IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION AND AFFIRMED NETWORKS, INC.,

Petitioners,

v.

LEMKO CORPORATION
Patent Owner.

Case No. IPR2023-00531
U.S. Patent No. 7,855,988

DECLARATION OF JAMES PROCTOR IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 7,855,988

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c. Limitation 1[c]: "storing the communications information in a home DMA register of the first DMA gateway;" 39
d. Limitation 1[d]: "receiving a communication at the first DMA gateway for a target device indicated by the

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communications information to be served by the second DMA gateway; and” 41
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TABLE OF ABBREVIATIONS AND CONVENTIONS

Petitioners	MICROSOFT CORPORATION AND AFFIRMED NETWORKS, INC.
Patent Owner	LEMKO CORPORATION
'988 Patent	U.S. Patent No. 7,855,988 (the patent being challenged herein)
Challenged Claims	Claims 1, 3-9, and 20
POSA	Person of Ordinary Skill in the Art

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PETITIONER'S EXHIBIT LIST

Ex. No.	Brief Description
1001	U.S. Patent No. 7,855,988
1002	U.S. Patent No. 7,855,988 File History
1003	RESERVED
1004	*Curriculum Vitae* of Mr. James Proctor
1005	U.S. Patent Application Publication 2007/0021120 ("Flore")
1006	3GPP TS 23.002 v7.1.0, "Network architecture," March 2006.
1007	RESERVED
1008	RESERVED
1009	RESERVED
1010	RESERVED

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I. Introduction And Qualifications

1. My name is James A. Proctor, Jr. At the request of Microsoft, I have been asked to analyze and offer my opinion regarding the validity of Claims 1, 3-9, and 20 of U.S. Patent No. 7,855,988 ("the '988 Patent").

2. For purposes of this declaration, I will provide my detailed analysis and opinions regarding validity below.

3. Prior to that, I summarize some of my relevant educational background, work experience, and other relevant qualifications. A more detailed recitation of my professional qualifications and background is reflected in my Curriculum Vitae ("CV"), attached hereto as Exhibit 1004.

4. I have worked as an engineer and entrepreneur in the field of wireless communications for over 25 years and have been involved with various aspects of wireless communications for the duration of my career.

5. I matriculated from the University of Florida with my Bachelor of Science in Electrical Engineering in 1991 and from Georgia Institute of Technology with my Master of Science in Electrical Engineering in 1992. My Master's studies focused on digital signal processing.

6. From 1986 to 1991, while at the University of Florida, I interned with Harris Corporation in various roles including mechanical design, software development, and digital design. From 1991 to 1992, while at Georgia Institute of

Technology, I worked at the Georgia Tech Research Institute as a graduate research assistant, performing software development on classified government programs.

7. From 1993 to 1995, while working for Harris Corporation, I designed various cellular communications systems for voice, data, and tracking/location. Many of these systems used advanced communications technologies, such as those codified in the then-developing and future telecommunication standards, such as Interim Standard 95 ("IS-95"), wideband code-division multiple access ("W-CDMA"), and aspects of the 3rd Generation Partnership Project's ("3GPP's") long-term evolution ("LTE").

8. From 1995 to 1998, I worked at Spectrian Corporation ("Spectrian") in advanced development and technical marketing. At Spectrian, I interfaced with Nortel Networks Corporation and Qualcomm Technologies, Inc. ("Qualcomm") and performed advanced technology development and systems analysis. In this role, I designed IS-95 CDMA and Global System for Mobile communication ("GSM") base station power amplifiers and control electronics, and received several patents associated with advanced linearization techniques for the reduction of transmitted intermodulation distortion within multicarrier and single carrier amplifiers and transceivers. My work and patents encompassed both analog (radio frequency ("RF")) and digital linearization approaches.

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9. From 1998 to 2002, I served as the Director of Strategic and Technical Marketing at Tantivy Communications ("Tantivy"), a venture capital-funded 3G cellular data and chipset company. At Tantivy, I helped to architect and standardize the Internet-CDMA ("I-CDMA") Spread Spectrum Systems Air Interface Standard (T1P1.4). I also developed both wireless access terminals and base stations that complied with the standard. The base stations utilized various Internet Protocol ("IP") protocols and interfaced with the wireline network utilizing IP over Ethernet. Additionally, I participated in and provided technical contributions to 3GPP/3GPP2 standardization efforts related to the development of CDMA2000 and 1xEV-DO technical specifications. This work resulted in me contributing as a named inventor to more than 150 pending or issued U.S. patents and applications.

10. From 2002 to 2007, as co-founder of WiDeFi, Inc. ("WiDeFi"), I served in various roles including President, CEO, CTO, and board member. As the CEO, my responsibilities included advanced development of platform technologies. I was a named inventor of wireless technology components, including a frequency translating time division duplex ("TDD") repeater, frequency repeater architecture for frequency division duplex ("FDD") and TDD based systems, and physical layer multi-stream multiple-input and multiple-output ("MIMO") repeater technology. WiDeFi invented and provided wireless home

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networking products based on Wi-Fi and cellular technologies. While at WiDeFi, I was a named inventor on over 25 issued U.S. patents or patent applications.

11. From 2007 to 2009, I consulted as a principal engineer for Qualcomm as part of Qualcomm's acquisition of WiDeFi's technology. While at Qualcomm, I worked with its corporate Research and Development division and developed consumer 3G and 4G cellular coverage enhancement systems utilizing WiDeFi's baseband interference cancellation technologies. My responsibilities included working with international cellular operators on product requirements, detailed W-CDMA simulations, LTE systems analysis, and participation in prototype product realization. I am currently a named inventor on roughly 45 issued United States patents or patent applications assigned to Qualcomm.

12. From 2010 to the present, I have served as managing director and co-founder of Proxicom Wireless, LLC ("Proxicom"), which has developed and continues to develop cloud-based, mobile social networking and mobile payments technology based upon the proximity and location of mobile devices. Proxicom currently holds fifteen issued U.S. patents and multiple pending patent applications, and I am a named inventor on each of those patents and patent applications. The significant aspects of Proxicom's technology include a mobile device's use of short-range wireless technologies (*e.g.*, 802.11, near field communications, and Bluetooth®) in combination with cellular data links

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(3G/WCDMA or 4G/LTE, for example) to facilitate frictionless interactions via a wireless networked central cloud server.

13. I have also served as the principal of Proctor Consulting, LLC since 2007. In this role, I have been a consultant on issues relating to wired, wireless, and cellular communications and technologies, start-up companies, and intellectual property. I have also been involved with numerous patent infringement, patent validity, and patent analysis assignments for public and private companies in the wired, wireless, and cellular networking industries.

14. Additionally, I have worked and consulted for both cellular infrastructure and device focused companies (*e.g.*, Spectrian, Qualcomm, Fastback Networks), and defense contractors (*e.g.*, Harris Corporation), where I developed covert-tracking and location technologies involving CDMA and smart-antenna technologies.

15. In several of the above-detailed roles, I have been responsible for the development of business plans, product development plans, product development budgets, and product bill of materials estimations. I have been responsible for numerous product development teams, including schedules and costs for the development process at various stages of my career. For example, at Tantivy, I ran a joint development of I-CDMA cellular base stations in Seoul, South Korea that were used in a field trial in that country. Additionally, as co-founder and CEO of

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WiDeFi, I was responsible for similar such activities, as well as raising venture capital funding and reporting to the board of directors.

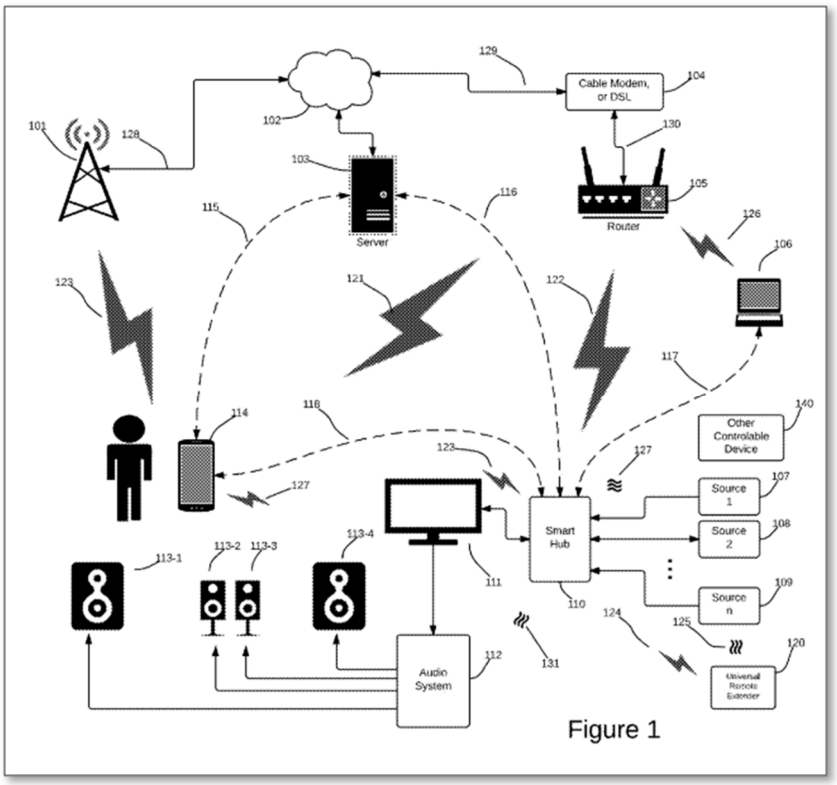
16. I am currently a named inventor on more than 320 issued U.S. patents and more than 700 international patent publications. A substantial portion of my work has been focused on wireless communication systems and products. A number of these patents and patent applications are related to the subject matter of the patents asserted in this matter, specifically methods for initiating calls in a wireless telecommunications system. The following patents, for which I am a named inventor, provide a few examples of some of my experience relevant to the subject matter of this declaration:

