

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner,

v.

ZILKR CLOUD TECHNOLOGIES, LLC,
Patent Owner.

Case IPR2023-00822
Patent No. 9,883,047

**DECLARATION OF DR. VIJAY MADISETTI
IN SUPPORT OF PATENT OWNER'S RESPONSE**

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I, Vijay K. Madiseti, Ph.D, of Atlanta, Georgia, hereby state and declare:

I. INTRODUCTION

1. I am over the age of 18 and am competent to make this Declaration. I have personal knowledge, or have developed knowledge, of these technologies based upon my education, training, and/or experience, of the matters set forth herein. If called upon to do so, I would testify competently thereto.

2. I have been retained by counsel for Patent Owner Zilkr Cloud Technologies, LLC (“Zilkr”) in the above matter. I am submitting this Declaration in response to the Petition for *Inter Partes* Review for U.S. Patent 9,883,047 (“’047 Patent”) and in rebuttal to the declaration of Dr. Houh. Specifically, I have been asked to consider the validity of claims 1 and 4-7 of the ’047 Patent (the “Challenged Claims”) in view of prior art, obviousness considerations, and understanding of a person of ordinary skill in the art (“POSITA”) at the time of the invention as it relates to the ’047 Patent.

II. BACKGROUND AND QUALIFICATIONS

3. I am a Professor of Cybersecurity & Privacy, and Electrical & Computer Engineering, at the Georgia Institute of Technology. Attached hereto as Appendix A is a true and correct copy of my *curriculum vitae* describing my background and experience.

4. As shown in my CV, in 1984, I received a Bachelor of Technology in Electronics and Electrical Communications Engineering from the Indian Institute of Technology (IIT). In 1989, I received my Ph.D. in Electrical Engineering and Computer Science (EECS) from the University of California, Berkeley. That year, I also received the Demetri Angelakos Outstanding Graduate Student Award from the University of California, Berkeley, and the IEEE/ACM Ira M. Kay Memorial Paper Prize.

5. In 1989, I joined the faculty of Georgia Tech. I began working at Georgia Tech as an assistant professor, became an associate professor in 1995, and have held my current position as Professor since 1998. As a member of the faculty at Georgia Tech, I have been active in, among other technologies, image and video processing, computer engineering, embedded systems, chip design, software systems, wireless networks, and cellular communications.

6. I have been involved in research and technology in the area of digital signal processing since the late 1980s, and I am the Editor-in-Chief the IEEE Press/CRC Press's three-volume Digital Signal Processing Handbook (Editions 1 & 2) (1998, 2010).

7. Over the past three decades, I studied, used, and designed image and video processing and wireless networking circuits for numerous applications,

including digital and video cameras, mobile phones, and networking products for leading commercial firms.

8. I also have significant experience in designing and implementing electronic equipment using various source code languages, including C, assembly code, VHDL, and Verilog. In 2000, I published a book entitled “VHDL: Electronics Systems Design Methodologies.”

9. In 1997, I was awarded the VHDL International Best PhD Dissertation Advisor for my contributions in the area of rapid prototyping.

10. Since 1995, I have authored, co-authored, or edited several books in the areas of communications, signal processing, chip design, and software engineering, including VLSI Digital Signal Processors (1995), Quick-Turnaround ASIC Design in VHDL (1996), The Digital Signal Processing Handbook (1997 & 2010), Cloud Computing: A Hands-On Approach (2013), Internet of Things: A Hands-On Approach (2014), and Big Data Science & Analytics (2016).

11. I have authored over 100 articles, reports, and other publications pertaining to electrical engineering, and in the areas of computer engineering, communications signal processing, and communications. All of my publications, including the ones identified here, are set forth in my attached CV.

12. I have worked in areas of digital signal processing relating to speech,

audio and image processing since the early 1980s.

