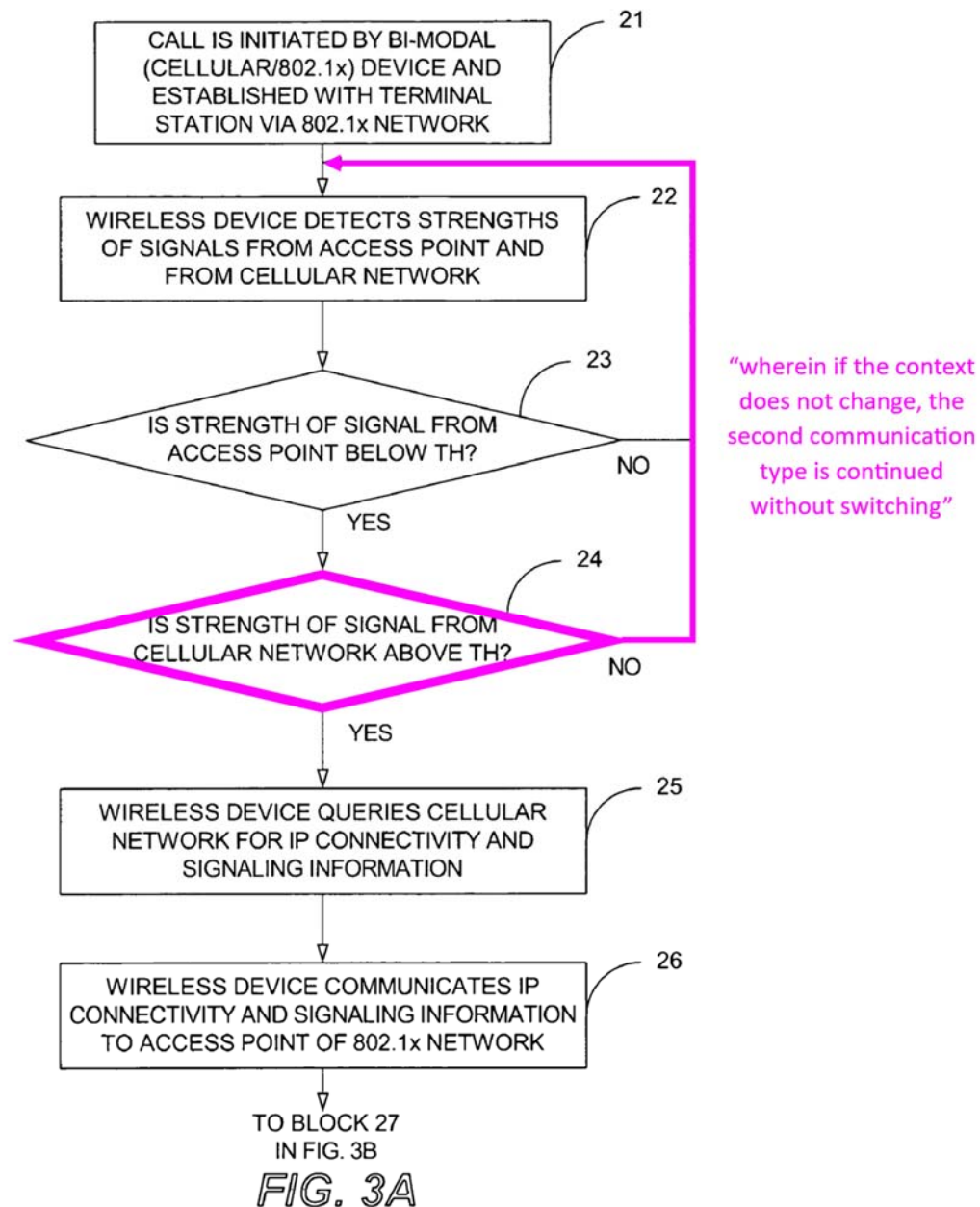


FIG. 4B

As illustrated in Figures 3A-3B, when on the 802.1x network, **Enzmann** implements a similar procedure of measuring signal strengths of the cellular and 802.1x networks to determine if handoff back to cellular is necessary. See Enzmann, [0025]-[0026]. If both the 802.1x signal strength “has dropped below a certain threshold level,” and cellular signal strength “is at or above a certain threshold level,” mobile device 1 connects to the cellular networks. Enzmann, [0025]-[0026]. If the 802.1x signal strength remains above the threshold or **the cellular network strength remains below the threshold, mobile device 1 remains on the 802.1x network.** Enzmann, [0025]. Lanning, ¶64.



2. Overview of Dorenbosch

Dorenbosch discloses “mobile subscriber unit 306...includes one or more processors 418,” and “a main memory 414” storing “handover manager 514.”

Dorenbosch, [0027]. **Dorenbosch’s** mobile subscriber unit contains “two sets of

transceivers—one for the **WLAN system** and one for the **WAN system**, each transceiver containing an antenna **402**, **408**, an RF front end **404**, **410**, and a decoder/encoder **406**, **412** respectively, designed to transmit, receive, encode and decode wireless signals for the frequencies and characteristics of its corresponding system.” Dorenbosch, [0026]. Lanning, ¶65.

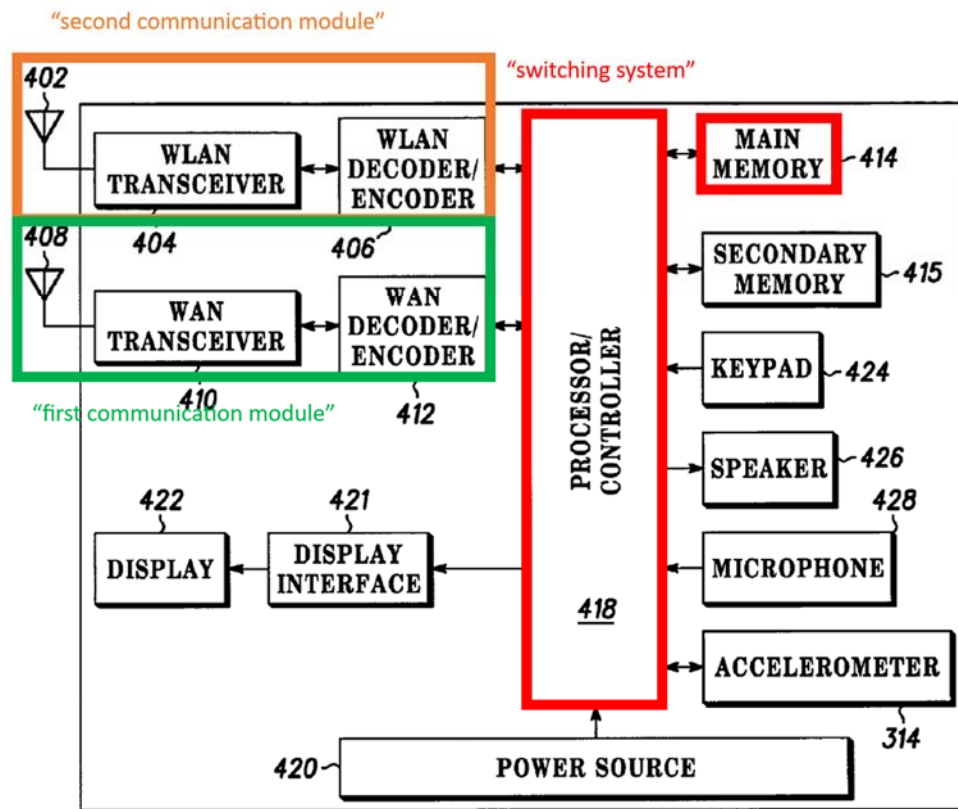


FIG. 4 306

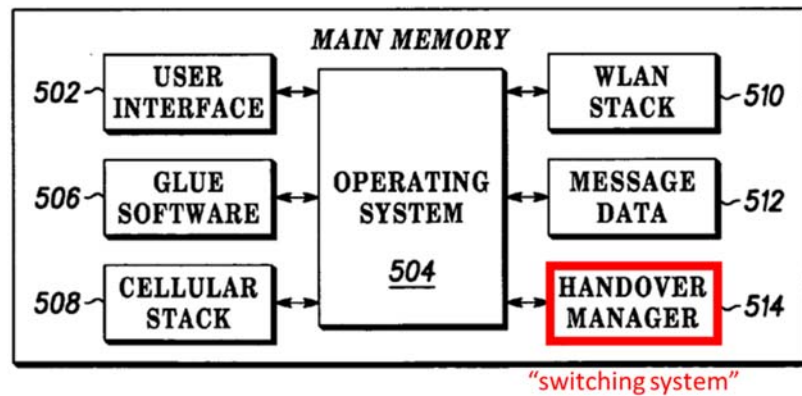


FIG. 5 414

Dorenbosch discloses switching from WAN to WLAN coverage, in which the mobile subscriber unit starts the **WLAN stack and associated hardware** and “attempts to receive signals from WLAN cells.” Dorenbosch, [0045]; Fig. 10. If the mobile subscriber unit “**detects a WLAN border cell**...[it] registers with the WLAN and begins to monitor its movement,” and “if the speed and/or displacement [of the mobile subscriber unit] exceed predetermined thresholds” (for example, not relatively stationary) the unit “**check[s] the signal strength of the WLAN signal**.” Dorenbosch, [0045]. If the WLAN signal strength is sufficient, the mobile subscriber unit “**terminat[es] running the WAN stack...and hardware**” and **conducts the present call via the WLAN**. Dorenbosch, [0045]. Lanning, ¶66.

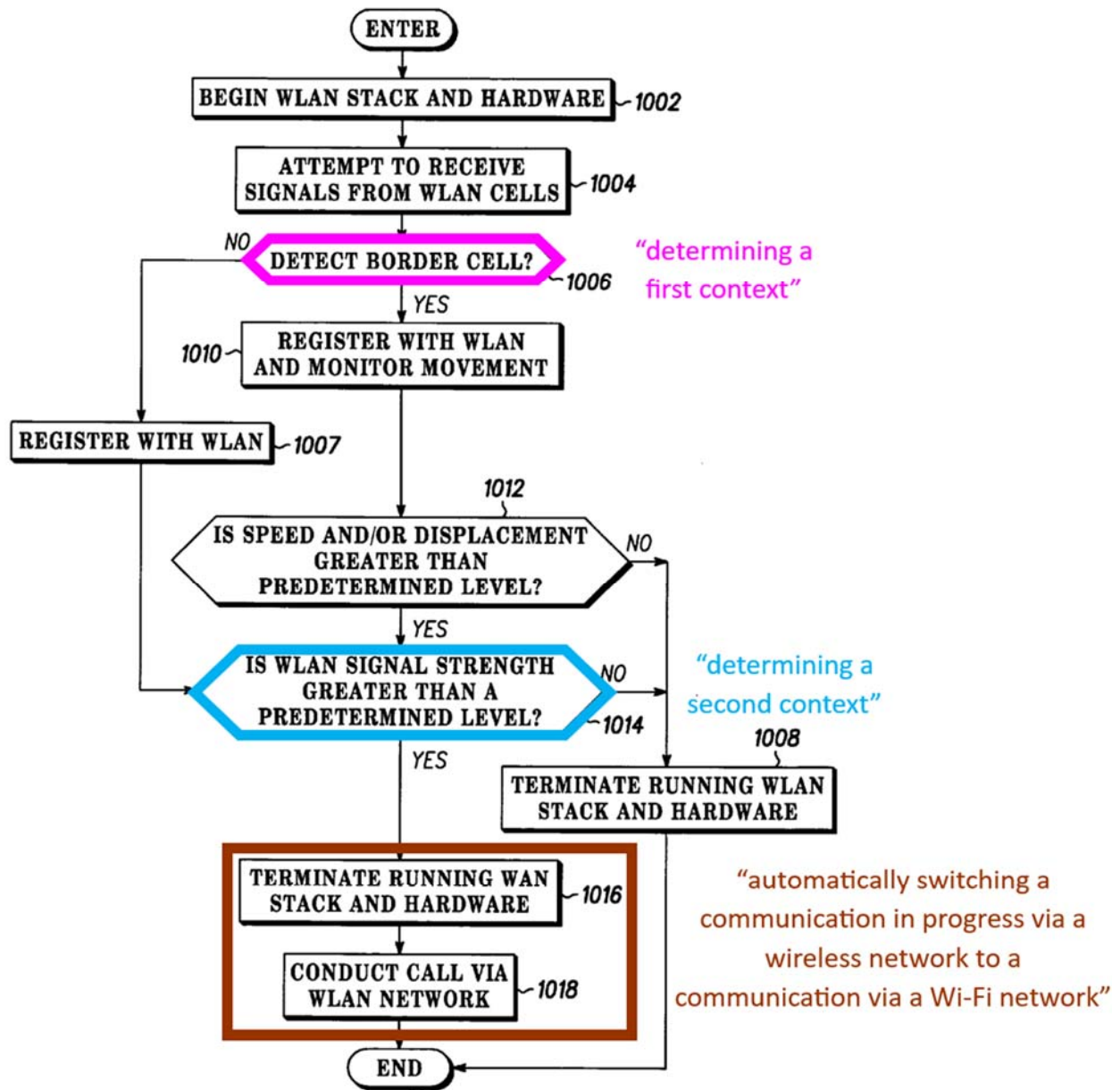


FIG. 10 1000

3. Motivation to Apply Dorenbosch to Enzmann

Enzmann and **Dorenbosch** are analogous art, in the same field as the '281—which includes wireless communications—and reasonably pertinent to alleged problems addressed by the '281 of switching between wireless communication

networks. *See e.g.*, '281, Abstract, 2:36-41; Enzmann, [0002], [0005], [0007], [0009], [0019]-[0020], [0025]-[0026]; Dorenbosch, Abstract, [0002], [0038], [0045]. Like the '281, **Enzmann** and **Dorenbosch** each contemplate switching between WAN and WLAN networks according to signal strengths detected by a mobile device. *See, e.g.*, '281, 2:54-67; Dorenbosch, [0038], [0045]; Enzmann, [0009], [0019]-[0020], [0025]-[0026]. Lanning, ¶¶67-68.

A POSITA would have been motivated to apply **Dorenbosch's** teachings of WAN and WLAN transceivers in implementing **Enzmann's** wireless device, as **Dorenbosch** provides implementation details for communication via WLAN and WAN. *See* Enzmann, [0019]. Lanning, ¶69. Further, a POSITA would have been motivated to apply **Dorenbosch's** switching system teachings to **Enzmann** to provide implementation details for **Enzmann's** handoff procedure. *See* Enzmann, [0025]-[0028]. Lanning, ¶70. And a POSITA would have been motivated to apply **Dorenbosch's** WLAN transceiver sleep and activation teachings in implementing **Enzmann's** device to advantageously reduce power consumption. As **Dorenbosch** explains, keeping both WLAN and WAN transceivers active while on a network has "significant detrimental effect on battery life." Dorenbosch, [0006]. Lanning, ¶71. A POSITA would have recognized that changing state from sleep mode to active mode would predictably be performed at initial stages of handover such that communications are not disrupted. Dorenbosch, [0038]. Lanning, ¶71.