U.S. Pat. No.	Title	Priority Date
6,542,481	Dynamic Bandwidth Allocation for Multiple Access Communication Using Session Queues	1998-06-01
8,908,654	Dynamic Bandwidth Allocation for Multiple Access Communications Using Buffer Urgency Factor	1998-06-01
9,306,658	Method and Apparatus for a Spectrally Compliant Cellular Communication System	1999-12-20
8,321,542	Wireless Channel Allocation in a Base Station Processor	2000-05-05
6,937,562	Application Specific Traffic Optimization in a Wireless Link	2001-02-05
6,941,152	Wireless Subscriber Network Registration System for Configurable Services	2001-04-24
6,888,807	Applying Session Services Based on Packet Flows	2002-06-10
9,554,061	Smart Hub	2006-12-15

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8,370,955	Enforcing Policies in Wireless Communication Using Exchanged Identities	2008-09-08
9,020,621	Network Based Media Enhancement Function Based on an Identifier	2009-11-18

17. For instance, I am a named inventor of U.S. Patent No. 9,554,061 ("the '061 patent") entitled "Smart Hub." There, I developed an intelligent hub for interfacing with other devices and performing smart audio or video source selection. The United States Patent and Trademark Office ("USPTO") awarded me a patent on my claimed invention on January 24, 2017. Figure 1 from this patent is pictured below:



U.S. Patent 9,554,061 ("Smart Hub") at Figure 1.

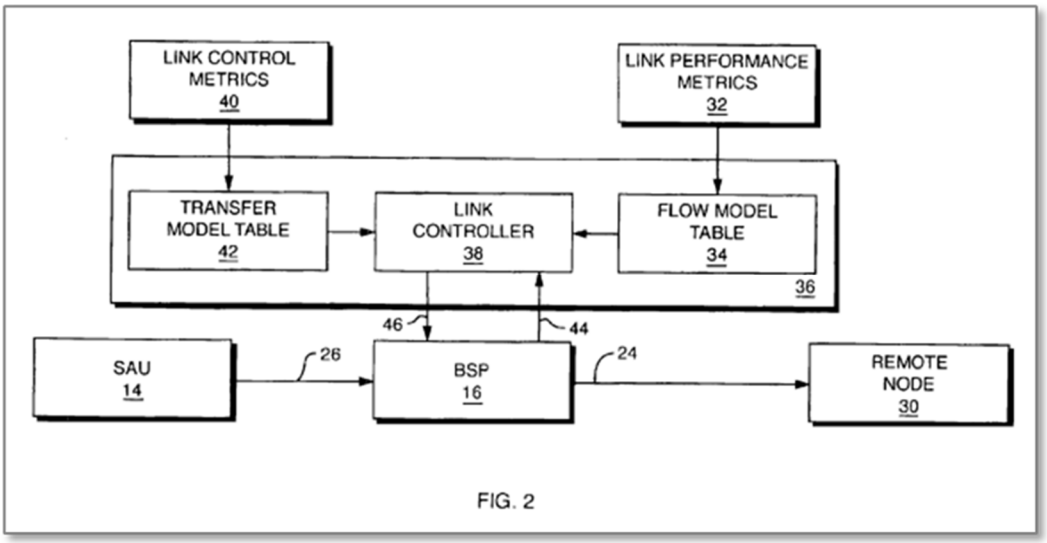
18. The claimed invention uses wired and/or wireless physical communication links, such as wired Institute of Electrical and Electronic Engineers

("IEEE") 803.2 Local Area Network ("LAN") connections, IEEE 802.11 Wi-Fi connections, Bluetooth® connections, Wi-Fi Direct®, intermediary network nodes, cellular mobile communications via a base station, wireless and wired routers, Near Field Communications ("NFC"), Ultra-wideband ("UWB"), and the like. The '061 patent further discloses Voice over Internet Protocol ("VoIP") and Session Initiation Protocol ("SIP") processing, including a user agent in an approach compatible with the 3GPP cellular standards, including IP Multimedia Subsystem ("IMS") services.

19. By way of further example, I am a named inventor of U.S. Patent No. 6,937,562 ("the '562 patent") entitled "Application Specific Traffic Optimization in a Wireless Link." This patent is directed to a data packet system for use in a network, such as a Transmission Control Protocol ("TCP")/IP network, for transmitting a variety of data types along links in the network. The packets are transmitted in a stream between nodes and interconnected by the links, which conform to transport layer protocols and include wireless links. I filed the patent application that issued as the '562 patent on February 5, 2001, and the USPTO issued the patent on August 30, 2005. The '562 patent is one of many examples demonstrating that I was at least a person of ordinary skill in the art ("POSA") well before the earliest possible priority date of the asserted patents.

20. Figure 2 from the '562 patent is pictured below:

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U.S. Patent 6,937,562 ("Application Specific Traffic Optimization in a Wireless Link") at Figure 2.

21. I included Figure 2 here because it depicts a block diagram of my claimed invention as shown in a telecommunication system, the conventional components of which were well known to me and any other POSA long before the earliest claimed priority date. For example, here, base station processor ("BSP") 16 maintains a database table of link performance metrics 32 and link control metrics 40 and communicates directly with link controller 38.

22. And finally, for purposes of my discussion here, I am a named inventor of U.S. Patent No. 9,020,621 ("the '621 patent") entitled "Network Based Media Enhancement Function Based on an Identifier." I filed the earliest provisional application to which that patent claims priority on September 18, 2009, and the USPTO issued this patent on April 28, 2015. This was directed to a network-based processing element for processing audio information to improve the

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understanding of speech or music for intended listeners based on an identifier. Relevant to this Report, my device was intended for use in a wireless communications-based system utilizing both a cellular communications network and an IP network as shown in Figure 2 below:

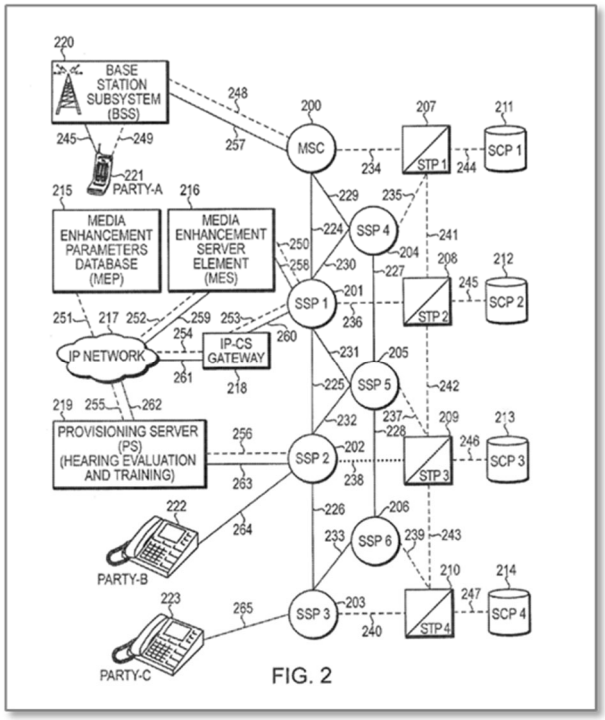


FIG. 2

U.S. Patent 9,020,621 ("Network Based Media Enhancement Function Based on an Identifier") at Figure 2.

23. The claimed invention in this patent was directed to calls made to a telephony network or a VoIP network where voice or a voice and video call is transacted. In addition to the inventive features of my patent, the patent specification also walks through some well-known architectures and methods for routing calls, including VoIP calls. Figure 2 above depicts the integration of the media enhancement architecture with legacy circuit switch telephony networks.

Figure 3 below depicts the integration of the media enhancement architecture with the 3GPP Internet Media Subsystem (IMS) packet-based telephony system, which supported Voice over LTE ("VoLTE") telephony services.

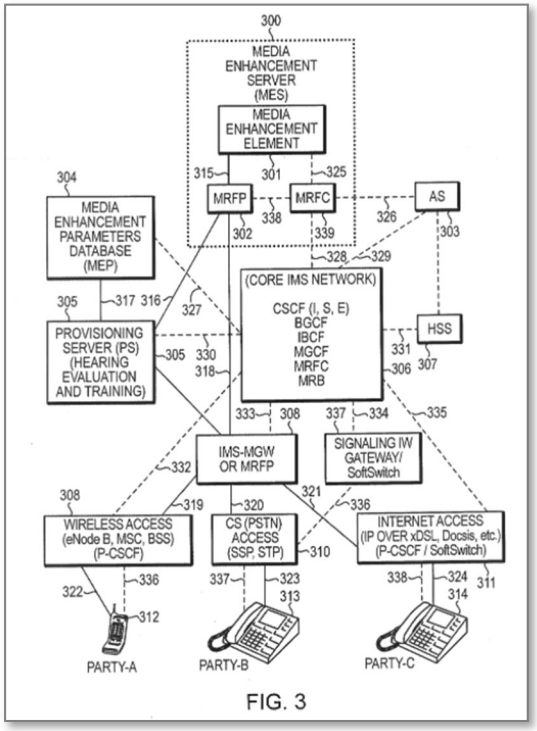


FIG. 3

Id. at Figure 3.