13. I developed efficient algorithms for echo cancellers for speech and voice applications that had reduced complexity and improved performance. This work resulted in a peer-reviewed publication called “Dynamically Reduced Complexity Implementation of Echo Cancellers,” IEEE ICASSP 96, Tokyo.

14. In collaboration with my students, I developed fast algorithms for the modified discrete cosine transform as used in adaptive spectral entropy coder (ASPEC) for music signals that uses Time Domain Aliasing Calculation (as used in the Opus Audio Codec). The MDCT/IMDCT is used as part of the perfect reconstruction process used in audio decoders. This peer-reviewed work was published in “On Fast Algorithms for Computing the Inverse Modified Discrete Cosine Transform,” IEEE Signal Processing Letters, Vol 6, No. 3, Issue 1999.

15. Adaptive lapped transforms (ALT) are fundamental building blocks for building time-varying linear phase filter banks, and many audio, image, and speech codecs utilize lapped transforms utilizing ALTs. I along with my students studied several improved adaptive lapped transforms between the 1996-1999 timeframe, and these have been published in several peer reviewed articles, including “Adaptive Lapped Transform-based Image Coding,” IEEE Signal Processing Letters, Vol 4, Issue 9, 1997.

16. I have been active in research in the area of electronic communications and telecommunications since 1984 and have authored or co-authored several papers and draft proposals on telephony communications. Some of these papers and proposals include “Multilevel Range/NEXT Performance in Digital Subscriber Loops,” IEEE Proceedings on Communications, Speech and Vision, Vol 136, Issue 2, April 1989, and “Comparison of Line Codes and Proposal for Modified Duobinary,” Contribution T1D1.3-85- 237, American National Standards Institute, November 1985.

17. Between 1998 and 2004, I and my students studied different codecs for audio and video streaming over the internet, and published IETF draft standards on these techniques. These included:

- V. Madisetti and A. Argyriou: Voice and Video over Mobile IP Networks, IETF Draft, May 20, 2002; and
- V. Madisetti and A. Argyriou: A Transport Layer Technology for Improving QoS of Networked Multimedia Applications, IETF Draft July 25, 2002.
- I have also published a number of peer-reviewed publications in the area of streaming audio and video applications over the internet include:
- V. Madisetti and A. Argyriou: Voice and Video over Mobile IP Networks, IETF Draft, May 20, 2002; and

- V. Madisetti and A. Argyriou: A Transport Layer Technology for Improving QoS of Networked Multimedia Applications, IETF Draft July 25, 2002.

18. In the 1999-2003 timeframe, I consulted with a team of engineers to design an integrated Soft Switch & Media Server, the SNX 850/8500, that was being sold and installed in Asia. The SNX 8500 was a one-box solution to VOIP, LAN switching, and iPBX/PBX solutions for enterprise customers, and has been installed as part of BPL Telecom's then offerings in Asia. The PBX modules within SNX 850/8500 supported Analog Phones, Digital Feature Phones, E1/ISDN PRI Trunks, E1 or PRI at the PSTN gateway, VOIP (SIP) soft phones, SS7 interfaces, and operated via a browser-based console. It included a variety of features, such as Automatic Call Back, Busy Override, Do Not Disturb, etc., through support for 16 ISDN BRI circuits. See additional details at URL (<http://www.financialexpress.com/news/bpl-telecom-launches-voip-platform/42827>).

19. In the timeframe of 2000-2007, I designed and provided optimized mobile speech codecs AMR and AMR-WB to one of the leading mobile phone and base station manufacturers in the world, and this implementation has been deployed on millions of 3G/4G mobile phones and numerous base stations.

20. In the timeframe of 2000-2007, I also designed and provided several

VOIP codecs to leading VOIP phone vendors that are now deployed in several generations of enterprise VOIP phone products in the USA and abroad. I also designed and provided echo cancellers for VOIP applications for deployment during that timeframe.