A POSITA would have had a reasonable expectation of success in applying **Dorenbosch's** teachings of WAN and WLAN transceivers, a switching system, and WLAN transceiver activation in implementing **Enzmann's** device. Lanning, ¶72. Both **Enzmann** and **Dorenbosch** discloses using 802.1x and cellular networks, and **Dorenbosch's** teachings are specific to these communications. Enzmann, [0019]; Dorenbosch, [0011]. This would have been a straightforward application of **Dorenbosch's** teachings in a manner that advantageously improves **Enzmann's** mobile device. Lanning, ¶72.

Accordingly, a POSITA would have had a reasonable expectation of success in applying **Dorenbosch's** teachings to **Enzmann's** mobile device, and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶73.

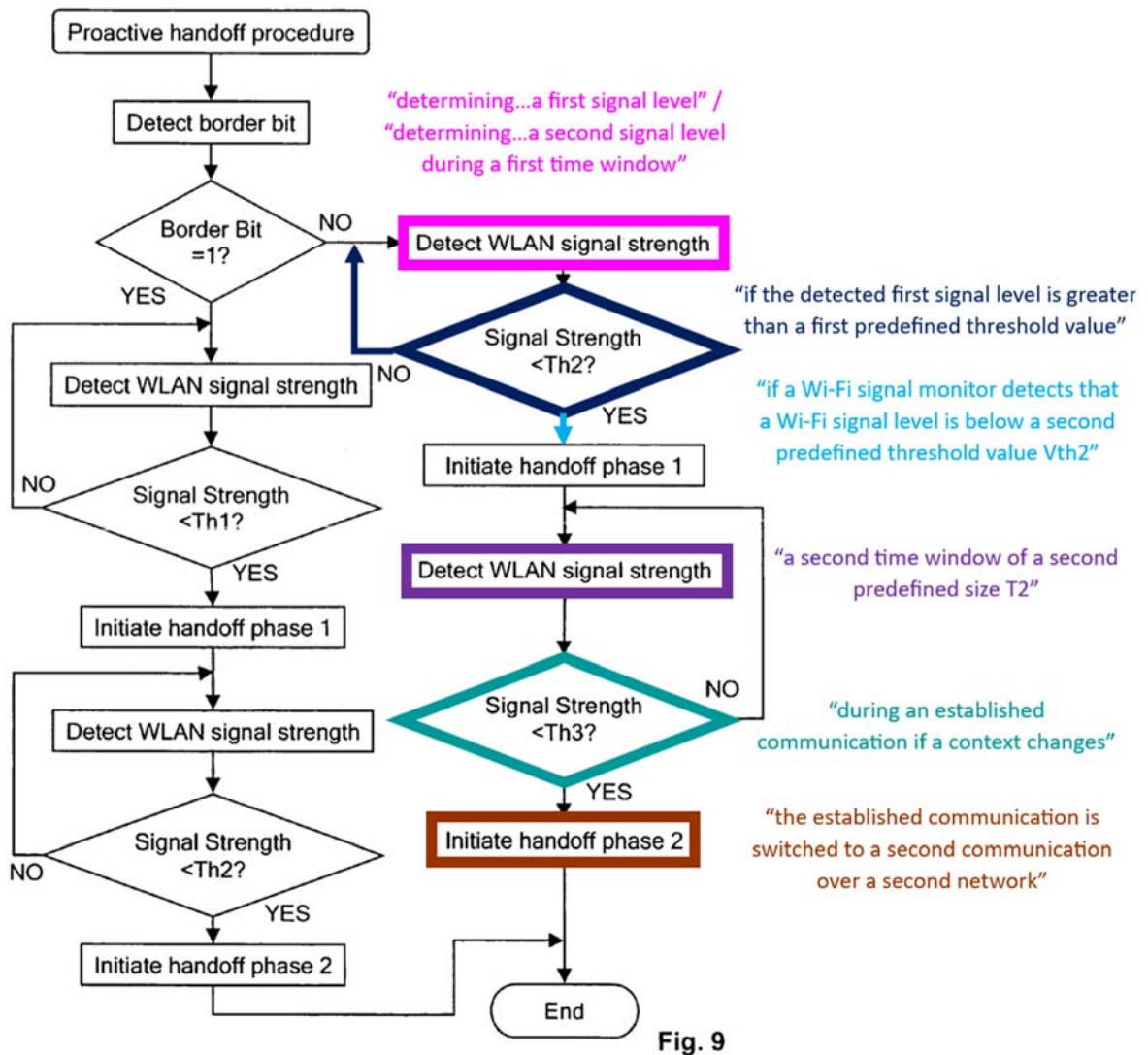
4. Overview of Chaskar

Chaskar discloses a handover method between WLAN and cellular networks by “detecting information about regions of an area of the first technology network,” and “initiating a handover procedure between the first and second technology networks based on the detected region information.” Chaskar, [0036]. **Chaskar's** method detects “whether a user of a mobile node is well within a WLAN footprint, [or] roaming near the boundary of it or has left hot spot premises, [so that] smart handoff decision policies can be implemented.” Chaskar, [0016]. **Chaskar's** method

improves handover control and avoids spurious handoff triggers. Chaskar [0013]. Lanning ¶74.

Chaskar's method detects whether the device is in a WLAN border region by detecting whether a WLAN access point's border bit is 1 or 0, and determines whether to transfer to cellular accordingly. Chaskar, [0044], [0070]-[0073]. Lanning ¶75.

When the mobile node detects a border bit=0 (indicating “a non-border region of the WLAN”), **the device “detect[s the] WLAN signal strength” over a “signal strength averaging window” of a particular “width,”** and **if the WLAN signal strength is larger than Th2, it repeats the measurement against Th2.** Chaskar, [0072], [0076]-[0077]. **If the signal strength falls below Th2,** the mobile node initiates “handoff phase 1,” (initial steps for a potential handoff). Chaskar, [0037], [0072]. After initiation of phase 1, **the mobile node again “detect[s the] WLAN signal strength” over a second signal strength averaging window of a particular width,** and **if the signal strength falls below Th3, “handoff phase 2”** is initiated and a **handover to cellular is performed.** Chaskar, [0037], [0073], [0076]-[0077]. Th3 is less than Th2. Chaskar, [0069]. Lanning ¶76.



Chaskar, Fig. 9.

5. Motivation to Apply Chaskar's Teachings to Enzmann as Modified by Dorenbosch

Like **Enzmann** and **Dorenbosch**, **Chaskar** is analogous art, in the same field as the '281—which includes wireless communications—and reasonably pertinent to alleged problems addressed by the '281 of switching between wireless communication networks. See *e.g.*, Chaskar, Abstract, [0036]. Lanning, ¶77. For

example, **Chaskar** contemplates a method of switching between a WLAN and a WAN according to signal strengths of signals detected by a mobile device. Chaskar, [0070]-[0073]. Lanning, ¶77.

A POSITA also would have been motivated to apply **Chaskar’s** teachings of using two thresholds to determine whether a handoff from the WLAN to cellular is required in implementing **Enzmann’s** device and handover procedure (as modified by **Dorenbosch**) to advantageously enhance the reliability of the system by reducing the number of false handoffs while ensuring handoffs are completed before the connection drops. Chaskar, [0017]-[0021], [0073]. Lanning, ¶78.

Moreover, a POSITA would have been motivated to apply **Chaskar’s** teachings of using signal strength averaging windows of a particular width to **Enzmann’s** device to advantageously provide more accurate signal strength measurements. Chaskar, [0076] (explaining that using signal strength averaging windows provides “robust measurement of received signal strength.”). Lanning, ¶79. While **Enzmann** discloses “the strengths of the signals from the access point 7 and from the cellular network 6 are detected by the wireless device 1,” it does not provide the implementation details for such measurements. *See, e.g.*, Enzmann, [0025]. **Chaskar** provides such implementation details. §IX.A.4. Lanning, ¶79.

A POSITA would have had a reasonable expectation of success in applying **Chaskar’s** teachings of using two thresholds to determine whether a handoff from

WLAN to cellular is required to **Enzmann's** device (as modified by **Dorenbosch**). Lanning, ¶80. **Enzmann** discloses determining 802.1x signal strength when deciding whether to switch to cellular. Enzmann, [0025]. A POSITA would have recognized implementing **Chaskar's** multiple threshold teachings in **Enzmann's** device (as modified by **Dorenbosch**) would involve simply repeating **Enzmann's** 802.1x network signal strength determination, while using a lower threshold for the second measurement, to ensure handoff is actually required. Chaskar, [0073]. Lanning, ¶80. Moreover, a POSITA would have had a reasonable expectation of success in applying **Chaskar's** teachings of using signal strength averaging windows of a width to **Enzmann's** device (as modified by **Dorenbosch**), as this would have simply involved measuring signal strength over a period of time. Lanning, ¶80.

Accordingly, a POSITA would have had a reasonable expectation of success in applying **Chaskar's** teachings to **Enzmann's** mobile device (as modified by **Dorenbosch**), and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶81.

6. Overview of Willhoff

Willhoff discloses a “dual stage method and apparatus for accurately evaluating a received signal by providing a mobile station with a concise and

consistent measure of a received signal strength.” Willhoff, 2:56-62; *see also* Willhoff, Abstract. **Willhoff** discloses using “a long term RSSI [(Received Signal Strength Indication)] average to determine when a handoff condition is to be checked” followed by a “short term average” before handoff is performed. Willhoff, 2:33-37, 9:54-10:7. The long term RSSI average is computed by averaging samples representing the strength of the received signal contained in a particular window of time over “several seconds,” while the short-term average is averaged over a smaller window of time of “tens to hundreds of milliseconds.” Willhoff, 9:56-61. A POSITA would have understood that these windows are determined using a timer activated at the beginning of the time window, and at minimum it would have been obvious to do so. Lanning, ¶¶82-83. The use of the long-term measurement windows avoids premature triggers due to “fluctuating signals.” Willhoff, 4:13-14. The use of short-term measurement windows avoids “historical bias” arising due to measurements that occurred in different locations over time. Willhoff, 4:15-18, 2:6-8. Lanning, ¶¶82-83.

7. Motivation to Apply Willhoff to Enzmann in view of Dorenbosch and Chaskar

Like **Enzmann**, **Dorenbosch**, and **Chaskar**, **Willhoff** is analogous art, in the same field as the ’281—which includes wireless communications—and reasonably pertinent to alleged problems addressed by the ’281 of switching between wireless

communication networks. *See, e.g.*, Willhoff, 1:15-20 (“The invention relates generally to...handoff decisions”). Lanning, ¶84.

A POSITA would have been motivated to apply **Willhoff’s** teaching of using a timer to compute signal strength to **Enzmann’s** (as modified by **Dorenbosch** and **Chaskar**) mobile device to advantageously provide the implementation details for measuring signal strength. Lanning, ¶85. For example, as explained above (§IX.A.5.), a POSITA would have applied **Chaskar’s** teachings of using a signal strength averaging window to **Enzmann’s** device (as modified by **Dorenbosch**). But **Chaskar** does not specify implementation details of its advantageous signal strength averaging windows for determining when to handover (*see* Chaskar, [0076]-[0077]), and a POSITA would have looked to **Willhoff** for implementation details for **Chaskar’s** signal strength averaging window teachings as implemented in **Enzmann’s** device. Lanning, ¶85. For example, **Willhoff** explains the “width of the window” is selected based on how many samples the device should sample and the sample rate of the signal strength measurement, and as discussed above a POSITA would have understood and at least found obvious the windows are measured with a timer. Willhoff, 10:47-55. Moreover, timers were commonly used in communication modules to determine time lengths, and would have predictably been implemented in **Enzmann’s** device (as modified by **Dorenbosch** and **Chaskar**) to determine the time averaging window width. Lanning, ¶85.

Further, a POSITA would have been motivated to apply **Willhoff's** teaching of using a longer time window (e.g., on the order of seconds) to **Chaskar's** first signal strength measurement for comparison against Th2 (as applied to **Enzmann**) and **Willhoff's** teaching of using a shorter time window (e.g., on the order of milliseconds) to **Chaskar's** second signal strength measurement for comparison against Th3 (as applied to **Enzmann**). A POSITA would have understood that, by using a longer window for the first measurement, the device would avoid a premature handoff based on a momentary signal strength fluctuation. Willhoff, 1:41-43, 1:51-65, 3:31-34, Abstract. Lanning, ¶¶86. Further, a POSITA would have understood that, by using a shorter window for the second measurement, the device could measure “quickly enough” to complete handoff before WLAN connection is lost when the device is leaving a WLAN coverage area. Willhoff, 2:31-33. Lanning, ¶¶87. A POSITA would have understood that the use of different signal strength measuring window widths as taught by **Willhoff** for Th2 and Th3 comparisons in **Chaskar** as applied to **Enzmann** would be predictable, as **Chaskar** already contemplates using measurement windows of different widths and thus discloses using the two different size windows. Chaskar, [0077]. Lanning, ¶¶88.

Accordingly, a POSITA would have had a reasonable expectation of success in applying **Willhoff's** teachings of using a timer for measuring signal strength to **Enzmann's** wireless device (as modified by **Dorenbosch** and **Chaskar**), and would

have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶89.