24. My CV, which includes a more detailed summary of my background and experience, as well as a complete list of my publications and a list of previous engagements in patents, is included as Exhibit 1004.

II. Understanding of the Governing Law

A. Legal Standard for Prior Art

25. I understand that a patent or other publication must first qualify as prior art before it can be used to invalidate a patent claim.

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26. I am informed by counsel that the applicable law in this case for prior art is 35 U.S.C. § 102 as written before the America Invents Act.

27. I am informed that the patent owner Lemko Corporation ("Lemko") contends that the '988 patent claims priority to July 14, 2008.

28. I understand that the "priority date" of a patent is the date on which it is filed, or the date on which an earlier-filed patent application is filed if the patentee claims it is entitled to the benefit of priority to that earlier-filed patent application. To be entitled to that benefit, I further understand that the earlier filed application must support the claimed subject matter in the manner required by 35 U.S.C. § 112. I understand that this section requires the patent's specification to contain a sufficient written description of the claimed invention to demonstrate that the applicant actually possessed the invention as of the filing date as broadly as it is claimed. In considering whether this written description requirement is met, I understand that I should consider the written description from the viewpoint of a person of ordinary skill in the art. I also understand that I should consider whether this person of ordinary skill would have recognized that the written description describes the full scope of the claimed invention and that the inventor actually possessed that full scope as of the claimed effective filing date. I understand that a person of ordinary skill would be able to immediately discern the limitations of the claims from the priority specification. I understand that a priority specification

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may provide inherent support if explicit support is missing. I understand that a person of ordinary skill would have understood an element to be inherent if the priority specification requires that element, but inherency cannot be established by probabilities or possibilities. I understand that a subgenus is not necessarily implicitly described by a genus or species unless the specification directs the person of ordinary skill to the claimed subgenus. I also understand that law for priority is not the same as the obviousness analysis under 35 U.S.C. § 103.

29. I further understand that the priority date is significant because patents, systems, or documents that are public prior to the priority date may invalidate the claims.

30. I understand that a U.S. patent may qualify as prior art to an asserted patent if the date of publication or issuance is prior to the invention in the asserted patent. I further understand that a printed publication, such as a book or an article published in a magazine or trade publication, may qualify as prior art to an asserted patent if the date of publication is prior to the invention of the asserted patent. A paper or presentation may also qualify as prior art if presented at a publicly available seminar, conference, or trade show prior to the invention in the asserted patent.

31. I understand that a U.S. patent or published patent application may qualify as prior art to the asserted patent if the application for that U.S. patent or

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published patent application was filed in the United States before the invention of the asserted patent.

32. I understand that to qualify as prior art, a reference must contain an enabling disclosure that allows one of ordinary skill to practice the claims without undue experimentation.

33. I understand that documents and materials that qualify as prior art can be used to invalidate a patent claim as anticipated or as obvious.

B. Invalidity by Anticipation

34. I understand that once the claims of a patent have been properly construed, determining anticipation of a patent claim requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

35. I understand that a prior art reference "anticipates" an asserted claim, and thus renders the claim invalid, if all elements of the claim are disclosed in that prior art reference, either explicitly or inherently (i.e., necessarily present or implied).

36. I have written this report with the understanding that in an *inter partes* review, anticipation must be shown by a preponderance of the evidence.

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C. Invalidity by Obviousness

37. I have been instructed by counsel on the law regarding obviousness, and understand that even if a patent is not anticipated, it is still invalid under 35 U.S.C. § 103, as written before the America Invents Act, if the differences between the claimed subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the pertinent art.

38. I understand that a person of ordinary skill in the art provides a reference point from which the prior art and claimed invention should be viewed. This reference point prevents a person of ordinary skill from using one's insight or hindsight in deciding whether a claim is obvious.

39. I also understand that an obviousness determination includes the consideration of various factors such as (1) the scope and content of the prior art, (2) the differences between the prior art and the challenged claims, (3) the level of ordinary skill in the pertinent art, and (4) the existence of secondary considerations such as commercial success, long-felt but unresolved needs, failure of others, etc.

40. I am informed that secondary considerations of non-obviousness may include (1) a long-felt but unmet need in the prior art that was satisfied by the invention of the patent, (2) commercial success or lack of commercial success of processes covered by the patent, (3) unexpected results achieved by the invention,

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(4) praise of the invention by others skilled in the art, (5) taking of licenses under the patent by others, and (6) deliberate copying of the invention. I also understand that there must be a relationship or "nexus" between any such secondary indicia and the invention. I further understand that contemporaneous and independent invention by others is a secondary consideration supporting an obviousness determination.

41. I understand that an obviousness evaluation can be based on a combination of multiple prior art references. I understand that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the link between two or more prior art references is simple common sense. I further understand that obviousness analysis recognizes that market demand, rather than scientific literature, can drive innovation, and that a motivation to combine references may be supplied by the direction of the marketplace.

42. I understand that if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

43. I also understand that practical and common-sense considerations should guide a proper obviousness analysis, because familiar items may have

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obvious uses beyond their primary purposes. I further understand that a person of ordinary skill in the art looking to overcome a problem will often be able to fit the teachings of multiple publications together like pieces of a puzzle, although the prior art need not be like two puzzle pieces that must fit perfectly together. I understand that obviousness analysis therefore considers the inferences and creative steps that a person of ordinary skill in the art would employ under the circumstances.

44. I understand that a particular combination may be proven obvious by showing that it was obvious to try the combination. For example, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp because the result is likely the product not of innovation but of ordinary skill and common sense.

45. I understand that the combination of familiar elements according to known methods may be proven obvious when it does no more than yield predictable results. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, obviousness likely bars its patentability.

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46. It is further my understanding that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee. Accordingly, I understand that any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed. Additionally, a reference outside of the field of endeavor may still be prior art if the reference is reasonably pertinent to the particular problem being solved by the patentee.

47. I understand that a claim can be obvious in light of a single reference, without the need to combine references, if the elements of the claim that are not found explicitly or inherently in the reference can be supplied by the common sense and knowledge of one of skill in the art.

48. I understand that a person of ordinary skill could have combined two pieces of prior art or substituted one prior art element for another if the substitution can be made with predictable results, even if the swapped-in element is different from the swapped-out element. In other words, the prior art need not be like two puzzle pieces that must fit together perfectly. The relevant question is whether prior art techniques are interoperable with respect to one another, such that a person of skill would view them as a design choice, or whether a person of skill could apply prior art techniques into a new combined system. The person of ordinary skill would use ordinary creativity and is not limited like an automaton.

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49. In sum, my understanding is that prior art teachings are properly combined where a person of ordinary skill in the art, having the understanding and knowledge reflected in the prior art and motivated by the general problem facing the inventor, would have been led to make the combination of elements recited in the claims. Under this analysis, the prior art references themselves, or any need or problem known in the field of endeavor at the time of the invention, can provide a reason for combining the elements of multiple prior art references in the claimed manner.

50. I have been informed and understand that the obviousness analysis requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

51. I have written this report with the understanding that in an *inter partes* review, obviousness must be shown by a preponderance of the evidence.

D. Interpreting Claims Before the Patent Office

52. I understand that IPR is a proceeding before the United States Patent & Trademark Office ("USPTO") for evaluating the validity of issued patent claims. I understand that, in an IPR, a claim term is interpreted in a manner consistent with the standard used in patent litigation. That standard generally construes the claims according to their "ordinary and customary" meaning in view

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of the claim language, specification, and file history, and where applicable, relevant other evidence.

53. I understand that a patent's "specification" includes all the figures, discussion, and claims within the patent. I understand that the USPTO will look to the specification and prosecution history to see if there is a definition for a given claim term, and if not, will apply the ordinary and customary meaning from the perspective of a POSA at the time in which the alleged invention was made.

E. Materials Relied on in Forming My Opinions

54. In forming my opinions expressed in this declaration, I have relied on my own knowledge, experience, and expertise, as well as the knowledge of a POSA in the relevant timeframe.

55. In addition, I have reviewed the Challenged Patent (Ex. 1001), its prosecution history (Ex. 1002), and the following references:

Ex. No.	Brief Description
1005	U.S. Patent Application Publication 2007/0021120 ("Flore")
1006	3GPP TS 23.002, "Network architecture," March 2006.

F. Level of Ordinary Skill in the Art

56. My opinions are provided based on what a person of ordinary skill in the art in the technical field of the purported invention would have understood at the time of the purported invention of the Challenged Patent. Around 2008, a

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POSA in the field of the '988 Patent's field would have had a bachelor's degree in electrical engineering, computer engineering or an equivalent, as well as two years of industry experience related to telecommunications networks. Such knowledge would encompass the design, architecture, and operations of mobile telecom networks, including gateways, servers, and user devices that were compliant with various standards, and how they interact with other components of a radio access network. Additional graduate education of a POSA could substitute for professional experience, or significant experience in the field could substitute for formal education. The basis for my familiarity with the level of ordinary skill is my interaction with large numbers of workers in the telecommunications and communications industry who were at this level of skill. As shown by my experience listed above and my CV (Ex. 1004), I was qualified as a POSA at the relevant time.

57. In reaching this opinion as to the hypothetical person of ordinary skill in the art, I have considered the types of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level and professional capabilities of workers in the field.