21. I have been elected a Fellow of the Institute of Electrical and Electronics Engineers (“IEEE”) in recognition of my contributions to embedded computing systems. The IEEE is a worldwide professional body consisting of more than 300,000 electrical and electronic engineers. Fellow is the highest grade of membership of the IEEE, with only one-tenth of one percent of the IEEE membership being elected to the Fellow grade each year.

22. In 2006, I was awarded the Frederick Emmons Terman Medal from the American Society of Engineering Education (ASEE) and HP Corporation for my contribution to electrical engineering while under the age of 45.

23. I am the official representative from Georgia Tech to the 3GPP/ETSI Standards organization and quite familiar with the standardization processors for speech, audio and video applications in the context of mobile and wireless communications.

24. I have developed speech and video codecs that comply with 3GPP standards. These tasks involved developing software to implement the associated

3GPP standards and also tests to verify compliance to these standards. The families of these 3GPP standards include TS 26.071 – TS 26.204, covering over a hundred standard specification documents. The software that I developed that complies with these standards is now available commercially on millions of 3G and 4G handsets worldwide. My codecs were tested on live 3G and 4G networks in Europe and USA since the early 2004 – 2006 timeframe.

25. I have also developed several speech and VOIP codecs that conform with the ITU (International Telecommunications Union) standards G.723.1, G.729 and Echo Cancellers conforming with the ITU G.168 standards (See <https://www.itu.int/rec/T-REC-G.723/en>)

26. The software and code I have developed and tested based on technologies essential to the ITU standards are now used by one of the leading suppliers of VOIP/Internet telephones in the world. This software is also part of commercially released soft switches for internet telephony used extensively in Asia. See for example URL <https://www.thehindubusinessline.com/bline/2002/04/09/stories/2002040900660700.htm>.

27. As part of earlier consulting work, I tested compliance of several smartphones (3G and 4G) in their use of standards-essential patents (SEP) related to 3GPP and 3GPP2 standards, primarily in the area of HARQ and encryption.

This work involved use of commercial 3GPP test equipment that included base stations and UEs to evaluate compliance to the standard and further opine on the issue of alternatives.

28. Further, as stated above, I serve as the official representative of Georgia Tech to ETSI. In that role, I manage Georgia Tech's relationship with ETSI and am responsible for representing Georgia Tech's interests as they relate to ETSI, including to choose technical areas to which Georgia Tech may contribute, to determine which meetings to attend, and participating in technical work related to various technologies, including those in the area of 5G, 4G, and IoT (Internet of Things). In addition, as noted, prior to assuming this role, in the past twenty years I have been retained to test various commercial mobile and wireless products to determine if they comply with various ETSI, 3GPP, and TIA (including 3GPP2) standards.

29. I have over thirty patent applications pending and am listed as inventor on over two dozen U.S. patents.

30. I have served on the paper reviewing committees of many leading conferences in my field, and have taken on editorial roles for leading technical journals in fields pertinent to my research.

31. I have also served as an expert in certain legal proceedings. A list of

cases in which I have testified at trial, hearing, or by deposition (including those during the past four years) is provided in my *curriculum vitae*. Over the years, I have been retained by both patent owners and petitioners, as well as plaintiffs and defendants.

III. MATERIALS RELIED UPON IN FORMING MY OPINIONS

32. In preparing this Declaration, I have reviewed the '047 Patent and its prosecution history, and the Petition for IPR for the '047 Patent ("Pet."), including accompanying exhibits and the declaration of Dr. Henry Houh in support of the Petition. I have also reviewed the other documents and materials cited herein, including the Institution Decision. When quoting from these materials, all emphasis is added unless otherwise noted.

33. My opinions are also based upon my education, training, research, knowledge, and personal and professional experience.

IV. LEGAL STANDARDS FOR PATENTABILITY

34. I am not an attorney and I offer no opinions on the law itself. My understanding of the relevant legal principles in this section is based on information provided to me by counsel.