8. Claim Chart

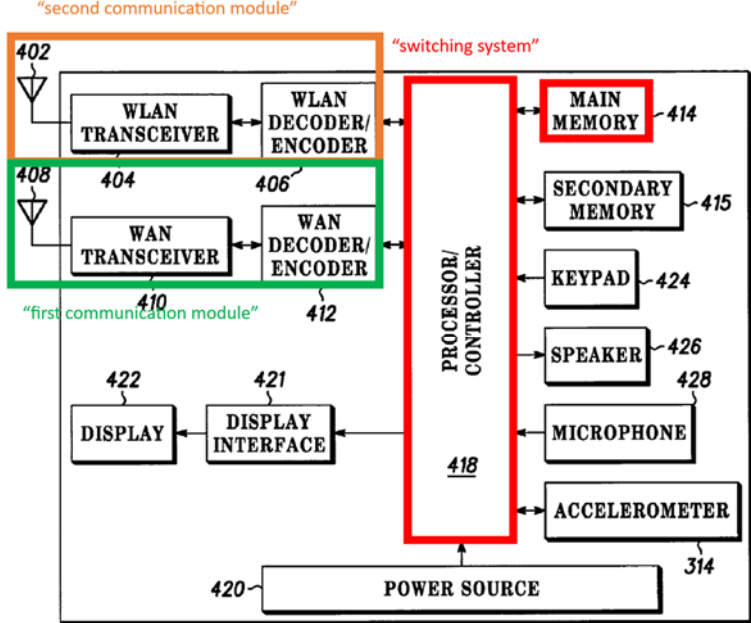
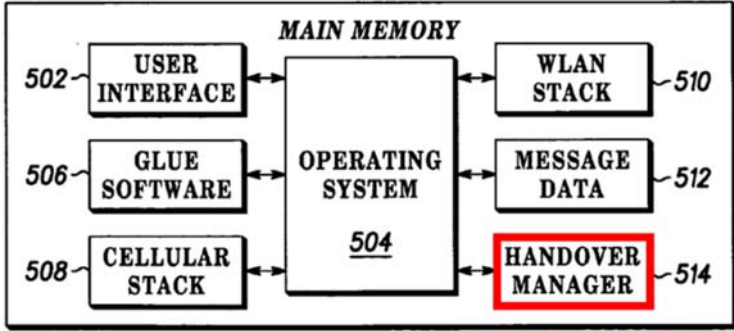
'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
[23.pre] A mobile communication device comprising:	To the extent the preamble is limiting, Enzmann discloses a mobile communication device (e.g., “wireless device 1”). <u>E.g., Enzmann:</u> • [0027]: “The call is initiated by <i>the wireless device 1 on the cellular network 6...</i>” Lanning, ¶¶92-94.
[23.a] a first communication module adapted to communicate with a first wireless network; [23.b] a second communication module adapted to communicate with an access point associated with a second network; and	Dorenbosch discloses a first communication module adapted to communicate with a first wireless network (e.g., “WAN” “transceiver”); a second communication module (e.g., “WLAN” “transceiver”) adapted to communicate with an access point associated with a second network (e.g., “WLAN cell with an access point (AP”). <u>E.g., Dorenbosch:</u> Dorenbosch discloses a mobile subscriber unit 306 that “contains two sets of transceivers—one for the WLAN system” and “one for the WAN system, each transceiver containing an antenna 402, 408, an RF front end 404, 410, and a decoder/encoder 406, 412 respectively, designed to transmit, receive, encode and decode wireless signals.” [0026], Fig. 4.⁴ Dorenbosch further discloses

⁴ While **Dorenbosch** discloses its WAN/WLAN transceivers include antennas, RF front ends and decoders/encoders, the figures illustrate each of the RF front ends 404

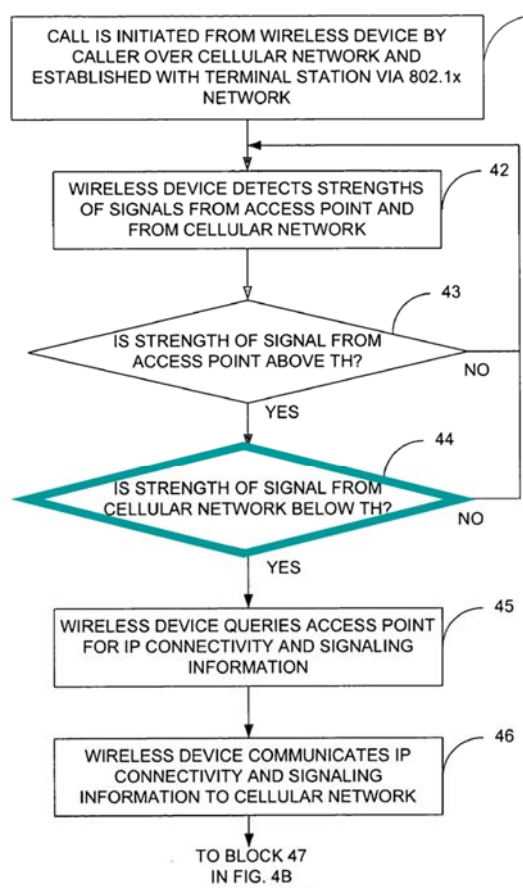
'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	the WLAN transceiver communicating with WLAN “access point[s].” [0007]. Lanning, ¶¶95-97, 99-102. As discussed in §IX.A.3, a POSITA would have been motivated to apply Dorenbosch’s transceiver/access point teachings to Enzmann’s device. Lanning, ¶¶98, 103. - Fig. 4: FIG. 4 306 [0007]: “A border cell 210 generally consists of a WLAN cell with an access point (AP) in the

and 410 as a “transceiver” itself. Fig. 4. Herein, “transceiver for WAN system” or “WAN transceiver” is used to refer to elements 408, 412 and 412, and “transceiver for WLAN system” or “WLAN transceiver” is used to refer to elements 402, 404 and 406.

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	vicinity of an entry and/or exit point 212....A border cell AP transmits information to the subscriber unit (SU) 106 that identifies its cell as a border cell 210.” • [0026]: “A block diagram of an exemplary mobile subscriber device (SU) 306 is shown in FIG. 4. The SU 306 contains two sets of transceivers—one for the WLAN system and one for the WAN system, each transceiver containing an antenna 402, 408, an RF front end 404, 410, and a decoder/encoder 406, 412 respectively, designed to transmit, receive, encode and decode wireless signals for the frequencies and characteristics of its corresponding system.”
[23.c] a switching system to switch operation between the first communication module and the second communication module,	Dorenbosch discloses a switching system (<i>e.g.</i>, “processor[] 418” and “main memory 414” having “handover manager 514”) to switch operation (<i>e.g.</i>, “handover”) between the first communication module (<i>e.g.</i>, “WAN” “transceiver”) and the second communication module (<i>e.g.</i>, “WLAN” “transceiver”). <u>E.g., Dorenbosch:</u> See [23.a], [23.b]. Dorenbosch’s subscriber unit 306 also includes “one or more processors 418 which processes instructions” and “main memory 414” that includes a “handover manager 514” for triggering a handover between the WLAN and WAN transceivers. [0021], [0027], Figs. 4, 5. Lanning, ¶¶104-107. As discussed in §IX.A.3, a POSITA would have been motivated to apply Dorenbosch’s teachings of a switching system to Enzmann’s wireless device. Lanning, ¶108. • Fig 4:

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	 FIG. 4 306 - Fig. 5:  FIG. 5 414 [0027]: “The mobile subscriber unit 306 also includes <i>one or more processors 418 which processes instructions, performs calculations, and manages the flow of information through the SU 306. The SU 306 also includes a main memory 414....Included within the main memory 414,</i>

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	shown in more detail in FIG. 5, are a user interface 502, a handover manager 514....” • [0038]: “The process illustrated in FIG. 8 further expands upon the method of the handover manager 514 presented in FIG. 7....” • <i>See also</i> [0021].
[23.d] wherein if a context changes, the second communication module is activated and a second communication type is initiated,	Enzmann discloses wherein if a context changes (<i>e.g.</i>, “the strength of the signal from the cellular network 6” “drop[s] below a certain threshold level”), a second communication type is initiated (<i>e.g.</i>, “handoff” to “802.1x network”). <u>E.g., Enzmann:</u> Enzmann discloses if “the strength of the signal from the cellular network 6 has dropped below a certain threshold level,” and “the strength of the signal from the 802.1x network 2 is at or above a certain threshold level,” wireless device 1 connects to 802.1x network 2. [0027], [0028]. Lanning, ¶¶109-111. • Fig. 4A:

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	 <pre>graph TD 41[CALL IS INITIATED FROM WIRELESS DEVICE BY CALLER OVER CELLULAR NETWORK AND ESTABLISHED WITH TERMINAL STATION VIA 802.1x NETWORK] --> 42[WIRELESS DEVICE DETECTS STRENGTHS OF SIGNALS FROM ACCESS POINT AND FROM CELLULAR NETWORK] 42 --> 43{IS STRENGTH OF SIGNAL FROM ACCESS POINT ABOVE TH?} 43 -- YES --> 44{IS STRENGTH OF SIGNAL FROM CELLULAR NETWORK BELOW TH?} 43 -- NO --> 44 44 -- YES --> 45[WIRELESS DEVICE QUERIES ACCESS POINT FOR IP CONNECTIVITY AND SIGNALING INFORMATION] 44 -- NO --> 44 45 --> 46[WIRELESS DEVICE COMMUNICATES IP CONNECTIVITY AND SIGNALING INFORMATION TO CELLULAR NETWORK] 46 --> 47[TO BLOCK 47 IN FIG. 4B]</pre> FIG. 4A Fig. 4B:

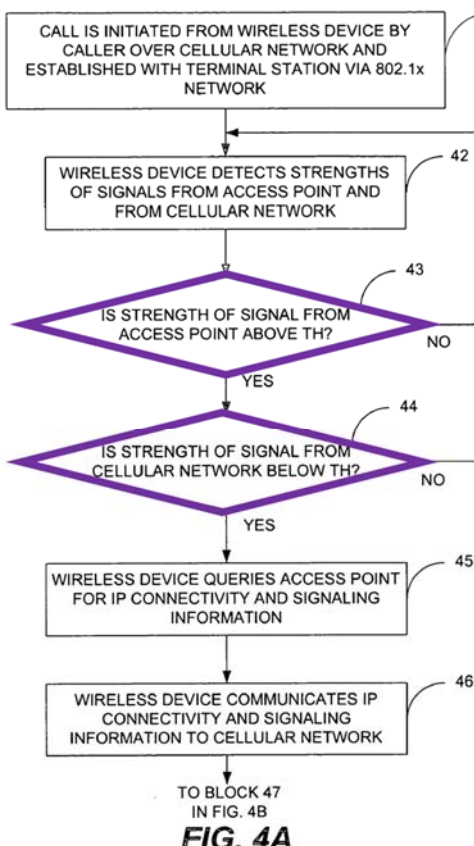
'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	<pre> graph TD A[FROM BLOCK 46 IN FIG. 4A] --> B[CELLULAR NETWORK RECORDS NEW IP ADDRESS FOR WIRELESS DEVICE AND CAUSES THE MEDIA GATEWAY TO CHANGE THE IP CONNECTION OF THE WIRELESS DEVICE TO THE NEW IP ADDRESS TO ESTABLISH NEW CONNECTION FOR WIRELESS DEVICE OVER 802.1x NETWORK] B --> C[CONNECTION BETWEEN CELLULAR NETWORK AND WIRELESS DEVICE SEVERED] style B stroke:#f00,stroke-width:2px </pre> FIG. 4B [0027]: “FIGS. 4A and 4B illustrate a flow chart of the method of...performing a seamless handoff from the cellular network 6 to the 802.1x network 2....<i>While the call is in progress, the strength of the signals from the access point 7 and from the cellular network 6 is measured by the wireless device, as indicated by block 42. A determination is made as to whether the strength of the signal from the cellular network 6 has dropped below a certain threshold level, as indicated by decision block 43. If so, a determination is made as to whether the strength of the signal from the 802.1x network 2 is at or above a certain threshold level, as indicated by decision block 44....</i>” [0028]: “<i>If the answer to both of these questions is yes, then...the media gateway 5...establishes the new IP connection for the wireless device 1 on the 802.1x network 2, as indicated by block 47.</i>” Dorenbosch discloses the second communication module is activated (e.g., circuitry of “WAN”

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	“transceiver” is used to determine whether “strength of the WAN signal is unacceptable” or “good”). <u>E.g., Dorenbosch:</u> See [23.b]. Dorenbosch discloses that the WLAN stack and hardware is terminated until needed, such as when needed to “attempt[] to receive signals from WLAN cells,” where the WLAN stack and hardware “begins [to] run,” which “includes the steps necessary to bring up the corresponding hardware and software” for the WLAN transceiver. [0038], [0045]. Lanning, ¶¶112-114. As explained in §IX.A.3, a POSITA would have been motivated to apply Dorenbosch’s WLAN transceiver activation teachings to Enzmann’s device. Lanning, ¶115. In implementing Dorenbosch’s WLAN transceiver activation teachings in Enzmann’s device, a POSITA would have understood or at least found obvious that the WLAN transceiver is activated to determine the strength of the 802.1x network signal after determining the cellular signal strength is below a threshold, to reduce power consumption. Dorenbosch, [0006]. For example, Dorenbosch explains that its WLAN software and hardware are started when it needs to check for WLAN cells, which in Enzmann occurs after detecting low cellular signal strength. Dorenbosch, [0045], Fig 10; Enzmann. Fig. 4A. Lanning, ¶¶116. • [0038]: “[T]he process of initiating the registration sequence with a communications system, be it a cellular (WAN) system or a local area (WLAN) system, includes the steps necessary to bring up the corresponding hardware and software for that system....”