58. I have been informed and understand that the content of a patent and prior art should be interpreted the way a person of ordinary skill in the art would

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have interpreted those references at the time of the invention of the patent. I understand that the person of ordinary skill is a hypothetical concept referring to one who thinks along the lines of conventional wisdom at the time.

G. Identification of Challenge

59. Claims 1, 3-9, and 20 are unpatentable on the following ground:

Ground	Claims	Basis for Unpatentability
1	1, 3-9, and 20	Anticipated by US 2007/0021120 to Flore et al. ("Flore")

III. The '988 Patent

A. Overview of the Challenged '988 Patent

60. U.S. Pat. No. 7,855,988 entitled "System, Method, and Device for Routing Calls Using a Distributed Mobile Architecture" issued on December 21, 2010. Ex. 1001 at Cover. The '988 Patent resulted from Application No. 12/172,639, filed July 14, 2008. For the purposes of this Declaration, I assume that the Challenged Claims are entitled to a priority date no earlier than July 14, 2008.

61. The '988 patent relates to mobile telecommunication networks. For example, the Abstract of the '988 patent states that this patent is directed at "[m]ethods and devices for routing communications between distributed mobile architecture (DMA) servers using DMA gateways." Ex. 1001, Abstract. The '988 patent states "the last decade of the telecommunications boom has not alleviated the disparities between urban and rural communities," citing that "[t]he average

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imbalance, in terms of telephone penetration, in Asia, for example, is over ten to one and is often as high as twenty to one." Ex. 1001, 1:24-29.

62. The '988 patent continues that "[c]urrent telephone systems are expensive to deploy" and provides an example of a "typical cellular system that includes a mobile switching center (MSC), a base station controller (BSC) and a home location register/visitor location register (HLR/VLR) can cost over $2.0 million." *Id.*, 1:37:41.

63. Thus, to solve the problem of high deployment costs, the '988 patent purports to satisfy the "need for an improved communications system that is relatively inexpensive to deploy and relatively inexpensive to operate, as well as able to integrate different communications systems." *Id.*, 1:66-2:2. To that end, the '988 patent describes an apparatus called a distributed mobile architecture (DMA) server, such as, for example, a portable unit depicted in Figure 1 (reproduced below):

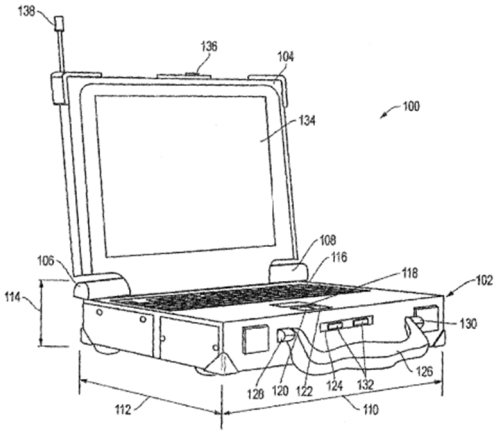


FIG. 1

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64. In describing the DMA server, the '988 patent states that "[it] is essentially shaped like a box or a briefcase" and that "it can be mounted in a vehicle or carried like a brief case." *Id*., 4:31-32, 5:23-24. The '988 patent states that "[i]n a particular embodiment, the DMA server 406 is essentially a processor, or computer, having a housing and a computer readable medium 500" embedding "a mobile switching center (MSC) module 506 and a base station controller (BSC) module 508" *Id*., 7:19-21, 7:32-35; *see* also Fig. 5.

65. Claim 1 is illustrative of the challenged claims, shown below:

[Claim] 1. A method, comprising:

receiving at a first distributed mobile architecture (DMA) gateway communications information for a communications network accessible by a second DMA gateway, the communications information indicating one or more devices accessible by one of a DMA server and a legacy communications network, wherein the first DMA gateway and the second DMA gateway participate in a DMA gateway communications network;

storing the communications information in a home DMA register of the first DMA gateway;

receiving a communication at the first DMA gateway for a target device indicated by the communications information to be served by the second DMA gateway; and

routing the communication from the first DMA gateway to the target device by relaying the communication from the first DMA gateway to the second DMA gateway via the DMA gateway communications network.

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66. The "DMA server enables the deployment or expansion of a communications network to… rural areas where remoteness of the area to be served or a relatively small customer base to be served make the installation of a conventional telephone system impractical or otherwise undesirable." '988 patent, 4:5-9. The DMA server "may include a mobile switching center (MSC) module 506 and a base station controller (BSC) module 508 embedded within [a] computer readable medium." *Id.,* 7:32-35.

67. The '988 patent describes enabling communications of wireless devices connected to different DMASes through a private IP network, and bridging communications between disparate private IP networks with a "Distributed Mobile Architecture Gateway" (DMAG) and DMAG Network, enabling hand-off for a mobile device traveling between two DMASes served by two different private networks. *See* Fig. 6, reproduced below, and 10:53-56 ("[e]mbodiments of the present disclosure enable devices on separate networks to communicate with each other via DMA gateways that bridge separate network and communications systems." 10:53-56.

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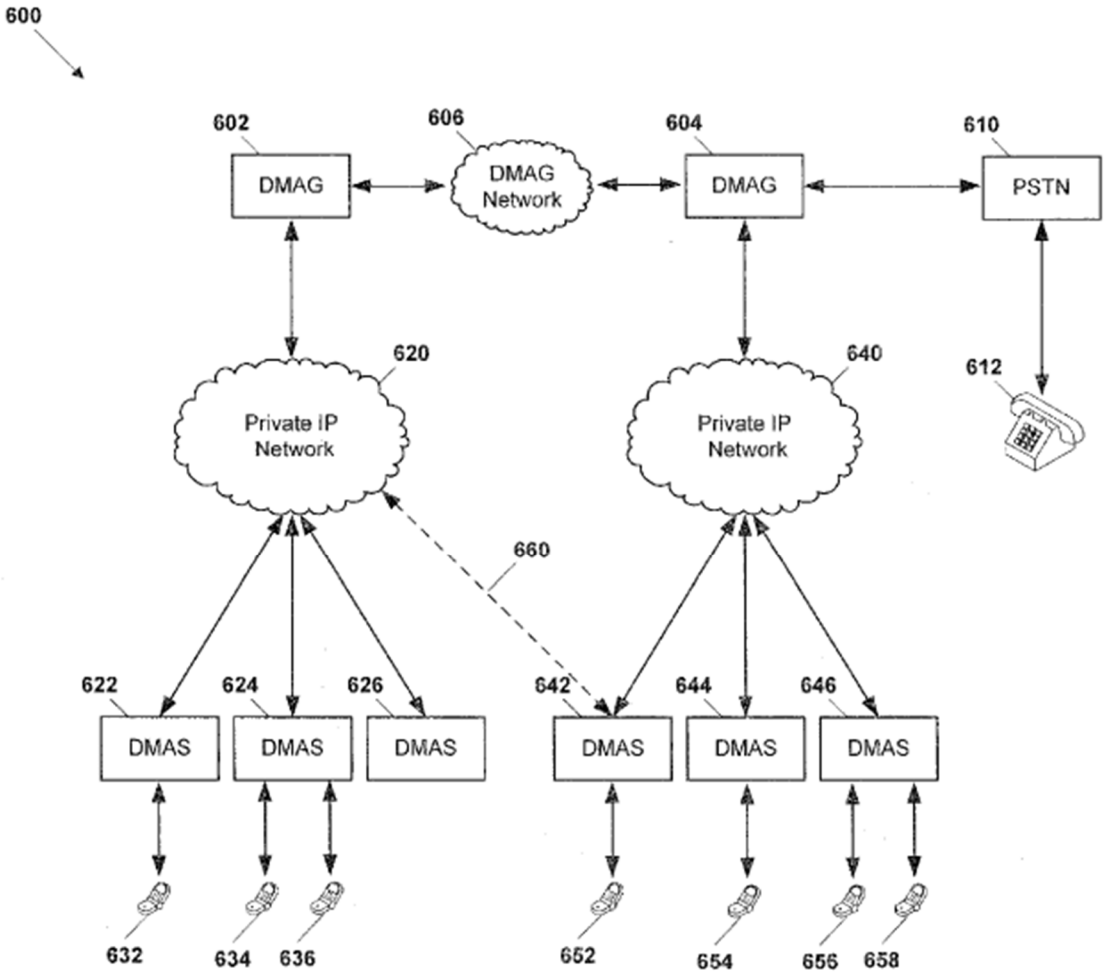


FIG. 6

68. "To facilitate communications between devices serviced by different networks, the DMA gateways 602 and 604 maintain information identifying the devices that each services." 11:10-12. "When a DMA gateway detects that it is in communications range with one or more DMA servers, the DMA gateway sends communications information from the DMA servers or other communications networks to one or more other DMA gateways or to a central database." *Id.* 14:66-

15:5. The communications information "includes register information, such as home location register (HLR) information and visitor location register (VLR) information maintained by the DMA servers or other communications networks." *Id.* 15:14-18.

B. Assumed Effective Filing Date

69. I have been informed by counsel for this Petition that I should assume the earliest possible effective filing date for the '988 patent is July 14, 2008. I have also been informed by counsel for this Petition that I should assume the invention date for this patent is the same as its earliest effective filing date.