A. Claim Construction

35. I understand that claim terms are typically given their ordinary and

customary meaning, as would have been understood by a person of ordinary skill in the art, at the time of the alleged invention, which I was asked to assume is the October 2013 timeframe. In considering the meaning of the claims, I also understand that one must consider the claim language, specification, prosecution history, and the knowledge of a person of ordinary skill in the art (“POSITA”) at the relevant time. I have followed these principles in my analysis.

B. Obviousness

36. I have been informed by counsel that a claim may be invalid if the invention recited in the claim would have been obvious to one of ordinary skill in the art at the time the invention was made in light of the prior art. I understand for a claim to be found obvious, every claim limitation must be found present in the combination of the prior art references before the obviousness analysis proceeds.

37. In considering whether a claim is obvious, I understand that one must consider (a) the level of skill in the art at the time of the claimed invention, (b) the scope and content of the prior art, (c) any differences between the prior art and the claims of the patent-in-suit, and (d) any “secondary factors” tending to show non-obviousness of the claimed invention, including commercial success, long-felt but unresolved need, failure of others, copying, praise by others, unexpected results, and simultaneous invention by others.

38. I understand that a claim composed of several elements is not proved obvious merely by demonstrating that each of its elements was independently known in the prior art. I also understand that obviousness should not be analyzed using the benefit of hindsight. Instead, it must be analyzed from the standpoint of what was known and understood by a POSITA at the time of the claimed invention. I further understand demonstrating whether making a modification to a reference or whether combining multiple references would have been obvious requires providing a reason for why a POSITA would modify the reference or combine multiple references, and that reason must be supported with some rationale underpinning. Merely pointing out that two references are similar or in the same field of endeavor is not sufficient.

39. I understand that if a combination of two or more prior art references is used to render a claimed invention obvious, there must be a reasonable expectation of success in making or practicing the claimed invention based on such combination. I understand the combination cannot modify a prior art reference such that it would render the reference unsatisfactory for its intended purpose.

40. I understand that it is impermissible to use the patent as a template (and reason) for combining prior art references as that would be applying hindsight. I understand that a POSITA would have to be motivated to combine

references to create the combination of features required by the claims of the patent.

V. LEVEL OF ORDINARY SKILL IN THE ART

41. In rendering the opinions set forth in this Declaration, I was asked to consider the patent claims and the prior art through the eyes of a person of ordinary skill in the art (“POSITA”). The “art” is the field of technology to which a patent is related. In my Declaration, I use the term POSITA and skilled person to refer to the same hypothetical person of ordinary skill in the art. I considered factors such as the educational level and years of experience of those working in the pertinent art; the types of problems encountered in the art; the teachings of the prior art; patents and publications of other persons or companies; and the sophistication of the technology. I understand that a POSITA is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors discussed above.

42. Relative to the '047 Patent, a POSITA would have a bachelor's degree in electrical engineering, computer engineering, and/or computer science and one to two years of experience with computer software development, particularly for telecommunications related applications. Extensive experience and technical training may substitute for educational requirements, and advanced education may

substitute for experience.

43. I understand that Petitioner has proposed the following set of qualifications: “a bachelor’s degree in electrical engineering, computer science, computer engineering, or an equivalent,” and “two years of experience in telecommunications and networking.” Pet. 12. I am qualified to provide opinions concerning what a POSITA would have known and understood in October 2013, and my analysis and conclusions herein are from the perspective of a POSITA and would apply under either set of qualifications.

VI. OVERVIEW OF THE ’047 PATENT

44. I have reviewed the ’047 Patent. It is my opinion that the ’047 Patent is patentable, valid, and not rendered obvious in view of the prior art references presented by Petitioner.