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	• [0045]: <i>“The unit 306 enters the method, at step 1002 where it begins running the WLAN stack 510 and its associated hardware 404, 406. The unit then attempts to receive signals from WLAN cells at step 1004. If the unit detects a WLAN border cell, at step 1006, then the unit 306 registers with the WLAN and begins to monitor its movement, at step 1010.”</i>
[23.e] wherein if the context does not change, the second communication type is continued without switching,	Enzmann discloses wherein if the context (e.g., “the strength of the signal from the cellular network 6”) does not change (e.g., “the strength of the signal from the cellular network is [not] at or above a certain threshold level”), the second communication type is continued without switching (e.g., continuing a call on the 802.1x network). <u>E.g., Enzmann:</u> See [23.d]. Enzmann further discloses that after a device is handed off to the 802.1x from the cellular network, the network signal strengths are monitored to determine whether a handoff back to cellular is required. [0025]. Enzmann further discloses that, after handoff to the 802.1x network, the device continues communicating using the 802.1x network if cellular signal strength remains low (e.g., below a threshold) such that the first context is unchanged, as discussed in [23.d]. [0025]. Lanning, ¶¶117-120. • Fig 3A:

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	<pre> graph TD 21[CALL IS INITIATED BY BI-MODAL (CELLULAR/802.1x) DEVICE AND ESTABLISHED WITH TERMINAL STATION VIA 802.1x NETWORK] --> 22[WIRELESS DEVICE DETECTS STRENGTHS OF SIGNALS FROM ACCESS POINT AND FROM CELLULAR NETWORK] 22 --> 23{IS STRENGTH OF SIGNAL FROM ACCESS POINT BELOW TH?} 23 -- YES --> 24{IS STRENGTH OF SIGNAL FROM CELLULAR NETWORK ABOVE TH?} 23 -- NO --> 22 24 -- YES --> 25[WIRELESS DEVICE QUERIES CELLULAR NETWORK FOR IP CONNECTIVITY AND SIGNALING INFORMATION] 24 -- NO --> 22 25 --> 26[WIRELESS DEVICE COMMUNICATES IP CONNECTIVITY AND SIGNALING INFORMATION TO ACCESS POINT OF 802.1x NETWORK] 26 --> 27[TO BLOCK 27 IN FIG. 3B] </pre> FIG. 3A [0025]: "...A determination is made as to whether the strength of the signal from the access point 7 has dropped below a certain threshold level, as indicated by decision block 23. <i>If so, a determination is made as to whether the strength of the signal from the cellular network is at or above a certain threshold level, as indicated by decision block 24. If the answer to either of these questions is no, the process returns to block 22.</i>"
[23.f] wherein switching is based on detecting a	Enzmann discloses wherein switching (e.g., "handoff from the cellular network 6 to the 802.1x network 2") is based on detecting a second context (e.g., determining

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
second context being preferred over the context within a set of known networks or from a newly discovered network,	“the strength of the signal from the 802.1x network 2 is at or above a certain threshold level”) being preferred over the context (e.g., is preferred over “the strength of the signal from the cellular network 6” “drop[s] below a certain threshold level”) within a set of known networks (e.g., “cellular network” and “802.1x network”) or from a newly discovered network (e.g., “802.1x network”). <u>E.g., Enzmann:</u> See [23.d]. As explained in [23.d], Enzmann discloses switching to 802.1x network if both the cellular signal strength drops below a threshold and the 802.1x signal strength is above a threshold, such that 802.1x is preferred. [0027], [0028]. Lanning, ¶¶121-124. Cellular network 6 is known because the call begins on cellular network 6. [0027]. And 802.1x network 2 is known because a determination can be “made as to whether the strength of the signal from the 802.1x network 2 is at or above a certain threshold level.” [0027]. If the 802.1x is considered a new instead of known network, Enzmann discloses wireless device 1 detecting the 802.1x has a preferable context over cellular network 6 when cellular signal is weak and 802.1x signal is strong, prompting the switch from cellular to 802.1x. Lanning, ¶125. • Fig. 4A:

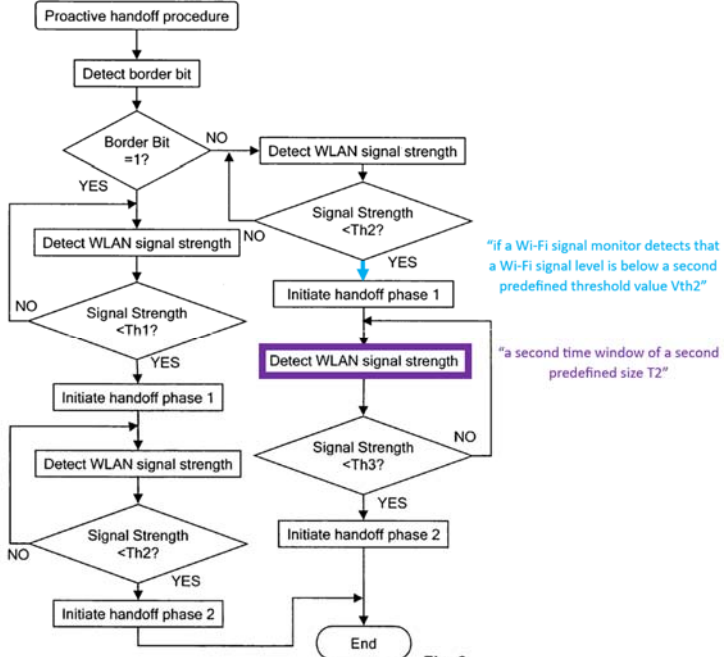
'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	 <pre> graph TD 41[CALL IS INITIATED FROM WIRELESS DEVICE BY CALLER OVER CELLULAR NETWORK AND ESTABLISHED WITH TERMINAL STATION VIA 802.1x NETWORK] --> 42[WIRELESS DEVICE DETECTS STRENGTHS OF SIGNALS FROM ACCESS POINT AND FROM CELLULAR NETWORK] 42 --> 43{IS STRENGTH OF SIGNAL FROM ACCESS POINT ABOVE TH?} 43 -- NO --> 42 43 -- YES --> 44{IS STRENGTH OF SIGNAL FROM CELLULAR NETWORK BELOW TH?} 44 -- NO --> 42 44 -- YES --> 45[WIRELESS DEVICE QUERIES ACCESS POINT FOR IP CONNECTIVITY AND SIGNALING INFORMATION] 45 --> 46[WIRELESS DEVICE COMMUNICATES IP CONNECTIVITY AND SIGNALING INFORMATION TO CELLULAR NETWORK] 46 --> 47[TO BLOCK 47 IN FIG. 4B] </pre> FIG. 4A “switching is based on detecting a second context being preferred over the context within a set of known networks or from a newly discovered network”
[23.g] wherein upon activation of a timer, the switching system causes the second communication module to change state from a sleep mode to an active mode, wherein the timer is activated to establish a time window of a predefined size,	Dorenbosch discloses the switching system (see [23.c]) causes the second communication module (see [23.b]) to change state from a sleep mode (e.g., “hardware 410, 412” is “terminate[d]”) to an active mode (e.g., circuitry of “WLAN” “transceiver” activated and used to “check the signal strength of the WLAN signal”). <u>E.g., Dorenbosch:</u> See [23.b]-[23.d]. As discussed in [23.d], Dorenbosch discloses that the WLAN hardware is terminated such that it is in a sleep mode, and activated to measure the signal strength of the WLAN. [0045]. Lanning, ¶¶126-129.

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	As explained in §IX.A.3, a POSITA would have been motivated to apply Dorenbosch's WLAN transceiver activation teachings to Enzmann's device. Lanning, ¶130. In implementing Dorenbosch's sleep/active mode teachings in Enzmann's device and handover procedure, a POSITA would have understood or at least found obvious that the WLAN transceiver is in a sleep mode until used to measure WLAN signal strength, whereby the WLAN transceiver switches from sleep to active mode. Such an implementation would have advantageously reduced power consumption. Lanning, ¶131. • [0045]: “...<i>The unit 306 enters the method, at step 1002 where it begins running the WLAN stack 510 and its associated hardware 404, 406. The unit then attempts to receive signals from WLAN cells at step 1004....[T]hen the unit will check the signal strength of the WLAN signal, at step 1014. Otherwise, the unit 306 again terminates running the WLAN stack 510 and hardware 404, 406, at step 1008, if either the movement information or the WLAN signal strength is insufficient to warrant a handover.</i>” Chaskar discloses a first time window of a first predefined size (e.g., “signal strength averaging window[]” having a “width[]”). <u>E.g., Chaskar:</u> Chaskar discloses the mobile terminal measures signal strength using “signal strength averaging windows.” [0076]. At a minimum, it would have been obvious to use signal strength averaging windows because they

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	advantageously provide “robust measurement of received signal strength.” [0076]. The averaging window has a “width[.]” [0076] Lanning, ¶¶76, 132-133. As explained in §IX.A.5, a POSITA would have been motivated to apply Chaskar’s teachings of using signal strength averaging windows to Enzmann’s device (as modified by Dorenbosch). Lanning, ¶134. • [0076]: “...[M]obile nodes may use some method for robust measurement of received signal strength. Examples are use <i>of signal strength averaging windows....</i>” • [0077]: “...[I]t is also possible to build in <i>aggressiveness and conservativeness into handoff logic in a different manner. For example, having different values for the widths of averaging windows</i>” Willhoff discloses activating a timer (<i>e.g.</i>, starting timer measuring “window of time”), wherein the timer is activated to establish a time window of a predefined size (<i>e.g.</i>, “window of time” of a “width”). <u>E.g., Willhoff:</u> Willhoff discloses using an “RSSI average to determine when a handoff condition is to be checked” in a cellular system. 9:53-56. The “RSSI average” is computed by “averaging samples representing the strength of the received signal, contained in a particular window of time.” 9:56-59. The measurement is performed over “several seconds” for a window of longer “width.” 9:56-62, 10:46-47. Lanning, ¶¶135-136. As explained in IX.A.6, a POSITA would have understood, or at least

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	found it obvious, that a timer is used to measure the “window.” Lanning, ¶¶135-136. As explained in §IX.A.7, a POSITA would have been motivated to apply Willhoff’s teaching of using a timer to compute signal strength to Enzmann’s (as modified by Dorenbosch and Chaskar) mobile device. Lanning, ¶137. In implementing Willhoff’s timer teachings in Enzmann’s device (as modified by Dorenbosch and Chaskar), because the timer is used to set a time window for signal strength measurement, a POSITA would have understood or at least found it obvious that the signal strength measurement (and thus the transition from sleep to active state) would be upon activation of the timer for measuring the signal strength, to advantageously wake up the transceiver hardware only when needed to reduce power consumption. Lanning, ¶138 (citing Dorenbosch, [0038]). • 9:53-56: “...The Voice Channel (VCH) in the base station will use a long term <i>RSSI average to determine when a handoff condition is to be checked.</i>” • 9:56-62: “The long term <i>RSSI average</i> is computed by <i>averaging samples representing the strength of the received signal, contained in a particular window of time, e.g. several seconds....</i>” • 10:46-11:3: “The Voice Channel parameters can vary among systems and from cell to cell. <i>The RSSI Sample Rate gives the long term averaging time, i.e. the width of the window. Typical values of the window are in the range of 2.5 to 3.5 seconds. Wider ranges for the long term</i>

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	<i>averaging widow are also possible. For instance, in one particular configuration, the range can vary from 0.32 seconds to 5.12 seconds....By way of example, in one particular embodiment, the SSSR can range from 20-300 ms with 120 ms being preferred, based on characteristics of the system and environment.”</i> • See also Abstract, 3:31-34.
[23.h] wherein if a Wi-Fi signal monitor detects that a Wi-Fi signal level is below a second predefined threshold value Vth2, the timer is activated to establish a second time window of a second predefined size T2,	Chaskar discloses wherein if a Wi-Fi signal monitor (e.g., monitor for detecting “802.11” “WLAN signal strength”) detects that a Wi-Fi signal level is below a second predefined threshold value Vth2 (e.g., “WLAN signal strength...has fallen below Th2”), establishing a second time window of a second predefined size T2 (e.g., “signal strength averaging window[]” having a “width[]” to determine if “the signal strength has fallen below Th3”). <u>E.g., Chaskar:</u> See [23.g]. Chaskar further discloses when “802.11” (Wi-Fi) WLAN signal strength falls below Th2, handoff phase 1 is initiated. [0072], Fig. 9. The monitor then detects the “WLAN signal strength” again in another signal strength averaging window to determine whether “the signal strength has fallen below Th3.” [0073], Fig. 9. Chaskar further discloses implementing the WLAN using 802.11. [0015]. Lanning, ¶¶139-142. As explained in §IX.A.5, a POSITA would have been motivated to apply Chaskar’s signal strength averaging windows teachings to Enzmann’s device (as modified by Dorenbosch). Lanning, ¶143. • Fig. 9:

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	 Fig. 9 • [0015]: “The invention enables smart detection of hot spot (such as 802.11 WLAN or HiperLAN) border crossing. • [0072]: “...[W]hile a detected WLAN signal strength is larger than Th2, the mobile node waits. After the signal strength has fallen below Th2, in order to be proactive, handoff phase 1 is initiated.” • [0073]: “After initiation of phase 1, WLAN signal strength is detected again and while the detected WLAN signal strength is larger than a predetermined threshold Th3, the mobile node waits.” • See also [0063]. Willhoff discloses the timer is activated to establish a second time window of a second predefined size T2

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	(<i>e.g.</i>, starting timer measuring “window of time” of a shorter “width”). <u>E.g., Willhoff:</u> See [23.g]. Willhoff further discloses a second signal strength measurement during handoff over a short term of “tens to hundreds of milliseconds.” 9:59-61. Lanning, ¶¶144-146. As explained in §IX.A.7, a POSITA would have been motivated to apply Willhoff’s teachings of a timer for measuring a window of time to Enzmann’s device (as modified by Dorenbosch and Chaskar). Lanning, ¶147. Moreover, to the extent that the claimed “second time window of a second predefined size T2” must be different than “a time window of a predefined size,” as explained in §IX.A.7, a POSITA would have been motivated to apply Willhoff’s teachings of using time windows of different sizes to Enzmann’s device (as modified by Dorenbosch and Chaskar). Lanning, ¶148.
[23.i] wherein a third predefined threshold value Vth3 is smaller than Vth2.	Chaskar discloses a third predefined threshold value Vth3 (<i>e.g.</i>, “Th3”) is smaller than Vth2 (<i>e.g.</i>, “Th2”). <u>E.g., Chaskar:</u> See [23.h]. Chaskar further discloses “multiple thresholds can be used, for example Th1>Th2>Th3.” [0069]. Lanning, ¶¶149-152. As explained in §IX.A.5, a POSITA would have been motivated to apply Chaskar’s teachings of using two thresholds to determine whether a handoff from the WLAN to cellular is required to Enzmann’s device and handover procedure (as modified by Dorenbosch). Lanning, ¶153. • [0069]: “...According to an alternative embodiment of the proactive handoff procedure,

'281	Enzmann in view of Dorenbosch, Chaskar and Willhoff
	<i>multiple thresholds can be used, for example Th1>Th2>Th3....”</i>

B. Ground 2: Iizuka in view of Chaskar and Willhoff (Claim 45)

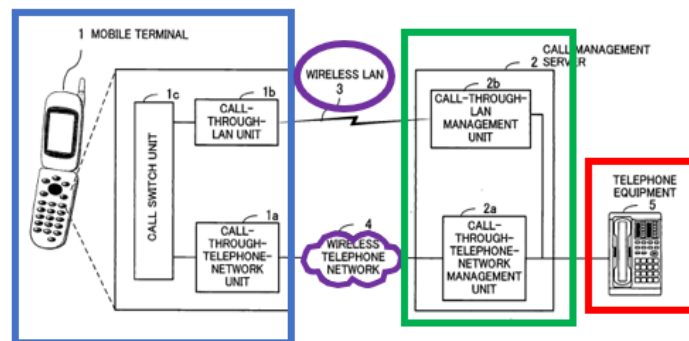
As explained below, this ground involves the use of **Iizuka’s** network operations involved in switching a mobile device from a wireless LAN to a telephone network (see §IX.B.1), to which **Chaskar’s** teachings of a mobile device using a multi-threshold comparison process for switching from a wireless LAN to a mobile telephone network (see §IX.A.4) are applied. **Willhoff’s** teaching of using a timer for measuring signal strength (see §IX.A.6) is applied to each signal strength measurement involved in the switching processes. Lanning ¶¶171-172.