C. Relevant Prosecution History

70. The claims of the '988 patent received minimal examination. In the first action on the merits on May 21, 2010, the examiner issued a single prior art rejection, rejecting claim 46 as being anticipated by US 2006/0114934 to Shin. Ex. 1002 at 96.

71. The examiner rejected claims 22-32 and 42-45 due to lack of antecedent basis for the term "call." The examiner also rejected claim 42 under 35 U.S.C. Section 112 because "it is not clear what it meant by 'send call information related the call to a DMA gateway, **the DMA gateway**" as cited the claim" [sic]. Ex. 1002 at 95. The examiner allowed claims 1-21 and 33-41. Ex. 1002 at 97.

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72. In its June 29, 2010 office action response, the applicant corrected the antecedent basis issue for claim 22 and typographical error to claim 42. Ex. 1002 at 122-123. The applicant also canceled rejected claim 46. *Id.* On September 17, 2010, the examiner allowed claims 1-45. The examiner did not provide a statement of reasons for allowability.

IV. Claim Construction

73. The Board construes claims under the same standard used in civil actions in federal district court. It is my opinion that, for purposes of this Declaration[1], no construction of claim terms is necessary.

V. Detailed Discussion of the Grounds for Unpatentability

74. The Challenged Claims are unpatentable based on one ground. Ground 1 establishes that claims 1, 3-9, 20, and 42 are anticipated by Flore (Ex. 1005).

A. Overview of the Principal Prior Art

1. Flore (Ex. 1005)

[1] This claim-construction analysis is not a concession as to the scope of any claim term in litigation, or a waiver of any argument in any proceeding that claim terms are indefinite, invalid, or unpatentable.

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75. U.S. Patent Application Publication 2007/0021120 to Flore ("Flore") was published on January 25, 2007, more than a year before the filing date of the '988 patent. I have been instructed to assume that Flore is prior art.

76. Flore discloses an exemplary network deployment consisting of two radio access networks (RANs). As one network deployment example, Flore discloses that the first RAN is a Universal Terrestrial Radio Access Network (UTRAN) 120 and the second RAN is an Evolved UTRAN (E-UTRAN) 130, shown in Fig. 1 (reproduced below):

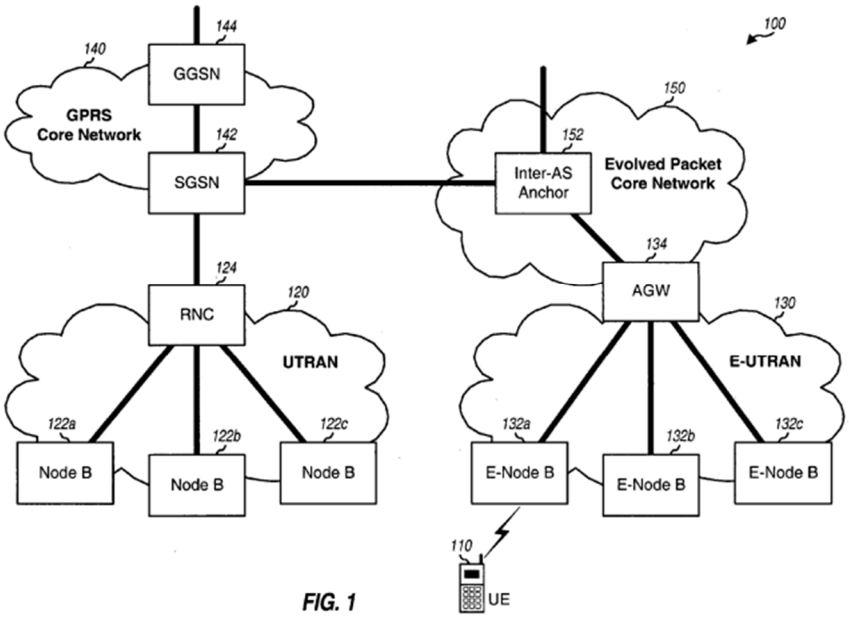


FIG. 1

77. Ex. 1005, Fig. 1. UTRAN 120 includes Node Bs coupled to Radio Network Controllers (RNCs) and E-UTRAN 130 includes Evolved Node Bs coupled to Access Gateways. Both Node Bs as well as Evolved Node Bs may be base stations. The E-UTRAN radio access network connects various E-Node Bs

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132a-c to an AGW ("Access Gateway"). "Node Bs 122 provide radio communication for UEs within their coverage. … E-Node Bs 132 provide radio communication for UEs within their coverage and may perform radio resource management. AGW 134 provides control for E-Node Bs 132.") *Id.* at [0026], [0027].

78. Flore describes the same problem identified by the '988 patent — integrating *different* communication systems. *Compare* Ex. 1005, [0003] *with* Ex. 1001, 1:66–2:2. Also see Ex. 1005, 0029 (describing functionality that "minimizes impact to legacy networks 120 and 140 to interoperate with new networks 130 and 150.") Flore recognizes that "Inter-AS Anchor 152 provides interoperability between E-UTRAN 130 and UTRAN 120 and GPRS core network 140." Ex. 1005, [0029]. Inter Access System Anchor (IASA) 152 "interfaces with AGW 134 and also with SGSN 142 in the GPRS core network 140." *Id.*

79. A POSA would have recognized that both Flore and the '988 patent propose the same solution, as well. Flore teaches that "Inter-AS Anchor 152 may communicate with SGSN 142 via a Gn interface, which is a legacy interface between SGSNs and GGSNs within a GPRS core network. The use of the Gn interface allows SGSN 142 to communicate with Inter-AS Anchor 152 in the same manner as with another SGSN, which minimizes impact to legacy networks 120 and 140 to interoperate with new networks 130 and 150." *Id.* Likewise, the '988

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patent describes functionality of the DMA gateways in the same way: "embodiments of the DMA gateways also enable legacy networks and devices participating in the legacy networks to communicate with devices serviced by one or more of the DMA servers" and further that "[a] first interface [included in a first DMA gateway] is adapted to communicate with a legacy communications network." Ex. 1001 at 9:22-25, Ex. 1001 at 3:16-18. Accordingly, a POSA would have understood that Inter-AS Anchor 152 operates as the "first DMA gateway" of the claims during a handover process as a UE moves out of the coverage of U-TRAN to the E-UTRAN. See, e.g., Flore at 0056.

80. In Figure 1 of Flore, the UTRAN 120 connects various radio towers (Node B 122a-c) through an RNC 124 to an SGSN 142. Ex. 1005, [0026] ("UTRAN 120 includes Node Bs coupled to Radio Network Controllers (RNCs)." The "Node Bs 122 provide radio communication for UEs [user equipment] within their coverage." *Id.* The "RNC 124 provides control for Node Bs 122 and perform radio resource management, some mobility management functions, and other functions to support communication between the UEs and the UTRAN." *Id.* Further, Flore recognizes that "AGW 134 is considered as a source RNC" and "RNC 142 is a target RNC." Ex. 1005, [0041]. In an analogous manner, the '988 describes that a DMA server includes a cellular radio network controller (CRNC) (e.g., CRNC 530 shown in DMA server of Fig. 5) that "can provide cellular radio

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resource management and cellular call control." Ex. 1001 at 8:41-42; *see* also *id*., 7:32-35, 8:34-35 ("the DMA server 406 may include … a base station controller (BSC) module 508" and "the BSC module 508 includes a cellular radio network controller (CRNC) 530"). Accordingly, a POSA would have understood that the RNC and AGW described in Flore serve as the **"distributed mobile architecture (DMA) servers"** of the asserted claims.

81. Flore teaches that the SGSN ("Serving GPRS Support Node") 142 is in communication with a GPRS Core Network 140, which is also in communication with one or more GGSN ("Gateway GPRS Support Nodes") 144. "SGSN 142 facilitates exchanges of packets between RANs and GGSN 144 and also performs mobility management for UEs. GGSN 144 performs routing function and exchanges packets with external data networks. SGSN 142 interfaces with RNC 124 in UTRAN 120 and supports packet-switches services for the UEs communicating with the UTRAN." *Id.* at 0028. Flore recognizes that by exchanging IP packets with user devices, the SGSN 142 provides IP functionality: "UE 110 exchanges IP packets with SGSN 142." Likewise, the '988 patent specifies that the second DMA gateway provides IP functionality ("the second DMA gateway 1050 is associated with a private IP network 1060 that services a plurality of DMA servers 1052, 1054, 1056 and the devices they serve"). Ex. 1001 at 14:33-36. Accordingly, a POSA would have understood that the SGSN operates

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as the **"second DMA gateway"** of the claims during a handover process as a UE moves out of the coverage of U-TRAN to the E-UTRAN. *See*, *e.g.*, Flore at 0056 and Fig. 1 (annotated):