45. The ’047 Patent, entitled “Multiple Service Group Interactions and Authorizations,” was filed on April 8, 2016, and issued on January 30, 2018. Ex. 1001 at 1. The ’047 Patent claims priority to continuation applications dating back to the filing of the application for Patent No. 9,210,254, filed November 22, 2013, and to provisional application No. 61/888,856, filed on October 9, 2013. *Id.*

46. The ’047 patent provides technical solutions that can be used for digital services onboarding in telecommunications systems. The Zilkr technology

increases revenue and customer retention for telecommunications providers by allowing their users to integrate multiple third-party services with the user's phone number all from a unified platform. *See, e.g., id.*, 7:37-40 (“The ability to integrate into the unified platform once and become available everywhere thus greatly increases the value to the service, the network provider, and/or the user.”).

47. The '047 Patent describes integrating two separate technological systems—a telephony network, such as a PSTN network, and a network of third-party applications connected via the internet. The patent describes a seamless integration of the two through a unified services platform, which is pictured below.

See id., Fig. 7.

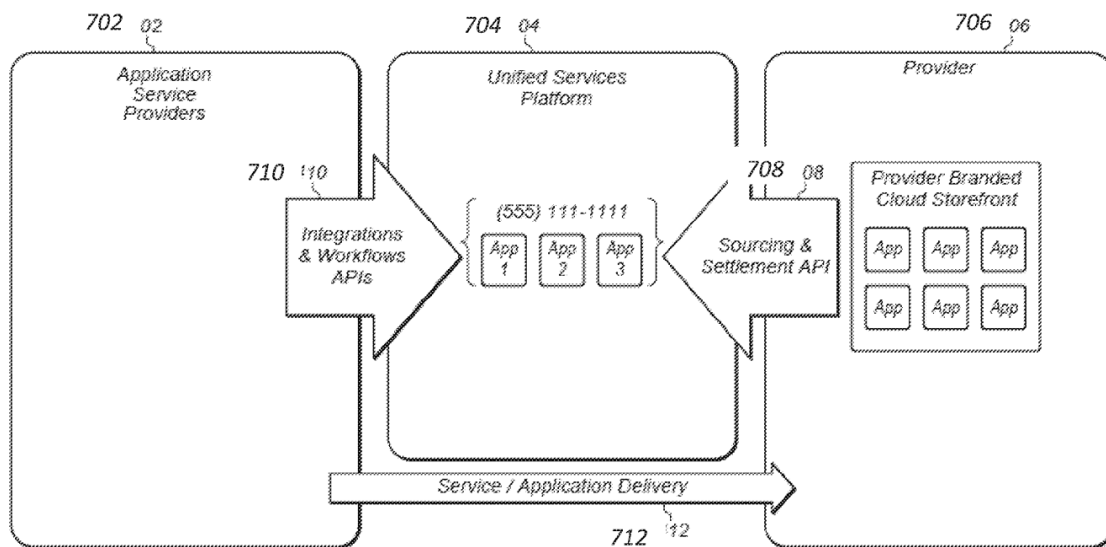


FIG. 7

48. FIG. 12 of the '047 Patent (below) illustrates an embodiment of an activation process in which an enterprise administrator is responsible for activating a service for one or more subscribers.