1. Overview of Iizuka

Iizuka discloses a method that enables a **mobile terminal** to roam between **different types of networks**, such as a **wireless local area network (LAN)** and a **wireless telephone network**. Iizuka, [0014], [0057]. Like the '281, **Iizuka** recognizes the problem of “dynamically switch[ing]” between different types of networks “so as to smoothly continue a call.” *Id.* [0010]. **Iizuka** addresses this by providing “a mobile terminal, a program for controlling a mobile terminal, a program for a call-management server, and a call-management process for performing

wireless communication,” which enable a continuous wireless call by “dynamically switching between [a] plurality of communication mediums during a call.” *Id.* [0014]. Lanning ¶154.

Figures 1 and 2 of **Iizuka**, annotated below, illustrate an exemplary system with a **mobile terminal** connected to a **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**. *Id.* [0057]-[0059], Figs. 1-2. The **mobile terminal** makes a call to a **telephone** (e.g., **IP telephone 21**) through one of the networks (e.g., **wireless LAN**). *Id.* [0061]-[0062]. When call quality “deteriorates and deviates from a predetermined criterion during a call through the wireless LAN, the call is switched from a connection through the wireless LAN to a connection through a **wireless telephone network**.” *Id.* [0212]. This allows “dynamically switch[ing] the call between a connection through the wireless LAN and a connection through the wireless telephone network.” *Id.* Lanning ¶155.



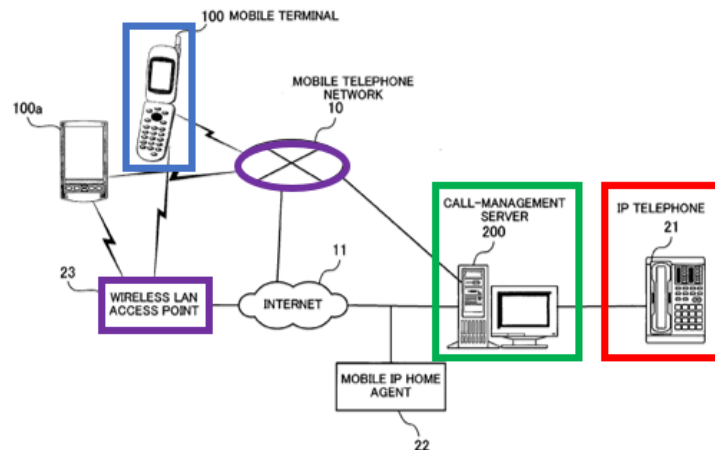
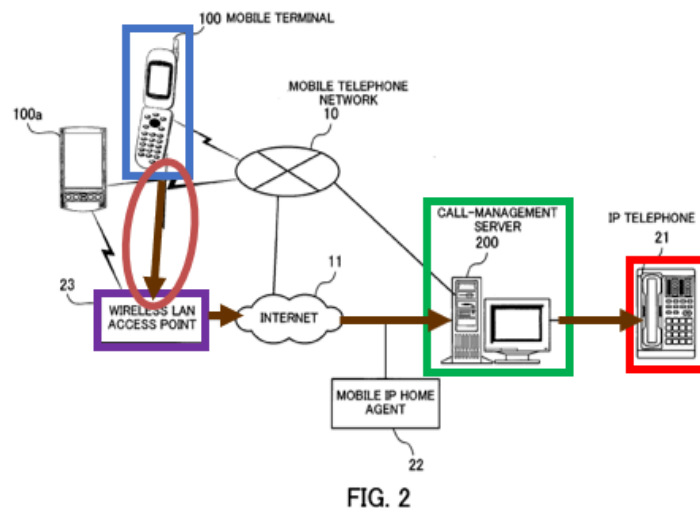


FIG. 2

Iizuka describes the process of switching a call from a wireless LAN to a wireless telephone network.⁵ **Iizuka's** **mobile terminal** makes a call to **IP telephone**

⁵ **Iizuka** describes the same switching embodiment 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. Iizuka, [0033]-[0034], [0157]-[0162], [0163]-[0176]; Lanning ¶156. Accordingly, this Petition includes parallel citations to the relevant disclosures for both Figures 13 and 14. To the extent it is argued these figures pertain to different embodiments, it would have been obvious to a POSITA to use the disclosures of both together 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.” Iizuka, [0033]-[0034]; Lanning ¶156.

21 (i.e., a **first communication link**), which can be a VoIP call made via **wireless LAN**, which is connected to the internet. *Id.*, [0039], [0061]-[0062], [0109], [0204], Fig. 13; *see also* Iizuka, [0158], [0169]. Thus, the process establishes “wireless communication” (i.e., **first wireless communication link**) between the **mobile terminal** and the **wireless LAN** (via the **wireless LAN access point**). *Id.*, [0061], [0064], Fig. 14 (arrow labelled “S76”); *see also* Iizuka, [0158], [0169]. Lanning ¶157.



Iizuka’s **mobile terminal** includes a **medium monitor unit 117**, **monitoring the “intensity of a radio wave”** received from the wireless LAN access point (i.e., the **first wireless communication link**). *Id.*, [0045], [0078], [0105], Fig. 4. During the call, the radio wave intensity is monitored to determine “when the condition of the communication deviates from a predetermined criterion.” *Id.*, [0060]-[0061], [0159], Fig. 13; *see also* Iizuka, [0159]-[0160], [0170]. Lanning ¶158.

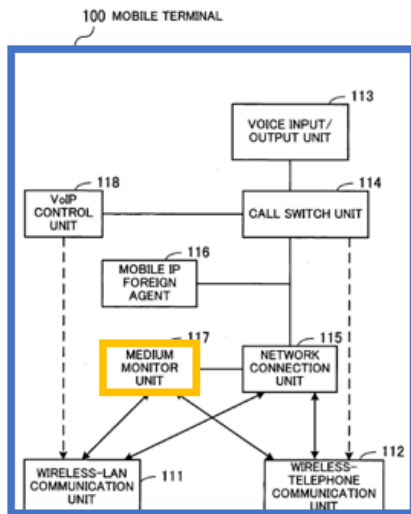


FIG. 4

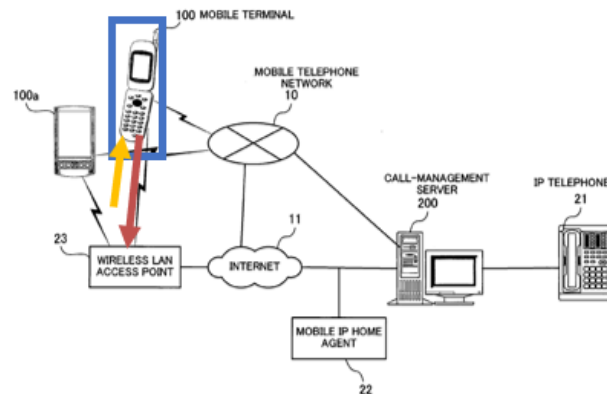


FIG. 2

When the 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 in the call-management server by dialing.” *Id.*, [0159]-[0160]; *see also* Iizuka, [0162], [0170]. Lanning ¶159.

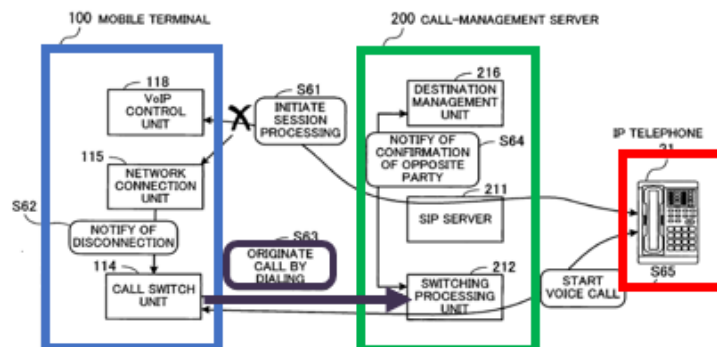
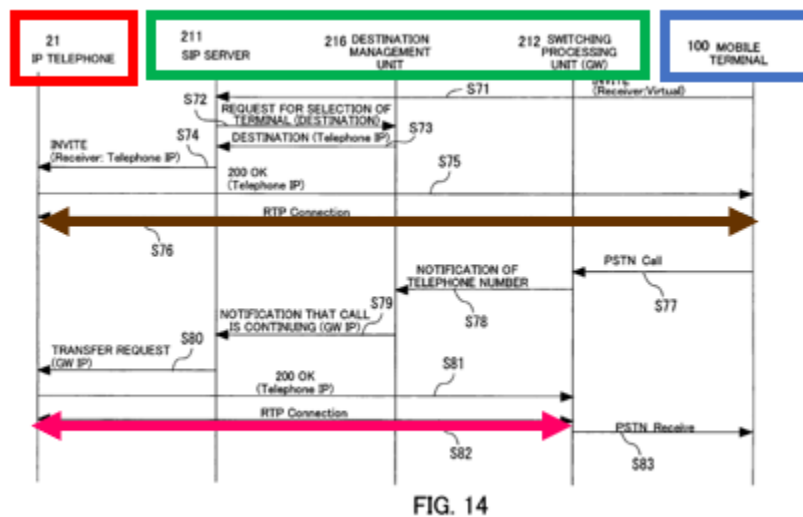


FIG. 13

The **call-management server** then establishes a voice call through the mobile telephone network while the VoIP call (over the **first communication link**) “continues.” *Id.*, [0160]-[0162], [0170]-[0176]. As part of this process of

establishing a voice call, the method 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) as depicted in Fig. 14. Iizuka, Fig. 14, [0175]. Lanning ¶160.



As shown below, after the RTP connection between the **call-management server** and **IP telephone** is established (i.e., **second communication link**), the switching processing unit 212 of the call-management server 200 returns a response to mobile terminal 100. Iizuka, [0176]; *see also* Iizuka, [0162]. This response “establishes a connection through the mobile telephone network 10” between the **call-management server** and the **mobile terminal**. Iizuka, [0176]; *see also* Iizuka, [0162]. This process thus establishes a “voice call” between the mobile terminal and IP telephone, using the mobile telephone network. Iizuka, [0162], [0176]. Lanning ¶161.

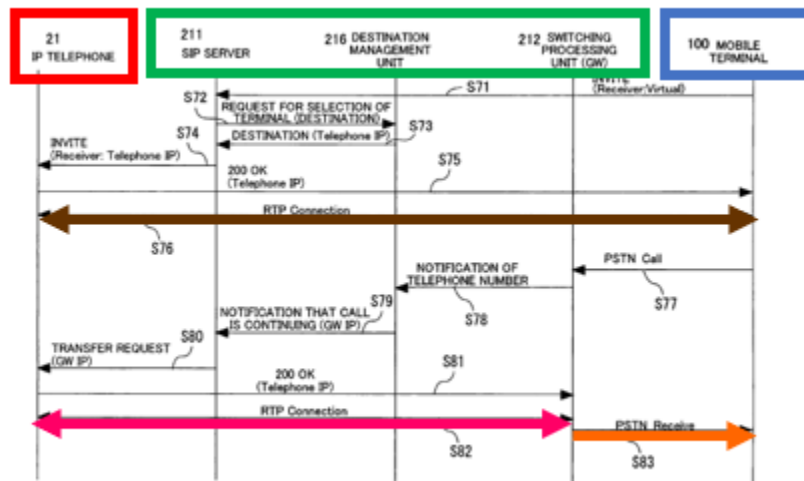


FIG. 14

After the voice call is established, 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**) so the call can continue through the voice call. Iizuka, [0162]; *see also* Iizuka, [0176]. Lanning ¶162.

2. Motivation to Apply Chaskar’s Teachings to Iizuka

Like **Chaskar**, **Iizuka** is in the same field as the ’281—which includes wireless communications—and are reasonably pertinent to the problems purportedly addressed by the ’281—e.g., switching between wireless communication networks. *See e.g.*, Iizuka, [0014]. Like the ’281 and **Chaskar**, **Iizuka** contemplates a method of switching between first and second networks according to signal strengths detected by a communication device. *See e.g.*, Iizuka, [0105], [0159], [0162]. Lanning ¶163.

A POSITA would have been motivated to apply **Chaskar**'s multiple threshold values teaching in implementing **Iizuka**'s system to advantageously enhance the reliability of the system. Lanning, ¶164. **Iizuka** discloses that during communication via a wireless LAN, when communication "becomes impossible (for example, when the condition of the communication deviates from a predetermined criterion)," the communication is switched to a mobile telephone network. Iizuka, [0159]-[0162]. Further, **Iizuka** discloses that "a threshold value of the intensities of signals can be...the predetermined criterion." Iizuka, [0045]. A POSITA would have understood successive use of multiple threshold values to measure signal strength, as opposed to a single threshold value, to determine when to handoff would improve the reliability of **Iizuka**'s system. See Chaskar, [0017]-[0021] ("The invention provides a method which: 1. can reduce the number of spurious handoff triggers without delaying the handoff trigger when it indeed needs to happen, 2. can reduce the number of false starts (of handoff preparation) in proactive handoff schemes, 3. make the implementation of proactive handoff schemes efficient by enabling the mobile terminal to complete handoff preparation while the signal from WLAN is still strong...."). A POSITA would have understood that basing a handoff decision on one WLAN signal strength measurement presents the risk of handoff even if WLAN signal strength improves after measurement (e.g., when a returns to a location with better WLAN signal strength). Chaskar teaches that multiple

thresholds can be used to avoid these spurious handoff triggers. *See Chaskar*, [0073]. Lanning, ¶164.

Further, a POSITA would have been motivated to apply **Chaskar’s** time window teachings (including the use of a particular width of time window) in **Iizuka’s** system to advantageously provide implementation details for measuring signal strength in a robust manner. Lanning, ¶165. While **Iizuka** discloses monitoring the “intensity of a radio wave” transmitted from wireless LAN to mobile terminal 100, it does not disclose any particular algorithm for determining from radio wave intensity when to handoff. *Iizuka*, [0105]. A POSITA would have looked to **Chaskar’s** teaching of “signal strength averaging windows” for robust measurement of *Iizuka’s* monitored radio wave intensity. **Chaskar**, [0076]. Lanning ¶165.

A POSITA would have had a reasonable expectation of success in applying **Chaskar’s** two thresholds teachings to determine whether WLAN-to-cellular handoff is required to **Iizuka’s** mobile device. Lanning, ¶166. **Iizuka** discloses determining wireless LAN signal strength when deciding whether to switch to cellular. *Iizuka*, [0045], [0078], [0105], [0159]. A POSITA would have recognized that implementing **Chaskar’s** multiple threshold teachings in *Iizuka’s* mobile device would involve simply repeating *Iizuka’s* process of determining the signal strength of a WLAN, and using a lower threshold for the second measurement. Lanning, ¶166. Moreover, a POSITA would have had a reasonable expectation of success in

applying **Chaskar**'s teachings of using signal strength averaging windows of a width to **Iizuka**'s device, as this would have simply involved measuring signal strength over a period of time. Lanning, ¶166 (citing Chaskar, [0073]). In addition, POSITA would have been had a reasonable expectation of success applying **Chaskar**'s time window teachings in Iizuka's mobile device. As **Iizuka** discloses determining wireless LAN signal strength when deciding whether to switch to cellular, applying **Chaskar**'s teachings of using signal strength averaging windows to **Iizuka**'s mobile device would have involved measuring the wireless LAN signal strength for an extended time period. Lanning, ¶166.