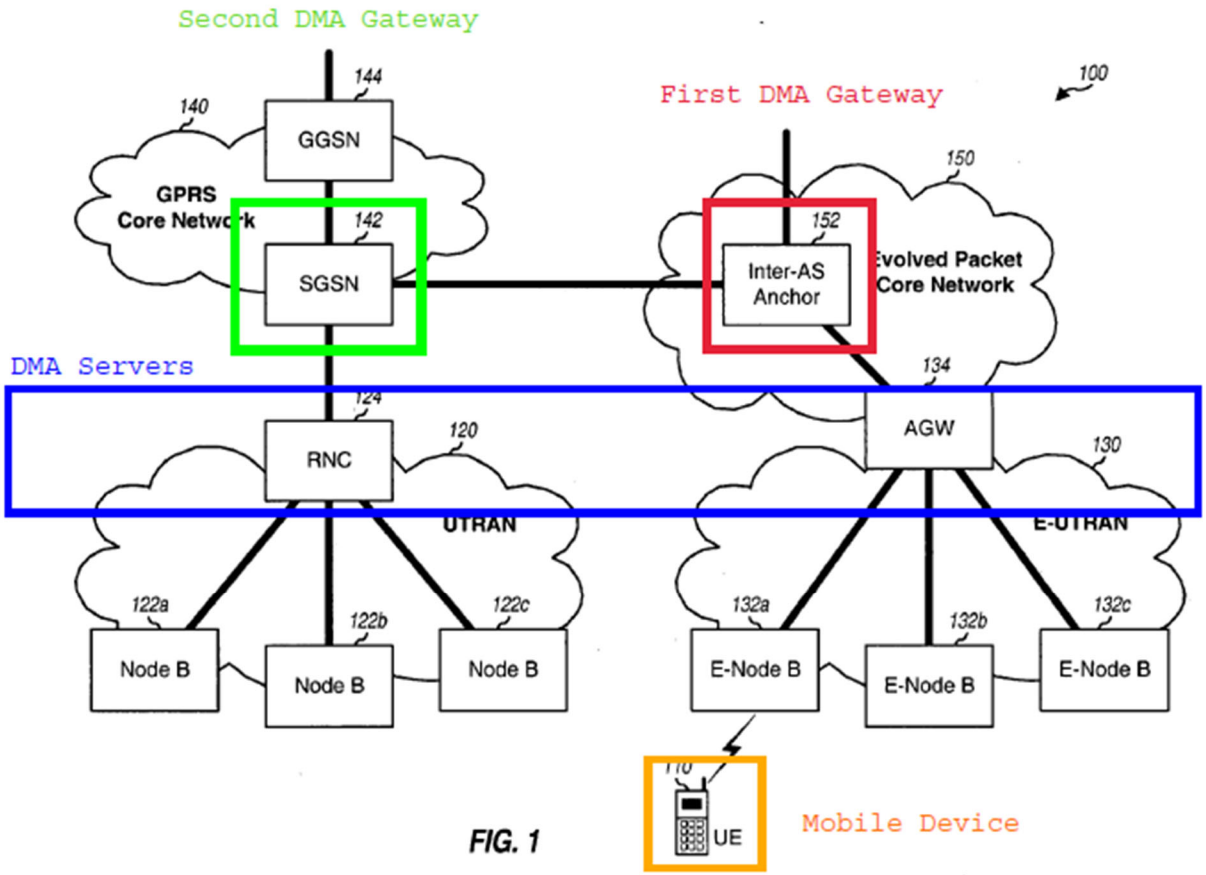


FIG. 1

82. Based on the above disclosures, a POSA would have understood that Flore and the '988 patent thus describe the same problem of integrating different communication systems to provide interoperability with new networks while minimizing impact to legacy networks. Such a person would have recognized that both propose the same solution: using gateways and servers to facilitate devices on different networks to communicate with each other. In addition, a POSA would

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have understood that both Flore and the '988 consider the same network scenario: handover of user devices. For example, Flore teaches techniques for performing handovers of user devices from one access network to another, and the '988 patent considers handing off of communications when a mobile device moves from one coverage area to another. See, e.g., Ex. 1005 at Abstract, [0003], Ex. 1001.

B. Ground 1: Claims 1, 3-9, and 20 Are Anticipated by Flore (Ex. 1005)

1. Claim 1

83. In my opinion, a POSA would have understood that Flore discloses the limitations of claim 1.

a. *Preamble*

84. The preamble of claim 1 recites "*A method, comprising:"*

85. To the extent the preamble is limiting, Flore discloses this limitation. *See* Flore's claim 7 ("[a] method comprising"), [0069] ("[t]he steps of a method or algorithm described in connection with the embodiments disclosed herein may be embodied directly in hardware, in a software module executed by a processor, or a combination of the two."). *See* also Ex. 1005, [0067] ("various illustrative logical blocks, modules, circuits, and algorithm steps described in connection with the embodiments disclosed herein may be implemented as electronic hardware, computer software, or combinations of both").

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86. For these reasons, a POSA would have understood that Flore discloses the preamble.

b. *Limitation 1[b]: "receiving at a first distributed mobile architecture (DMA) gateway communications information for a communications network accessible by a second DMA gateway, the communications information indicating one or more devices accessible by one of a DMA server and a legacy communications network, wherein the first DMA gateway and the second DMA gateway participate in a DMA gateway communications network;"*

87. Flore discloses this limitation.

88. Flore discloses "receiving at a first distributed mobile architecture (DMA) gateway communications information for a communications network accessible by a second DMA gateway …" During a E-UTRAN-to-UTRAN UE handover, numerous messages including communication information are received by the Inter-AS Anchor 152 (the "**first DMA gateway**"). *See, e.g.*, Fig. 4, steps 1, 5, 7, 10, 11 (reproduced below):

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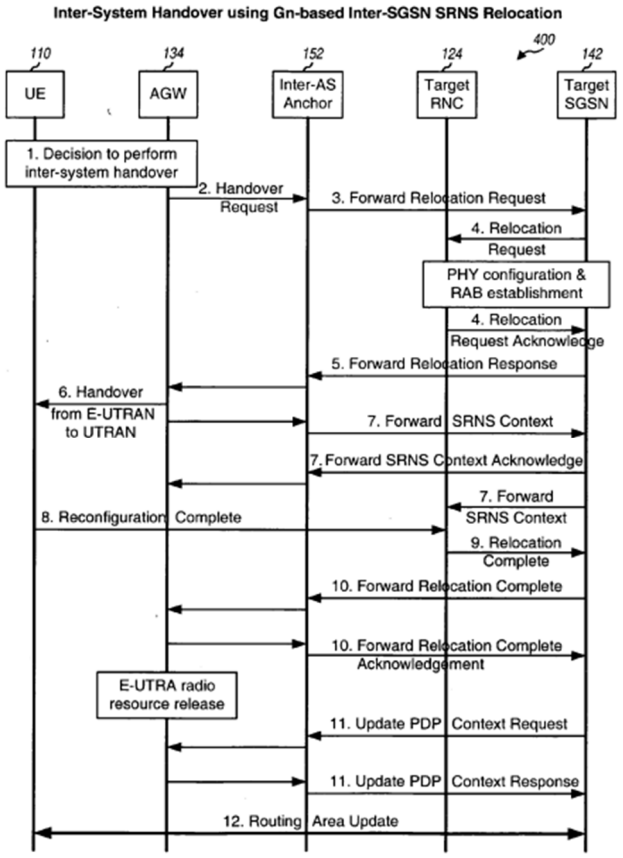


FIG. 4

89. In particular, as part of step 11 shown in Fig. 4, Flore discloses that AGW 134 sends a "PDP context" to Inter-AS Anchor 152. Ex. 1005, [0046]. A "Packet Data Protocol (PDP) context… contains various parameters such as routing information for IP packets (e.g., the IP addresses of UE 110 and Inter-AS Anchor 152), QoS profiles, and so on." Ex. 1005, [0046]. In response, the "Inter-AS Anchor 152 updates its PDP context fields for UE 110 so that **future packets for the UE are forwarded to SGSN 142** instead of AGW 134." *Id.*, emphasis added. Thus, a POSA would have understood that the PDP context includes the address of SGSN 142 as part of its routing information. This understanding is

consistent with how the '988 patent broadly describes communications information received at a DMA gateway. Ex. 1001, 16:59-62 ("as information about a communication is received, routing instructions are provided indicating through which DMA gateways the communication is to be directed from its source to its destination").

90. As I explained above, this message received by the Inter-AS Anchor 152; *i.e.*, the **"first DMA gateway"**, includes information about UE 110, which following completion of the handover procedure is served by UTRAN 120, that includes SGSN 142 (the "**second DMA gateway"**), and thus a POSA would have recognized that the PDP context qualifies as "communications information for a communications network accessible by a second DMA gateway."

91. Flore discloses "the communications information indicating one or more devices accessible by one of a DMA server and a legacy communications network." The PDP context included in the message identified above contains *information identifying the UE 110* undergoing the handover process. *See, e.g.,* Ex. 1005, [0046] ("Packet Data Protocol (PDP) context… contains various parameters such as routing information for IP packets (e.g., the **IP addresses of UE 110** and Inter-AS Anchor 152), QoS profiles, and so on.") The UE 110 is accessible by one or more Node Bs and "legacy networks 120 and 140," and the message above is meant to facilitate handover from the E-UTRAN 130 and

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Evolved Packet Network Core network 150 to the legacy UTRAN 120 and GPRS core network 140. *Id.* [0029]. Thus a POSA would have understood that the message including the PDP context is a "communications information indicating one or more devices accessible by one of a DMA server and a legacy communications network."