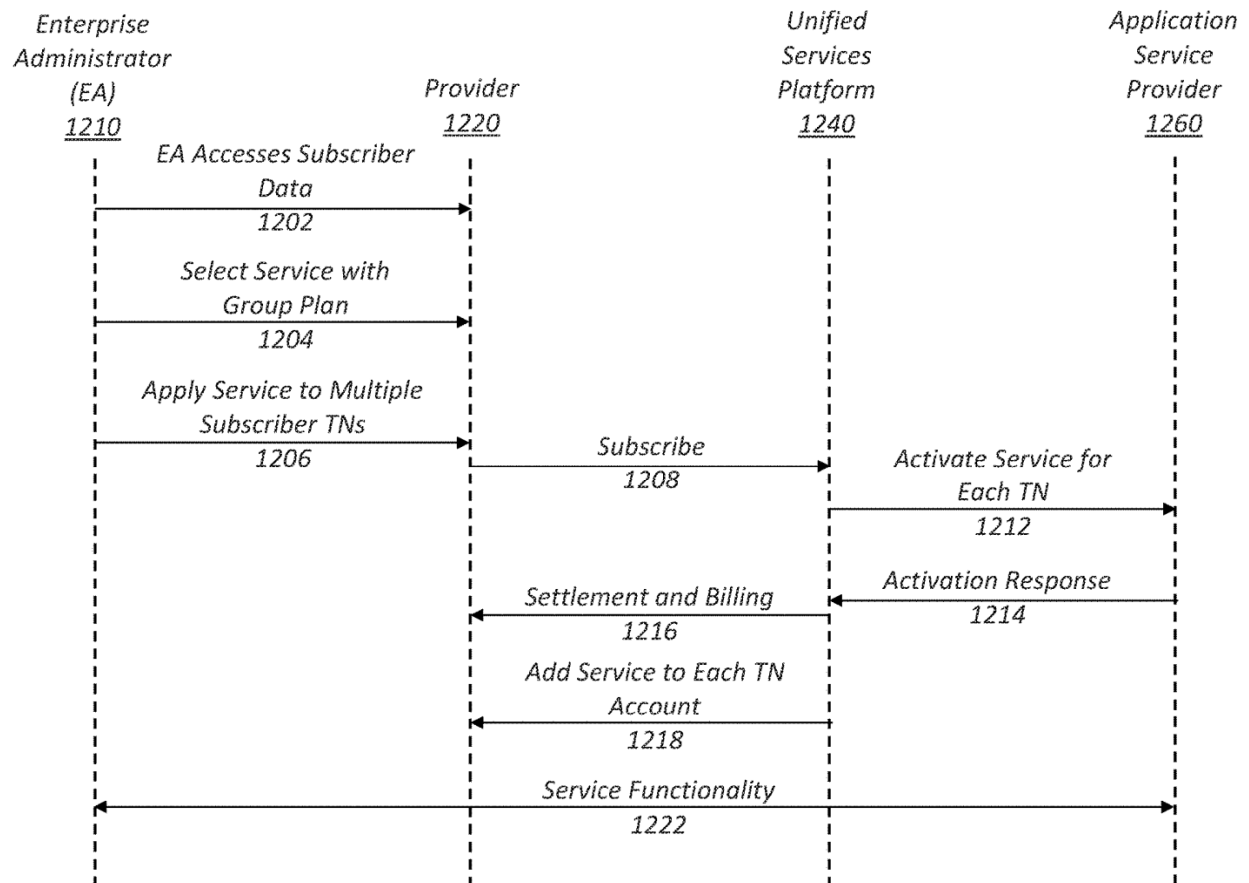


FIG. 12

49. The '047 Patent describes Figure 12 as follows:

For the purposes of this discussion, it will be assumed that the enterprise has selected a service to be added to the one or more subscriber accounts. The enterprise administrator 1210 may request the new service to be associated with the subscriber telephone

numbers. In step 1202, the enterprise administrator 1210 may access the subscriber data for the subscribers to which the service is being added. The subscriber data may include an identification sent to the provider 1220, and the provider 1220 may or may not return additional account information to the enterprise administrator 1210. In an embodiment, the subscriber data may include the telephone numbers of the subscribers for which the service will be provided.

A request for the service or services is sent from the enterprise administrator 1210 to the provider 1220 in step 1204. The request sent to the provider 1220 may identify the specific services being requested. In addition, a group plan identifier can be included with the request to identify the services as being associated with a group request. Each subscriber identifier such as the telephone number can be associated with the group plan identifier in step 1206. The provider 1220 may receive the request and in turn may generate and send a request in step 1208 to the unified services platform 1240 to source the desired services.