Accordingly, a POSITA would have had a reasonable expectation of success in applying **Chaskar**'s teachings of using multiple signal strength measurements in implementing **Iizuka**'s handoff procedure, and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶167.

3. Motivation to Apply Willhoff's Teachings to Iizuka and Chaskar

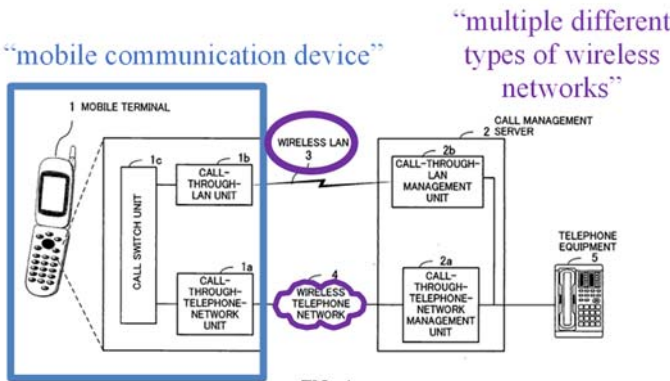
Like **Iizuka** and **Chaskar**, **Willhoff** is analogous art, in the same field as the '281—which includes wireless communications—and reasonably pertinent to alleged problems addressed by the '281 of switching between wireless communication networks during a in-progress call. *See e.g.*, Willhoff, 1:15-20.

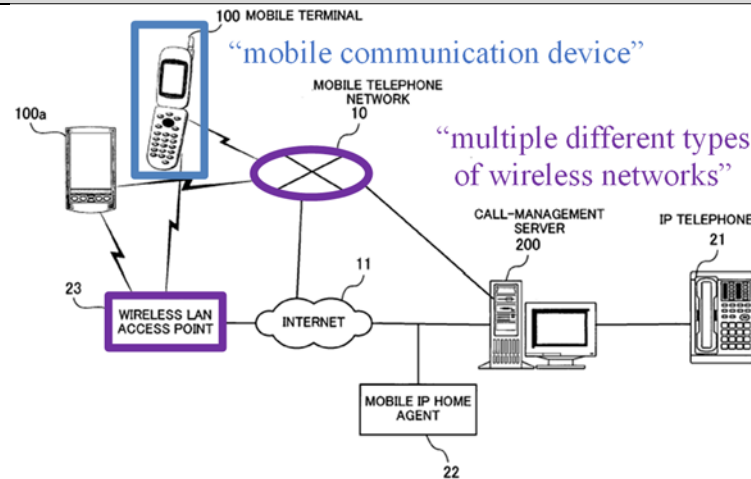
Lanning, ¶168.

A POSITA would have been motivated to apply **Willhoff's** teaching of using a timer to compute signal strength to **Iizuka's** (as modified by **Chaskar**) method to advantageously provide the implementation details for monitoring the intensity of a radio wave. Lanning, ¶169. A POSITA would have looked to **Willhoff** for implementation details for **Iizuka's** monitoring the intensity of a radio wave (as modified by **Chaskar**). Lanning, ¶169. Moreover, as explained in §IX.A.7, **Chaskar** does not specify implementation details of its advantageous signal strength averaging windows for determining when to handover, and a POSITA would have looked to **Willhoff** for implementation details for **Chaskar's** signal strength averaging window teachings as implemented in **Iizuka** for the same reason for doing so when applying these same teaches as implemented in **Enzmann**. Lanning, ¶¶169. Moreover, timers were commonly used in communication modules to determine time lengths, and would have predictably been implemented in **Iizuka's** method to determine the time averaging window width. Lanning, ¶169.

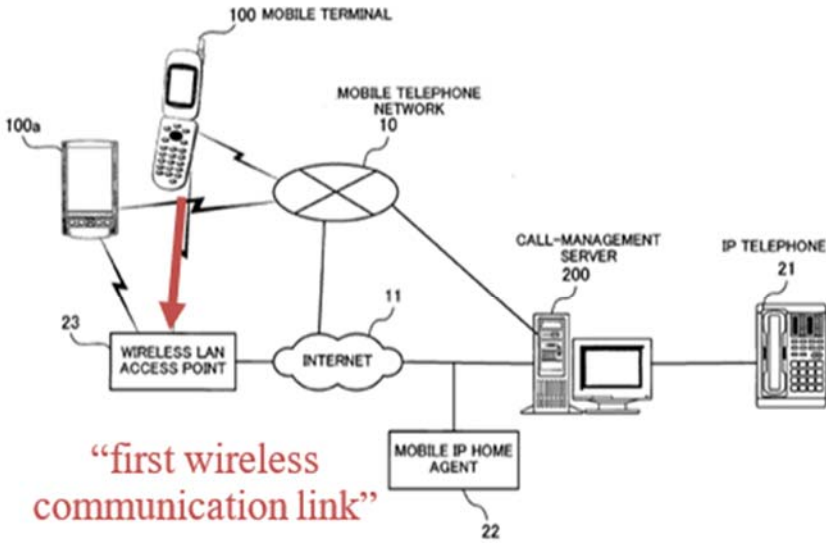
Accordingly, a POSITA would have had a reasonable expectation of success in applying **Willhoff's** teachings of using a timer for measuring signal strength to **Iizuka's** method (as modified by **Chaskar**), and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶170.

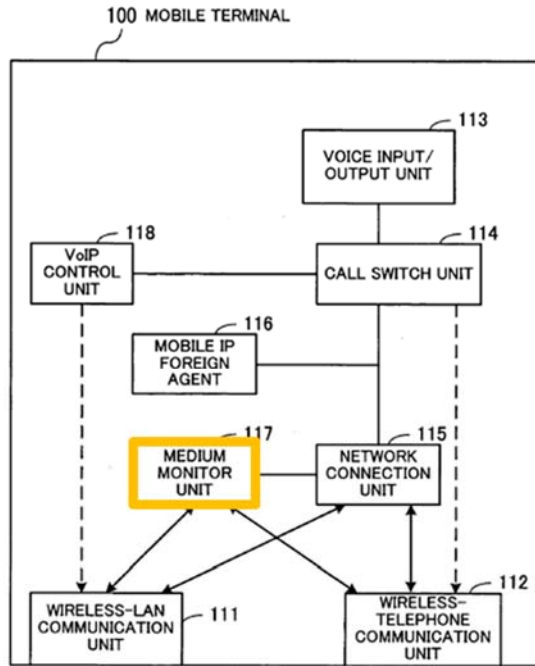
4. Claim Chart

'281 Claim	Iizuka in view of Chaskar and Willhoff
[45.pre] A method comprising:	To the extent the preamble is limiting, Iizuka discloses a method (e.g., “dynamically switching between the plurality of communication mediums during a call”). <u>E.g., Iizuka:</u> Iizuka discloses a method enabling “mobile terminal [1, 100]” to roam between different types of networks, such as a “wireless LAN,” (containing “Internet 11”) and “wireless telephone network 4,” and “mobile telephone network 10”. Iizuka, [0014], [0057]. For example, a call initiated over a wireless LAN may be “switched from a connection through the wireless LAN to a connection through a wireless telephone network.” Iizuka, [0015], [0212]. Lanning ¶¶173-175. - Fig. 1  FIG. 1 - Fig. 2

'281 Claim	Iizuka in view of Chaskar and Willhoff
	 FIG. 2 • [0014]: “[T]he present invention...provide[s]...a call-management process 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]: “...[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]: “...[A] mobile terminal for making a wireless call is provided. The mobile terminal comprises: a call-through unit which has a function of making a call through a wireless LAN; a call-through-telephone-network unit which has a function of making a call through a wireless telephone network; and a call switch unit which establishes a connection through the call-through-telephone-network unit and switches from a first call through the call-through-LAN

'281 Claim	Iizuka in view of Chaskar and Willhoff
	<i>unit to a second call through the call-through-telephone-network unit....</i> • [0212]: “[W]hen the condition of communication through a wireless LAN deteriorates and deviates from a predetermined criterion <i>during a call through the wireless LAN, the call is switched from a connection through the wireless LAN to a connection through a wireless telephone network....</i>” • [0157]: “FIG. 13 is a diagram illustrating processing for <i>switching (roaming)</i> from a VoIP call to a voice call through the mobile telephone network.” • [0039]: “...[M]obile terminal 1 and a call-management server 2 can communicate with each other through two wireless communication mediums, a wireless LAN 3 and a wireless telephone network 4....” • See also [0043], [0157]-[0176].
[45.a] monitoring a context of a first communication link;	Iizuka discloses monitoring a context of a first communication link (e.g., monitoring the “intensity of a radio wave” transmitted from wireless LAN to mobile terminal 100; and transmitted from IP telephone 21 to mobile terminal 100). <u>E.g., Iizuka:</u> Iizuka discloses that the mobile terminal monitors the signal strength of communication link between the mobile terminal and the wireless LAN. For example, mobile terminal 100 includes a medium monitor unit 117 that “monitors the conditions of the network mediums,” by detecting the “intensity of a radio wave” received from a wireless access point, including wireless LAN access point 23. A measure of the intensity of a radio wave is a measure of signal strength, and at minimum it

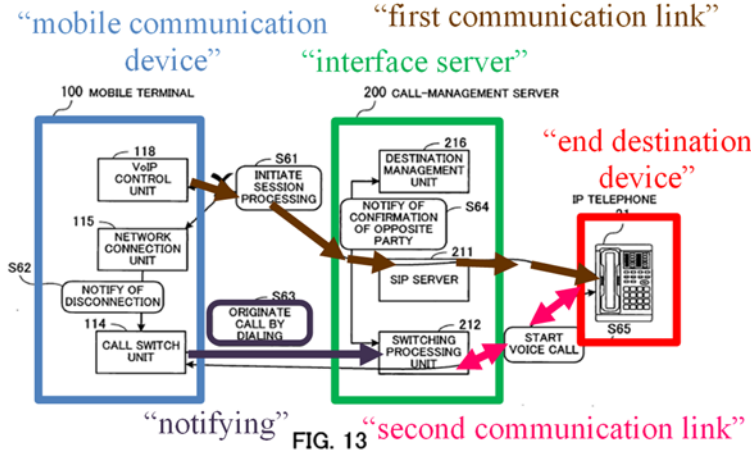
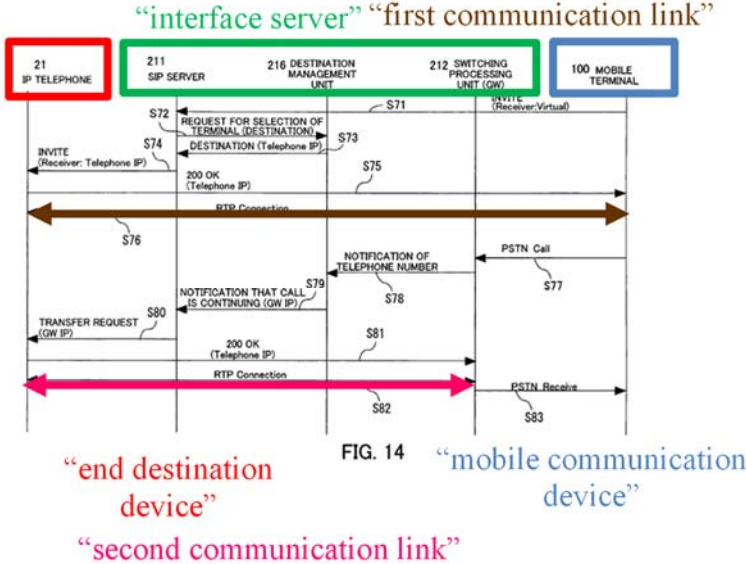
'281 Claim	Iizuka in view of Chaskar and Willhoff
	would have been obvious to measure signal strength as part of “intensity” in determining whether to switch networks. Iizuka, [0045], [0078], [0105]. Lanning ¶¶176-178. During a VoIP call, mobile terminal 100 communicates with wireless LAN access point 23 through the wireless LAN, receiving radio waves from wireless access point 23. Iizuka, [0060]-[0061], [0159]; <i>see also</i> Iizuka, [0170]. Medium monitor unit measures the signal strength of these radio waves to determine “when the condition of the communication deviates from a predetermined criterion.” Iizuka, [0159]; <i>see also</i> Iizuka, [0170]. Lanning ¶179. • Fig. 2  FIG. 2 • Fig. 4

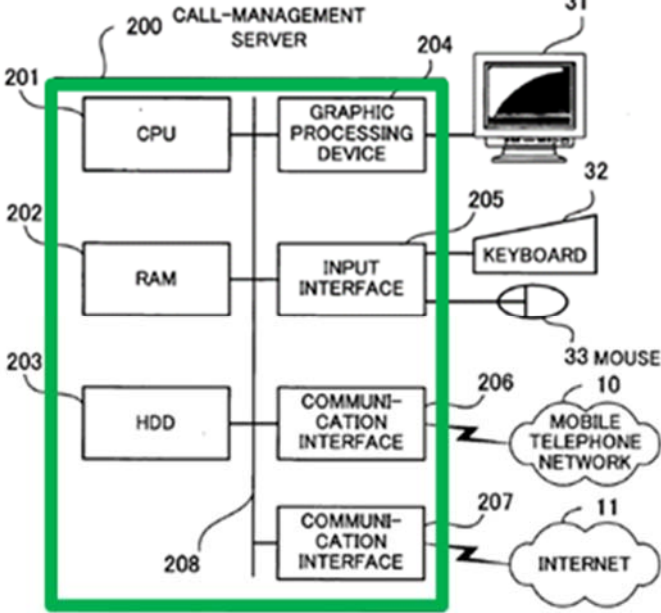
'281 Claim	Iizuka in view of Chaskar and Willhoff
	 “monitoring a signal strength” FIG. 4 • [0045]: “The condition of the connection realized by the call-through-LAN unit 1b (which is used as a reference for determining whether or not the connection is to be switched) can be determined based on, <i>for example, the intensities of signals received from an access point, to which the LAN is to be connected.</i> In this case, a threshold value of the intensities of signals can be determined to be the predetermined criterion.” • [0078]: “...[M]edium monitor unit 117 <i>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...</i>” • [0105]: “...[T]he network connection unit 115 <i>receives from the medium monitor unit 117</i>