92. Flore discloses "wherein the first DMA gateway and the second DMA gateway participate in a DMA gateway communications network" The SGSN 142 ("second DMA gateway") and Inter-AS Anchor 152 communicate via a Gn interface. *See, e.g.,* Ex. 1005, [0029] ("Inter-AS Anchor 152 may communicate with SGSN 142 via a Gn interface, which is a legacy interface between SGSNs and GGSNs within a GPRS core network."), [0040] ("Inter-AS Anchor 152 communicates with SGSN 142 via the Gn interface and emulates (or appears as) another SGSN to SGSN 142"), [0048] ("Inter-AS Anchor 152 communicates with SGSN 142 via the Gn interface and using messages described in 3GPP TS 29.060, entitled 'GPRS Tunnelling Protocol (GTP) across Gn and Gp interface,' June 2006"). Thus a POSA would have understood that the SGSN (second DMA gateway) and Inter-AS Anchor 152 (first DMA gateway) **participate in a DMA gateway communications network.**

93. For these reasons, a POSA would have understood that Flore discloses this limitation.

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c. *Limitation 1[c]: "storing the communications information in a home DMA register of the first DMA gateway;"*

94. Flore discloses this limitation.

95. Flore explains that during handover, an Update PDP Context Response Message is forwarded to the Inter-AS Anchor 152, which is "the first DMA gateway." Flore states "UE 110 may have established a call with E-UTRAN 130 by activating a Packet Data Protocol (PDP) context … AGW 134 stores the PDP context for UE 110 during the call and, in response to the request from SGSN 142, forwards the PDP context to Inter-AS Anchor 152, which forwards the information in an Update PDP Context Response message to SGSN 142 (also step 11)." Ex. 1005, [0046]. In response, the "Inter-AS Anchor 152 **updates its PDP context fields for UE 110,** so that future packets for the UE are forwarded to SGSN 142 instead of AGW 134." *Id.*, emphasis added. After the handover is performed, Inter-AS Anchor 152 acts as a GGSN. *See* Flore [0039] ("FIG. 3D shows UE 110 communicating with UTRAN 120 after completing the inter-system handover. User data is exchanged between UE 110 and SGSN 142, which forwards the data to via [sic] Inter-AS Anchor 152 acting as the GGSN"), [0046] ("After the PDP context is updated, Inter-AS Anchor 152 acts as a GGSN to SGSN 142."). Inter-AS Anchor 152 "emulates a virtual SGSN and a virtual GGSN… Inter-AS Anchor 152 behaves… as a GGSN after updating the PDP context." *Id.* at [0050].

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96. A POSA would have understood that a GGSN necessarily contains a location register. Flore also states "[t]he network entities in UTRAN 120 and GPRS core network 140 are described in 3GPP TS 23.002, entitled 'Network architecture,' March 2006." Id. at [0030]. The Technical Specification states:

- The Gateway GPRS Support Node (GGSN).

3GPP

Release 7 14 3GPP TS 23.002 V7.1.0 (2006-03)

The location register function in the GGSN stores subscription information and routeing information (needed to tunnel packet data traffic destined for a GPRS MS to the SGSN where the MS is registered) for each subscriber for which the GGSN has at least one PDP context active.

The GGSN is needed only in a PLMN which supports GPRS.

Thus a GGSN contains a "location register function" which "stores subscription information and routeing [sic] information … for each subscriber for which the GGSN has at least one PDP context active." This location register function is a "home DMA register." Similarly, because Inter-AS Anchor 152 emulates a GGSN, a POSA would have understood that also includes a location register function.

97. A POSA would likewise understand the Inter-AS Anchor's "PDP context fields for UE 110" are a "home DMA register" of the Inter-AS Anchor (**"first DMA gateway**"). Inter-AS Anchor 152 necessarily has a list of entries for the UEs it serves, such as UE 110. Thus, by updating the PDP Context

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information with the address of SGSN 142 instead of AGW 134, the Inter-AS Anchor stores the communications information included in the Update PDP Context Response message to its "home DMA register."

98. For these reasons, a POSA would have understood that Flore discloses this limitation.

d. *Limitation 1[d]: "receiving a communication at the first DMA gateway for a target device indicated by the communications information to be served by the second DMA gateway; and"*

99. Flore discloses this limitation.

100. Flore teaches that the Inter-AS Anchor 152 (**"first DMA gateway"**) "updates its PDP context fields for UE 110 so that **future packets for the UE are forwarded to SGSN 142 instead of AGW 134.**" Ex. 1005, [0046]. Flore thus discloses receiving packets (i.e., a communication) at Inter-AS Anchor152 (i.e., first DMA gateway) that are addressed to the IP address of UE 110 as their destination (*i.e.*, for a target device indicated by the communications information). *See also id.* at [0060] "The Inter-AS Anchor may store PDP context for the UE and forward packets for the UE in accordance with the PDP context."

101. For these reasons, a POSA would have understood that Flore discloses this limitation.

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e. *Limitation 1[e]: "routing the communication from the first DMA gateway to the target device by relaying the communication from the first DMA gateway to the second DMA gateway via the DMA gateway communications network."*

102. Flore discloses this limitation.

103. Referring to Figure 3D and the disclosures below, a POSA would understand the packets received at the first DMA gateway (the Inter-AS Anchor 152), are forwarded to the second DMA gateway SGSN (142), and ultimately to UE 110. *See* Flore [0039] ("FIG. 3D shows UE 110 communicating with UTRAN 120 after completing the inter-system handover. User data is exchanged between UE 110 and SGSN 142, which forwards the data to via [sic] Inter-AS Anchor 152 acting as the GGSN"), [0046] ("After the PDP context is updated, Inter-AS Anchor 152 acts as a GGSN to SGSN 142."). Furthermore, as I explain above, the Inter-ASA routes packets addressed to UE 110 to SGSN 142 after handover, in accordance with the updated PDP context. *See* Ex. 1005, [0060], emphasis added ("The Inter-AS Anchor may emulate a GGSN after the handover to the second RAN and **may exchange packets for the UE with the SGSN (block 818).** *See also id.* at [0046]: ("In the first phase of the handover procedure and until the PDP context is updated in step 11, SGSN 142 communicates with Inter-AS Anchor 152, which acts as a source SGSN to SGSN 142. After the PDP context is updated, Inter-AS Anchor 152 acts as a GGSN to SGSN 142."). *See also* Fig. 8.

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104. Paragraph [0046] of Flore also discloses that "Inter-AS Anchor 152 updates its PDP context fields for UE 110 **so that future packets for the UE are forwarded to SGSN 142** instead of AGW 134." *See also id.,* [0060] ("The Inter-AS Anchor may emulate a GGSN after the handover to the second RAN and **may exchange packets for the UE with the SGSN …** the Inter-AS Anchor may store PDP context for the UE and **forward packets for the UE** in accordance with the PDP context.") Accordingly, Flore discloses routing packets by "relaying the communication from the first DMA gateway" (the Inter-AS Anchor) to "the second DMA gateway" (the SGSN 142) "via the DMA gateway communications network."

105. For these reasons, a POSA would have understood that Flore discloses this limitation.

2. Claim 3: "*The method of claim 1, wherein the DMA server includes one of: a ground-based DMA server; and a satellite-based DMA server.*"

106. As I explained above, Flore discloses the limitations of claim 1. The additional limitations recited in claim 2 are also disclosed in Flore. Flore discloses a ground-based DMA server. A POSA would understand that nodes of cellular networks are traditionally ground based, and would understand that, or otherwise would have found obvious that the RNC 124 and AGW 134 are each ground-based, rather than satellite-based. *See, e.g.,* Fig. 1, [0026-27].

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107. For these reasons, a POSA would have understood that Flore discloses the limitations recited in claim 2.

3. Claim 4: "*The method of claim 1, wherein the communication includes at least one of: a voice communication; and a data communication.*"

108. As I explained above, Flore discloses the limitations of claim 1. The additional limitations recited in claim 4 are also disclosed in Flore. Flore discloses that the communication can be both a voice and a data communication. *See* Ex. 1005, [0046]: "UE 110 may have activated a **call** with E-UTRAN 130 by activating a Packet Data Protocol context…. Inter-AS Anchor 152 updates its PDP context fields for UE 110 **so that future packets for the UE are forwarded to SGSN 142** instead of AGW 134." *See also id.,* [0049] ("With procedure 400, UE 110 operates with **new protocol stacks 230 and 232 prior to step 8** and with **legacy protocol stacks 220 and 222 for step 8 and beyond**."), [0060] ("The Inter-AS Anchor may emulate a GGSN after the handover to the second RAN and **may exchange packets for the UE with the SGSN …** the Inter-AS Anchor may store PDP context for the UE and **forward packets for the UE** in accordance with the PDP context.")

109. Flore also discloses that during relocation, "[l]ossless SRNS relocation may be performed, and AGW 134 may continue to **forward packets for UE 110 to RNC 124 to avoid losing packets during SRNS switching**." *Id.* at [0044].

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110. For these reasons, a POSA would have understood that Flore discloses the limitations recited in claim 4.

4. Claim 5: "*The method of claim 1, wherein the legacy communications network includes one of: a public switched telephone network (PSTN); a wireless communications network serviced by mobile switching center (MSC); a public internet protocol (IP) network; and an American National Standards Institute 41 (ANSI-41) network.*"

111. As I explained above, Flore discloses the limitations of claim 1. The additional limitations recited in claim 5 are also disclosed in Flore. In Flore the "legacy network" is the UTRAN 120 and GPRS core network 140. Ex. 1005, [0029] ("The use of the Gn interface allows SGSN 142 to communicate with Inter-AS Anchor 152 in the same manner as with another SGSN, which minimizes the impact to **legacy networks 120 and 140** to interoperate with new networks 130 and 150." The UTRAN network 120 is a "wireless communications network serviced by a mobile switching center (MSC)." Flore also states "[t]he network entities in UTRAN 120 and GPRS 140 are described in 3GPP TS 23.002, entitled 'Network architecture,' March 2006." The December 2005 version of this document, attached as Ex. 1006, states in 3.3.1, "The CS domain refers to the set of all the CN entities… The entities specific to the CS domain are: **MSC,** GMSC, VLR." Ex. 1006 at 13. A POSA would therefore understand that UTRAN 120 is a "wireless communications network serviced by a mobile switching center (MSC)."