In response to receiving this request, the unified services platform 1240 may generate the appropriate activation data to activate

the requested service and associate the service with the existing telephone numbers of the subscribers in the group plan. The unified services platform 1240 may generate configuration data in accordance with the API of the application service provider 1260 who is providing the requested service. Specifically, the unified services platform 1240 may generate activation data in step 1212 to the application service provider 1260. In an embodiment, the unified services platform 1240 may translate the telephone number into a second identifier (ID) that can be used to identify the subscriber and/or the group plan.

The unified services platform 1240 may also create a mapping of the group plan identification and/or the telephone numbers to the second ID and send this mapping to the provider 1220. The provider 1220 may store this mapping and use the mapping when initiating sessions of the service for the subscribers in the group plan. The activation response corresponding to the activation of the service may be returned from the application service provider 1260 in step 1214.

Ex. 1001, 30:43-31:22.

VII. OVERVIEW OF THE CITED PRIOR ART

A. Raleigh (Ex. 1005)

50. Raleigh, entitled “Service Plan Design, User Interfaces, Application Programming Interfaces, and Device Management,” was filed on January 23, 2013, and published on May 23, 2013. Ex. 1005 at 1. Raleigh is directed to specific methods of enabling subscribers of mobile wireless communication devices to view, research, select, and customize service plans; to create and manage device groups, share and set permission controls for service plans among devices in device groups; to manage communication services through graphical user interfaces; to sponsor and promote service plans; and to design, manage, and control communication services through application programming interfaces. *Id.*

51. In Raleigh, “FIGS. 35A and 35B illustrate representative processes to activate an association between a service provider and the mobile wireless communication device 105, e.g., to establish a new service account or associate the mobile wireless communication device with an existing service account of the service provider.” Ex. 1005, ¶ 1840. “Figure 35A illustrates a first alternative process by which a service provider is activated for the mobile wireless communication device 105 based on information obtained from the mobile wireless communication device 105 and provided to a service provider system by

the third party service partner system.” *Id.* ¶ 1840.

52. Once the service provider is selected, services may then be selected as illustrated in Figures 36A-B. See Ex. 1005, ¶ 1846. Raleigh’s statement that “[i]n some embodiments, selection of a service is conducted in conjunction with selection of a service provider as described above” (¶ 1846) means that a user can be prompted to select services immediately after selecting the service provider. This is evidenced by the next sentence, which presents an alternative in which selection of a service is prompted at a later time in response to certain conditions. Ex. 1005, ¶ 1846 (“In some embodiments, selection of a service is prompted by a notification trigger condition for the mobile wireless communication device 105, e.g., detection of no service plans, detection of an expiring or expired service plan, monitoring of particular service activities, monitoring of service usage, detection of a change in network state, etc.”).

VIII. RALEIGH DOES NOT RENDER OBVIOUS CLAIMS 1 AND 4-7

A. Claim 1

1. Raleigh does not teach at least limitations [1.1] and [1.2] because Raleigh does not teach a request to subscribe each member of a group to a service.

53. Claim 1 requires a request to subscribe each member of a group to a service, as claimed in limitations [1.1] and [1.2]. The Petition does not show that

Raleigh teaches or suggests these limitations.

54. The '047 Patent describes “an embodiment of an activation process in which an enterprise administrator is responsible for activating a service for one or more subscribers.” Ex. 1001, 30:41-43. In an embodiment, “[a] request for the service or services is sent from the enterprise administrator 1210 to the provider 1220 in step 1204.” *Id.*, 30:57-59. “[A] group plan identifier can be included with the request to identify the services as being associated with a group request.” *Id.*, 30:60-62. “The provider 1220 may receive the request and in turn may generate and send a request in step 1208 to the unified services platform 1240 to source the desired services.” *Id.*, 30:64-67. “In response to receiving this request, the unified services platform 1240 may generate the appropriate activation data to activate the requested service and associate the service with the existing telephone numbers of the subscribers in the group plan.” *Id.*, 31:1-5. “Specifically, the unified services platform 1240 may generate activation data in step 1212 to the application service provider 1260.” *Id.*, 31:8-10. Figure 12 describes step 1212 as “Activate Service for Each [Telephone Number].” *Id.*, Fig. 12. “The activation response corresponding to the activation of the service may be returned from the application service provider 1260 in step 1214.” *Id.*, 31:19-22. The unified services platform may also “generate the necessary configuration data to activate the new service for