'281 Claim	Iizuka in view of Chaskar and Willhoff
	<i>information indicating the conditions of communication at the wireless-LAN communication unit 111 and the wireless-telephone communication unit 112. For example, the medium monitor unit 117 passes to the network connection unit 115 information indicating the intensity of a radio wave which the wireless-LAN communication unit 111 can receive from the wireless LAN access point 23....”</i> • [0061]: “...When each of the mobile terminals 100 and 100a makes a call through the Internet 11, the mobile terminal performs wireless communication with the wireless LAN access point 23, and establishes a connection between the mobile terminal and the call-management server 200 through the wireless LAN access point 23.” • [0106]: “In the present embodiment, the functions of the wireless-LAN communication unit 111 can be stopped during the absence of communication. In this case, <i>the medium monitor unit 117 confirms the condition of a connection through the wireless LAN</i> by activating the wireless-LAN communication unit 111.” • [0159]: “[Step S62] Thereafter, when <i>communication through the wireless LAN becomes impossible (for example, when the condition of the communication deviates from a predetermined criterion)</i>, the network connection unit 115 notifies the call switch unit 114 of the condition of the communication.” • See also [0060], [0170].
[45.b] when a network is detected	Iizuka discloses when a network is detected as available (e.g., when “communication can be realized

'281 Claim	Iizuka in view of Chaskar and Willhoff
as available with a second communication link with a context preferable to the first communication link, notifying an interface server and establishing the second communication link between the interface server and an end destination device without disrupting the first communication link; and	through” the “mobile telephone network”) with a second communication link with a context preferable to the first communication link (<i>e.g.</i>, when the “intensity of signal[]” is below a “predetermined criterion” or “threshold value” such that “communication through the wireless LAN becomes impossible”), notifying an interface server (<i>e.g.</i>, “originat[ing] a call to the switching processing unit 212 in the call-management server 200”) and establishing the second communication link between the interface server and an end destination device (<i>e.g.</i>, establishing a “voice call through the mobile telephone network 10” between call-management server 200 and IP telephone 21) without disrupting the first communication link (the “VoIP call” “still continues” while the voice call is being established). <u>E.g., Iizuka:</u> Iizuka discloses the mobile terminal informing an interface server when the context of the first communication link is not preferred (<i>see</i> [45.a]), such as when it is detected as below a threshold. For example, mobile terminal 100 monitors the wireless LAN signal strength (<i>see</i> [45.a]) to determine when the communication degrades to the point it becomes “impossible,” meaning signal strength has weakened sufficiently, and, thus, “deviates from a predetermined criterion.” Iizuka, [0159]; <i>see also</i> Iizuka, [170], [0146]. Then, the context is no longer preferred and the mobile terminal 100 notifies the call-management server 200 by “originat[ing] a call to the switching processing unit 212 in the call-management server by dialing.” Iizuka, [0159]-[0160]; <i>see also</i> Iizuka, [0170]. The call-management server 200 is an interface server at least because it interfaces with both the wireless LAN and

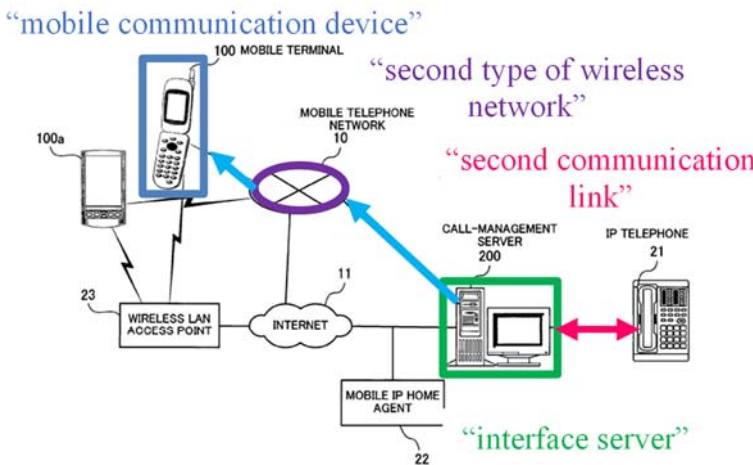
	mobile telephone network (<i>see</i> [45.pre]). Iizuka, [0057]-[0058]. Lanning, ¶¶180-182. Iizuka discloses that after the context of the first communication link is no longer preferred, establishing a second communication link between the interface server and the end destination device without disrupting the first communication link. For example, after being dialed, the switching processing unit 212 in call-management server 200 establishes a voice call through the mobile telephone network 10 to IP telephone 21. Iizuka, [0160]-[0162], [0170]-[0175]. This voice call is established while the VoIP call “still continues.” Iizuka, [0162]. Lanning, ¶183. 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. Iizuka, [0175]. The subsequent step redirecting this link to the mobile terminal is discussed below in [45.c]. Lanning ¶184. Iizuka further discloses detecting when the second network is available before notifying call-management server 200. The mobile terminal determines “whether or not communication can be realized through each [network],” based on the detected “intensity of a radio wave.” Iizuka, [0107]; <i>see also</i> Iizuka, [0104]. A communication can be realized only when “the conditions of communication” “guarantee a predetermined call quality level through” that network. Iizuka, [0107]. Thus, a POSITA would have understood (or at minimum found it obvious) that 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 (mobile network is available). Lanning ¶185.
--	---

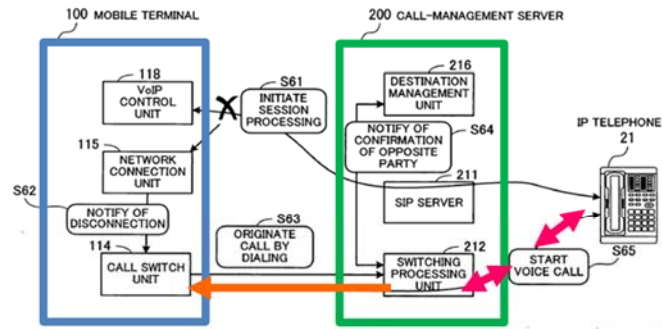
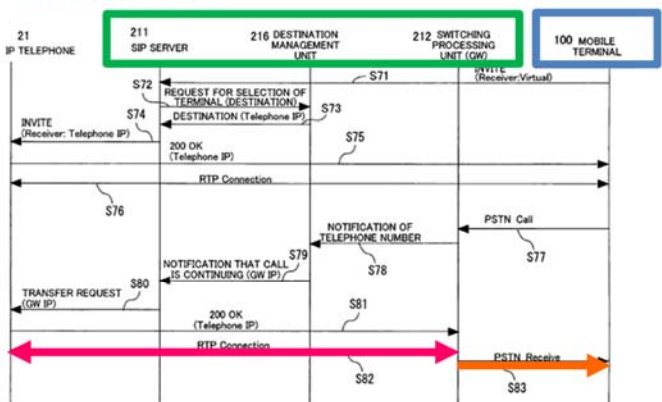
'281 Claim	Iizuka in view of Chaskar and Willhoff
	- Fig. 13:  - Fig. 14:  - Fig. 5:

'281 Claim	Iizuka in view of Chaskar and Willhoff
	“interface server”  FIG. 5 • [0159]: “[Step S62] Thereafter, <i>when communication through the wireless LAN becomes impossible (for example, 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.</i>” • [0160]: “[Step S63] <i>The call switch unit 114 originates a call to the switching processing unit 212 in the call-management server 200 by dialing.</i>” • [0175]: “[Step S82] <i>A connection for originated call is established between the IP telephone 21 and the switching processing unit 212.</i>” • [0146]: “[Step S56] The mobile terminal 100...detects the condition of the radio wave in

'281 Claim	Iizuka in view of Chaskar and Willhoff
	the wireless LAN....[by]...detect[ing] that <i>the condition of the radio wave is not sufficiently good to perform communication (i.e., connection through the wireless LAN is impossible)....</i> • [0057]: “.....<i>An IP telephone 21 is connected through a call-management server 200 to the mobile telephone network 10 and the Internet 11...</i>” • [0058]: “<i>The call-management server 200 is connected to the mobile telephone network 10 and the Internet 11</i> performs medium conversion between the telephone line and the VoIP,...transfers call data[,]...[and] establishes and switches connections between the IP telephone 21 and the mobile terminals 100 and 100a.” • [0084]: “The communication interface 206 is connected to the mobile telephone network 10, and exchanges data with the mobile terminals 100 and 100a through the mobile telephone network 10.” • [0085]: “The communication interface 207 is connected to the Internet 11, and exchanges data with the mobile terminals 100 and 100a through the Internet 11.” • [0069]: “...<i>The mobile terminal 100 comprises...a call switch unit 114....</i>” • [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 a connection through the wireless telephone network.”

'281 Claim	Iizuka in view of Chaskar and Willhoff
	• [0107]: “<i>The network connection unit 115 can determine whether or not communication can be realized through each communication medium (i.e., whether or not to be able to secure a condition of communication which can guarantee a predetermined call quality level through each communication medium)</i>, based on information on the intensity of a radio wave transmitted through the communication medium from the opposite party....” • [0104]: “[Step S12] The call switch unit 114 acquires from the network connection unit 115 <i>information on a communication medium which is currently usable.</i>” • See also [0105]-[0106]; [0170]-[0174].
[45.c] re-directing the second communication link from the interface server to a mobile communication device, thereby establishing the second communication link between the communication device and a second network,	Iizuka discloses re-directing the second communication link (e.g., voice call over the RTP connection; see [45.b]) from the interface server (e.g., from “call-management server 200”) to a mobile communication device (e.g., to “mobile terminal 100” by providing a response), thereby establishing the second communication link between the communication device and a second network (e.g., providing the response “establishes a connection” to mobile terminal 100 “through the mobile telephone network 10”). <u>E.g., Iizuka:</u> 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 [45.b]), call-management server 200’s switching processing unit 212 returns a

'281 Claim	Iizuka in view of Chaskar and Willhoff
	response to mobile terminal 100, which “establishes a connection through the mobile telephone network 10” between call-management server 200 and mobile terminal 100. Iizuka, [0176]; <i>see also</i> Iizuka, [0162]. This response, (labeled “PSTN Receive” in Fig. 14 step S83) establishes the second communication link between call-management server 200 and mobile terminal 100. Iizuka, Fig. 14, [0176]; <i>see also</i> Iizuka, [0162]. As illustrated in Figure 2, the “PSTN receive” process passes through mobile telephone network 10, such that a wireless connection for this communication link is established between mobile terminal 100 and mobile telephone network 10. Thereafter, a voice call between IP telephone 21 and mobile terminal 100 through mobile telephone network 100 becomes possible. Iizuka, [0176]; <i>see also</i> Iizuka, [0162]. Lanning, ¶¶186-188. - Fig. 2:  FIG. 2 - Fig. 13:

'281 Claim	Iizuka in view of Chaskar and Willhoff
	“mobile communication device” “interface server”  FIG. 13 “second communication link” “re-directing the second communication link from the interface server to the mobile communication device” - Fig. 14:  FIG. 14 “second communication link” “re-directing the second communication link from the interface server to the mobile communication device” [0160]: “[Step S63] The call switch unit 114 originates a call to the switching processing unit 212 in the call-management server 200 by dialing.”

'281 Claim	Iizuka in view of Chaskar and Willhoff
	• [0176]: “[Step S83] The switching processing unit 212 returns to the mobile terminal 100a 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 which has already been established still continues....”
[45.d] wherein upon activation of a timer, a switching system causes a second communication module to change state from a sleep mode to an active mode, wherein the timer is activated to establish a time window of a predefined size,	Iizuka discloses a switching system (e.g., “call switch unit 114” of “mobile terminal 100”) causes a second communication module (e.g., “wireless-telephone communication unit 112”) to change state from a sleep mode (e.g., “wireless-telephone communication unit 112” is turned off) to an active mode (e.g., the receiving circuitry of “wireless-telephone communication unit 112” is “activate[d]” so that “medium monitor unit 117” monitors the strength of “the mobile telephone network 10”). <u>E.g., Iizuka:</u> See [45.pre]-[45.c]. Iizuka further discloses its mobile terminal includes “a call switch unit 114” for switching between a WLAN and wireless telephone network.” [0073]; <i>see also</i> [0015], [0212]. Lanning, ¶¶189-192. Iizuka discloses call switch unit 114 requests information from “medium monitor unit 117,” which “monitors the condition[] of the...wireless-telephone communication unit 112,” and provides “information indicating the intensity of a radio wave which the wireless-telephone communication unit 112 can receive from a base station of the mobile telephone network 10.” [0078], [0105]. A POSITA would have understood, or at least found it obvious, that before the wireless-telephone

'281 Claim	Iizuka in view of Chaskar and Willhoff
	communication unit 112 is activated ([0114]), it would be in a sleep mode—to advantageously conserve energy. Lanning, ¶193 (citing Dorenbosch, [0006]). • [0073]: “Further, the <i>call switch unit 114 switches calls between the wireless LAN and the wireless telephone network...</i>” • [0015]: “The mobile terminal comprises...a call switch unit....” • [0105]: “...[C]all switch unit 114 outputs to the network connection unit 115 a request for information on a communication medium which is currently usable. Then, the network connection unit 115 receives from the medium monitor unit 117 information indicating the conditions of communication at... wireless-telephone communication unit 112. For example, the medium monitor unit 117 passes to the network connection unit 115...<i>information indicating the intensity of a radio wave which the wireless-telephone communication unit 112 can receive from a base station of the mobile telephone network 10.</i>” • [0212]: “... [W]hen the condition of communication through a wireless LAN deteriorates and deviates from a predetermined criterion during a call through the wireless LAN, the call is switched from a connection through the wireless LAN to a connection through a wireless telephone network.....” • [0114]: “Specifically, the <i>call switch unit 114 outputs to the network connection unit 115 a request for a connection through the wireless telephone network. Then, the network</i>

'281 Claim	Iizuka in view of Chaskar and Willhoff
	<i>connection unit 115 activates the wireless-telephone communication unit 112.</i> • [0078]: “<i>The medium monitor unit 117 monitors the conditions of the network mediums.</i> That is, the <i>medium monitor unit 117 monitors</i> the conditions of the wireless-LAN communication unit 111 and <i>the wireless-telephone communication unit 112....</i>” • See also [0074], [0113]. Chaskar discloses establishing a time window of a predefined size (e.g., “signal strength averaging window[]” having a “width[]”). <u>E.g., Chaskar:</u> See [23.g] (§IX.A.8). Lanning, ¶¶194-195. As explained in §IX.B.2, a POSITA would have been motivated to apply Chaskar’s time window teachings to Iizuka’s system. Lanning, ¶196. Willhoff discloses activating a timer (e.g., starting timer measuring “window of time”), wherein the timer is activated to establish a time window of a predefined size (e.g., “window of time” of a “width”). <u>E.g., Willhoff:</u> See [23.g] (§IX.A.8). Lanning, ¶¶197-198. As explained in §IX.B.3, A POSITA would have been motivated to apply Willhoff’s teaching of using a timer to compute signal strength in implementing Iizuka’s mobile terminal (as modified by Chaskar). Lanning, ¶199. In implementing Willhoff’s time window teachings in Iizuka’s system (as modified by Chaskar), a POSITA would have understood or at least found it obvious that