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112. Flore also states "[t]he network entities in UTRAN 120 and GPRS core network 140 are described in 3GPP TS 23.002, entitled 'Network architecture,' March 2006." Ex. 1005, [0030]. This document, attached hereto as Exhibit 1006, states in 3.3.1, "The CS domain refers to the set of all the CN entities… The entities specific to the CS domain are: **MSC,** GMSC, VLR." Ex. 1006 at 13. It is my opinion that a POSA would understand that UTRAN 120 is a "wireless communications network serviced by a mobile switching center (MSC)."

113. For these reasons, a POSA would have understood that Flore discloses the limitations recited in claim 5.

5. Claim 6: "*The method of claim 1, further comprising the first DMA gateway sending a notification to the second DMA gateway, the notification indicating that the communications information is stored at the first DMA gateway.*"

114. As I explained above, Flore discloses the limitations of claim 1. The additional limitations recited in claim 6 are also disclosed in Flore. Flore discloses that, in step 11 shown in Fig. 4, "AGW 134 stores the PDP context for UE 110 during the call and … forwards the PDP context to Inter-AS Anchor 152" (the "first DMA gateway). Ex. 1005, [0046]. The first DMA gateway then "forwards the information in an Update PDP Context Response message to SGSN 142" (the "second DMA gateway"). *Id.* The Update PDP Context Response message is a notification to the SGSN that both contains the communications information, and indicates that the communications information is stored at the Inter-AS Anchor.

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Furthermore, because the Inter-AS Anchor 152 is the source of the "Update PDP Context Response" including the PDP context (*i.e.*, the claimed "communications information") and because the Inter-AS Anchor "updates its PDP context fields for UE 110 so that future packets for the UE are forwarded to SGSN 142 instead of AGW 134," it is my opinion that a POSA would have understood the SGSN's reception of the "Update PDP Context Response to indicate that the "communications information is stored at the first DMA gateway." Ex. 1005, [0040].

115. For these reasons, a POSA would have understood that Flore discloses the limitations recited in claim 6.

6. Claim 7: "*The method of claim 1, further comprising, upon receiving the communications information, the first DMA gateway automatically sending at least a portion of the communications information to the second DMA gateway via the gateway communications network.*"

116. As I explained above, Flore discloses the limitations of claim 1. The additional limitations recited in claim 7 are also disclosed in Flore. Flore discloses that, in step 11 of Fig. 4, "AGW 134 stores the PDP context for UE 110 during the call and … forwards the PDP context to Inter-AS Anchor 152" (the "first DMA gateway). Ex. 1005, [0046]. The first DMA gateway then "forwards the information in an Update PDP Context Response message to SGSN 142" (the "second DMA gateway"). *Id.*

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117. The Update PDP Context Response message is sent across the Gn interface, which is a "gateway communications network." Ex. 1005, [0029] ("Inter-AS Anchor 152 may communicate with SGSN 142 via a Gn interface, which is a legacy interface between SGSNs and GGSNs within a GPRS core network."), [0040] ("Inter-AS Anchor 152 communicates with SGSN 142 via the Gn interface and emulates (or appears as) another SGSN to SGSN 142"), [0048] ("Inter-AS Anchor 152 communicates with SGSN 142 via the Gn interface and using messages described in 3GPP TS 29.060, entitled 'GPRS Tunnelling Protocol (GTP) across Gn and Gp interface,' June 2006").

118. For these reasons, a POSA would have understood that Flore discloses the limitations recited in claim 7.

7. Claim 8: "*The method of claim 1, further comprising, in response to receiving a query from the second DMA gateway for the communications information, the first DMA gateway sending at least a portion of the communications information to the second DMA gateway via the gateway communications network.*"

119. As I explained above, Flore discloses the limitations of claim 1. The additional limitations recited in claim 8 are also disclosed in Flore. Flore discloses this limitation. Flore discloses in paragraph 0046: "SGSN 142 sends an Update PDP Context Request message to Inter-AS Anchor 152." The SGSN ("second DMA gateway") thus sends a query for the PDP Context to the Inter-AS Anchor ("first DMA gateway). Flore further states "AGW 134 stores the PDP context for

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UE 110 during the call and, **in response to the request from SGSN 142,** forwards the PDP context to Inter-AS Anchor 152, **which forwards the information in an Update PDP Context response message to SGSN 142)**." Thus the first DMA gateway "sends… the communications information to the second DMA gateway." This message is sent via the Gn interface, and is therefore sent "via the gateway communications network" as discussed above.

120. For these reasons, a POSA would have understood that Flore discloses the limitations recited in claim 8.

8. *Claim 9: "The method of claim 1, wherein the communications information includes communications register data including at least one of… a portion of home location register (HLR) data for the communications network."*

121. Flore discloses receiving PDP Context information from AGW 134 at Inter-AS Anchor 152. The PDP context contains information such as the IP address of the Inter-AS Anchor. Ex. 1005, [0046] ("Packet Data Protocol (PDP) context… contains various parameters such as routing information for IP packets (e.g., the **IP addresses of** UE 110 and **Inter-AS Anchor 152**), QoS profiles, and so on."). This information is a portion of Home Location Register (HLR) data for the communications network. 3GPP TS 23.002 states "the Home Location Register (HLR) is the location register to which a mobile subscriber is assigned for record purposes such as subscriber authentication." Ex. 1006 at 13. Because the Inter-AS Anchor is the acting GGSN for the subscriber (i.e., the location register

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for which it is assigned), the PDP context includes "communications register data including a portion of home location register (HLR) data for the communications network."

122. For these reasons, a POSA would have understood that Flore discloses the limitations recited in claim 9.

9. Claim 20: "*The method of claim 1, wherein the first DMA gateway receives the communications information from the second DMA gateway.*"

123. Flore discloses that "the inter-system handover techniques may also be used for handover from a UTRAN to an E-UTRAN." Ex. 1005, [0053]. Flore further states, "[t]he message flow in FIG. 4 may be used for handover from the UTRAN to the E-UTRAN, albeit with AGW 134 in procedure 400 being replaced with a source RNC in the UTRAN, Inter-AS Anchor 152 being replaced by the old SGSN, target RNC 124 being replaced by AGW 134, and target SGSN 142 being replaced by Inter-AS Anchor 152." *Id.* Thus in step 11, instead of the AGW sending a PDP context to the Inter-AS Anchor, source RNC sends the PDP context for the UE 110 to the SGSN 142, and subsequently, instead of the Inter-AS Anchor sending the Update PDP Context Response message to SGSN, the SGSN ("second DMA gateway") "forwards the information in an Update PDP Context Response message to" Inter-AS Anchor 152 ("first DMA gateway.")

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124. For these reasons, a POSA would have understood that Flore discloses the limitations recited in claim 20.

C. No Secondary Considerations Exist

125. No secondary indicia of non-obviousness exist. However, I reserve the right to supplement my opinions Patent Owner alleges or offers any purported evidence of objective indicia of non-obviousness.

126. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed this 14th day of February, 2023.

Respectfully submitted,



James A. Proctor, Jr

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Appendix A: Table of Challenged Claims of the ’988 Patent

Claim Element	Claim Language
1.a	A method, comprising:
1.b	receiving at a first distributed mobile architecture (DMA) gateway communications information for a communications network accessible by a second DMA gateway, the communications information indicating one or more devices accessible by one of a DMA server and a legacy communications network, wherein the first DMA gateway and the second DMA gateway participate in a DMA gateway communications network;
1.c	storing the communications information in a home DMA register of the first DMA gateway;
1.d	receiving a communication at the first DMA gateway for a target device indicated by the communications information to be served by the second DMA gateway; and
1.e	routing the communication from the first DMA gateway to the target device by relaying the communication from the first DMA gateway to the second DMA gateway via the DMA gateway communications network.
3.	The method of claim 1, wherein the DMA server includes one of:
	a ground-based DMA server; and
	a satellite-based DMA server.
4.	The method of claim 1, wherein the communication includes at least one of:
	a voice communication; and
	a data communication.
5.	The method of claim 1, wherein the legacy communications network includes one of:
	a public switched telephone network (PSTN);
	a wireless communications network serviced by mobile switching center (MSC);
	a public internet protocol (IP) network; and
	an American National Standards Institute 41 (ANSI-41) network.
6.	The method of claim 1, further comprising the first DMA gateway sending a notification to the second DMA gateway, the notification indicating that the communications information is stored at the first DMA gateway.

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7.	The method of claim 1, further comprising, upon receiving the communications information, the first DMA gateway automatically sending at least a portion of the communications information to the second DMA gateway via the gateway communications network.
8.	The method of claim 1, further comprising, in response to receiving a query from the second DMA gateway for the communications information, the first DMA gateway sending at least a portion of the communications information to the second DMA gateway via the gateway communications network.
9.	The method of claim 1, wherein the communications information includes communications register data including at least one of:
	a portion of a community location register;
	a portion of home location register (HLR) data for the communications network; and
	a portion of visitor location register (VLR) data for the communications network.
20.	The method of claim 1, wherein the first DMA gateway receives the communications information from the second DMA gateway.

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