'281 Claim	Iizuka in view of Chaskar and Willhoff
	the signal strength measurement (and thus the transition from a sleep state to an active state) would be upon activation of the timer for measuring the signal strength, to advantageously wake up the transceiver hardware only when needed to reduce power consumption. Lanning, ¶200.
[45.e] wherein if a Wi-Fi signal monitor detects that a Wi-Fi signal level is below a second predefined threshold value V_{th2}, the timer is activated to establish a second time window of a second predefined size $T2$,	Chaskar discloses wherein if a Wi-Fi signal monitor (e.g., monitor for detecting “802.11” “WLAN signal strength”) detects that a Wi-Fi signal level is below a second predefined threshold value V_{th2} (e.g., “WLAN signal strength...has fallen below $Th2$”), establishing a second time window of a second predefined size $T2$ (e.g., “signal strength averaging window[]” having a “width[]” to determine if “the signal strength has fallen below $Th3$”). <u>E.g., Chaskar:</u> See [23.h] (IX.A.8), [45.d]. Lanning, ¶¶201-204. As explained in §IX.B.2, a POSITA would have been motivated to apply Chaskar’s signal strength averaging windows teachings to Iizuka’s system. Lanning, ¶205. Willhoff discloses the timer is activated to establish a second time window of a second predefined size $T2$ (e.g., starting timer measuring “window of time” of a “width”). <u>E.g., Willhoff:</u> See [45.d], [23.h] (§IX.A.8). Lanning, ¶¶206-208. As explained in §IX.B.3, a POSITA would have been motivated to apply Willhoff’s teaching of using a timer to compute signal strength in implementing Iizuka’s (as modified by Chaskar) mobile device. Lanning, ¶209. Moreover, to the extent that the claimed “second time window of a second predefined size $T2$” must be

'281 Claim	Iizuka in view of Chaskar and Willhoff
	different than “a time window of a predefined size,” as explained in §IX.B.3, a POSITA would have been motivated to apply Willhoff’s teachings of using time windows of different sizes for different thresholds to Iizuka’s mobile terminal (as modified by Chaskar). Lanning, ¶210.
[45.f] wherein a third predefined threshold value Vth3 is smaller than Vth2.	Chaskar discloses a third predefined threshold value Vth3 (e.g., “Th3”) is smaller than Vth2 (e.g., “Th2”). <u>E.g., Chaskar:</u> See [23.i] (§IX.A.8). Lanning, ¶¶211-213. As explained in §IX.B.2, a POSITA would have been motivated to apply Chaskar’s teachings of using multiple thresholds to Iizuka’s system. Lanning, ¶214.

C. Grounds 3-4: Grounds 1-2 in further view of Donovan

To the extent further disclosure of a “sleep mode” is required, **Donovan** discloses a “sleep mode” (also referred to as a “low power mode”). **Donovan** discloses a mobile station connected to a wireless LAN, including a “**wireless network communications device 48**” (communication module) that transitions between a “sleep” (or “low power”) and an “active” mode. Donovan, [0042], [0057]. Lanning ¶215.

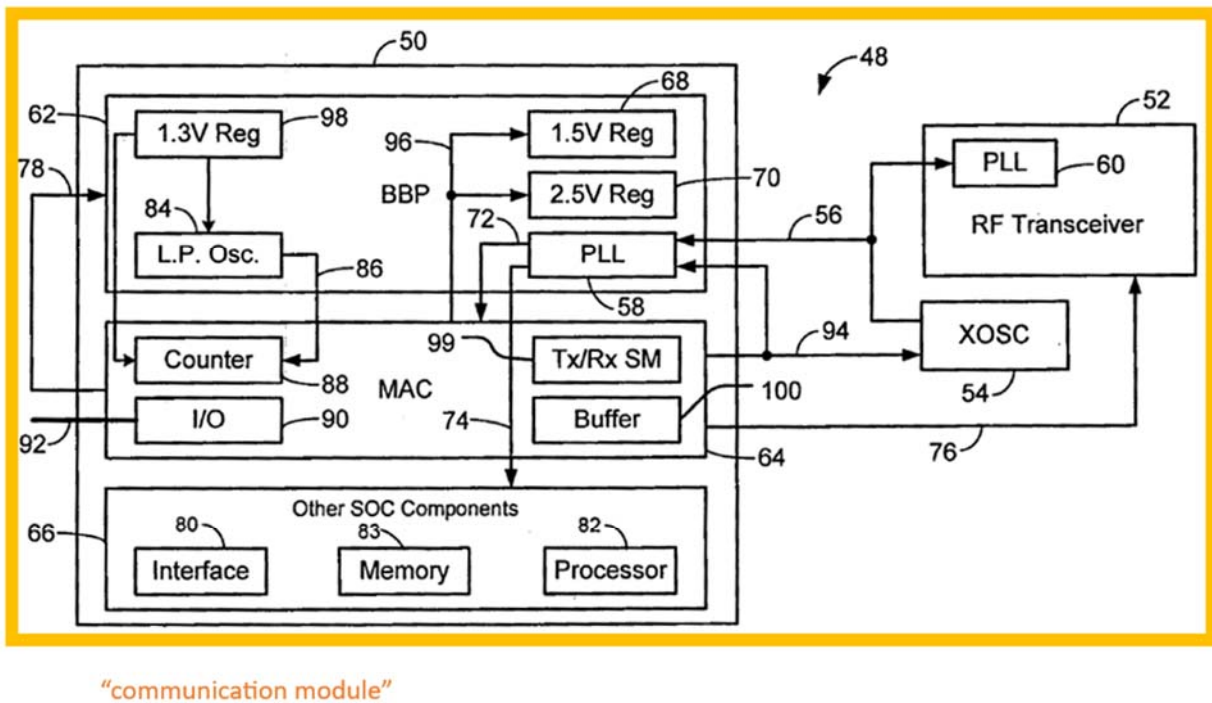
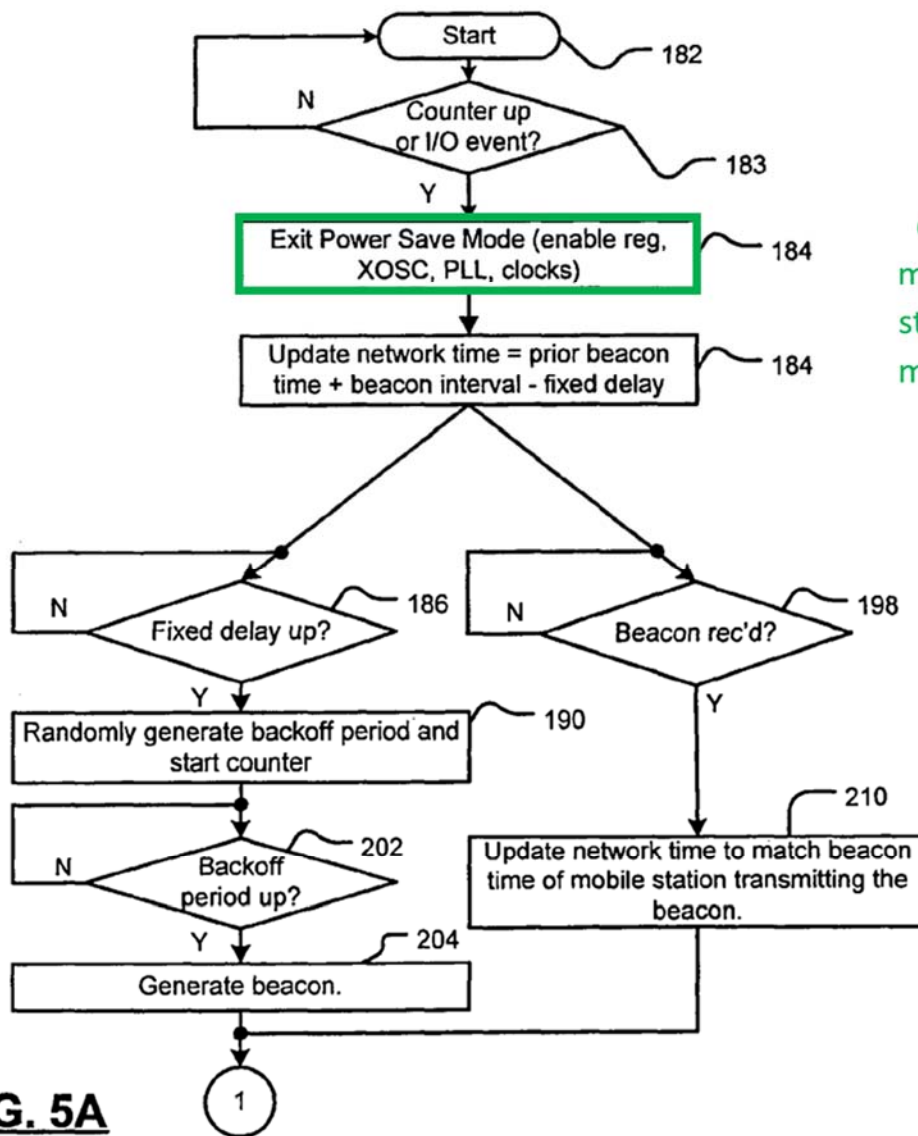


FIG. 2

Donovan, Fig. 2.

In “active mode,” “the wireless network communications device 48 processes incoming and outgoing data.” Donovan, [0042]. In “sleep mode,” **Donovan’s** RF transceiver “remains deactivated...and does not transmit or receive RF signals,” but “may utilize a small amount of power to ensure a quick transition from the low power mode to the active mode.” Donovan, [0045]. If “a mobile station requires the wireless network communications device 48 to return to the active mode, the mobile station triggers an I/O input 92,” and “**the remaining circuitry is enabled in step 184.**” Donovan, [0050], [0057]; Fig. 5A. After entering active mode, wireless communications device 48 transmits and receives signals. Donovan, [0058].

Lanning ¶216.



“the second communication module to change state from a sleep mode to an active mode”

Like **Enzmann, Dorenbosch, Chaskar, Willhoff, and Iizuka, Donovan** is analogous art, in the same field as the '281—which includes wireless communications—and reasonably pertinent to alleged problems addressed by the '281 of connecting to wireless communication networks. *See e.g.*, '281, Abstract;

Donovan, [0042]-[0043]. Lanning, ¶217.

A POSITA would have been motivated to apply **Donovan's** teachings of a communication module changing state from a low power sleep to an active mode in implementing **Enzmann's** device (as modified by **Dorenbosch**, **Chaskar**, and **Willhoff**) to allow the device to reduce power consumption and allow faster wake-up time than if the communication module were shut off. Dorenbosch, [0006]; Donovan, [0045]. Lanning, ¶218. Further, a POSITA would have found it straightforward to apply these teachings to **Enzmann's** device as modified by **Dorenbosch** because **Dorenbosch** teaches turning off its WAN or WLAN communication module when communicating over the other module, and how that impacts the switching operation. Dorenbosch, [0038]. *See* §IX.A.2. Lanning, ¶218.

A POSITA would have similarly been motivated to apply **Donovan's** teachings of a communication module changing state from a low power state to an active mode in implementing **Iizuka's** device (as modified by **Chaskar** and **Willhoff**) to allow the device to reduce power consumption and allow faster wake-up time than if the communication module were shut off. Donovan, [00045]. Lanning, ¶219 (citing Dorenbosch, [0006]). Further, a POSITA would have found it straightforward to apply these teachings to **Iizuka's** device (as modified by **Chaskar** and **Willhoff**) because **Iizuka** teaches turning off its wireless-LAN communication or wireless-telephone communication unit when communicating over the other unit,

and how that impacts the switching operation. *See* Iizuka, [0114]. *See* §IX.B.1. Lanning, ¶219.

Accordingly, a POSITA would have had a reasonable expectation of success in applying **Donovan's** teachings of a sleep mode and active mode to **Enzmann's** device (as modified by **Dorenbosch**, **Chaskar** and **Willhoff**), and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶220.

Moreover, a POSITA would have had a reasonable expectation of success in applying **Donovan's** teachings of a sleep mode and active mode to **Iizuka's** system (as modified by **Chaskar**), and would have known such a combination (yielding the claimed limitations) would predictably work and provide the expected functionality. Lanning, ¶221.

X. SECONDARY CONSIDERATIONS

The Challenged Claims of the '281 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.1015, 36-47; Ex.1016, 11-12), those allegations are unavailing at least 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, providing no explanation as to any nexus to any particular claim of the four patents, let alone the '281 claims. Lanning ¶¶222-231.

To the extent these general arguments can be understood as being particular to the '281, PO's conclusory allegations additionally fail for the reasons set forth below.

Commercial success: PO provides no evidence of commercial success. While PO asserts that such success “will be shown” based on Samsung's own products (Ex.1015 at 37), the success of Samsung's own products has no nexus to the Claims at least because Samsung does not infringe and because the accused phone and tablet products include many unrelated features that drive their success.

Long-felt need: PO cites portions of U.S. Patent No. 8,886,181's specification as purported evidence of long-felt need, but such explanations are conclusory and self-serving, and regardless do not show any alleged need was “long-felt.” Ex.1015, 38-39.

Industry recognition: PO cites an award that Samsung received for Wi-Fi Innovation, but PO has not shown the requisite nexus between that award and the Claims. *Id.*, 39. PO also argues that praise and recognition is shown by Vasu patents being cited during prosecution of other patents, but PO does not explain how mere citation during prosecution is praise or recognition, and PO has not shown that any

such citation would have the requisite nexus to the Claims. *Id.*, 40-47.

Skepticism in the industry: PO argues that unidentified contemporaneous publications acknowledged the difficulty of developing the claimed invention, but PO does explain how purported challenges show “skepticism” and also does not even attempt to explain the requisite nexus the Claims. *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 that Samsung was aware of the ’281 specifically, as opposed to other Vasu patents and application, and does not allege knowledge of the ’281 before Samsung developed its products. Ex.1015, 37, 47-53; Ex.1014, 21-26, 76-77; Ex.1016, 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, ¶¶60-236. There is a reasonable likelihood Petitioners will prevail as to each of these Claims. IPR of Claims 23 and 45 of the ’281 is accordingly requested.

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

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 13,981 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 '281 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