each subscriber in the group plan.” *Id.*, 31:30-32. “In an embodiment, the unified service platform 1240 may notify the corresponding application service provider 1260 that the provider 1220 is activating the new service in place of the subscribers in the group plan.” *Id.*, 31:35-39. “As a result, the new service may be assigned to the enterprise and different rules may apply than if the subscribers were directly activating the new application by themselves.” *Id.* 31:39-42.

55. Claim 1 of the ’047 Patent similarly recites “receiving, by a unified services platform system, a subscription request for a service for a group plan, wherein the group plan comprises a plurality of telephone numbers, wherein each telephone number of the plurality of telephone numbers is associated with a subscriber” ([1.1]-[1.2]). Interpreted in light of at least the specification passages noted above and the claim as a whole, the claimed “subscription request for a service for a group plan” at least includes a request to subscribe each member of a group to a service. For example, the group aspects claimed in limitations [1.1]-[1.2] and [1.4]-[1.7] contrast with limitations [1.8]-[1.13], in which a subscriber that is a part of the group is requesting a subscription for a service. A plain reading of the claim is that the first subscription request (in limitation [1.1]) is “for” the group plan, requiring at least that it is a request to subscribe each member of the group to the service, and the second subscription request (in limitation [1.8]) is

merely a subscriber of the group requesting a subscription to a service for that subscriber.

56. Raleigh does not teach “receiving, by a unified services platform system, a subscription request for a service for a group plan” [1.1]. In contrast to the ’047 Patent, Raleigh’s service plan selection at most adds the service for a single user, and Raleigh separately teaches that a user of a master device may share a service plan with other devices in a master service account. Thus, Raleigh’s service selection is not “a subscription request for a service for a group plan” as claimed, at least because it is not a request to subscribe each member of a group to a service.

57. Even if Raleigh’s service plan is later shared, there is no single request for each member of the group, and the users are not each subscribers of a service but are merely sharing a single service.

58. The Petition explains that it relies on combining three different “aspects” of Raleigh:

1. Service selection and activation procedures (FIGS.35A-36B);
2. Group account management (FIGS.9G, and 12A-12B); and
3. Service provider and network provider API integration (FIGS.1AH-1AM, 15I, and 25H-26A).

Pet. 18. The Petition describes the combination as follows: “the service selection and activation procedures of FIGS.35A-36B would be performed for a ‘master service account,’ using integrated APIs to ‘assist in providing a uniform and consistent service selection and purchase process.’” Pet. 18 (quoting Ex. 1005, ¶ 1455). Consistent with this explanation, for element [1.1] the Petition states that “Raleigh explains that the service plan selection method of FIGS.36A-36B is for a ‘service account,’ which may be a master service account (‘group plan’). Ex.1005, [1840], [1846].” Pet. 25-26; *see also* Pet. 37 (“As explained above at [1.1], it would have been obvious to a POSITA for the ‘service account’ in the service selection process of FIGS.36A-36B to be a master service account (‘*group plan*’).”).

59. Even if a service were to be added for a “master service account,” there is no indication in Raleigh that doing so would subscribe each device in the master service account to the service. Raleigh instead describes that a master device may be used to share services added to a master service account (for the master device) with other devices in the master service account. To show how a service plan may be shared, the Petition relies on Figures 15I, 11A, 11D, 12A, and 12B. *See* Pet. 26-29. None of these figures show that adding a service to a master service account results in subscribing each member of a group to a service. At

most, once a service is added to a master account, a master device can “share” the service with other devices in the master service account. *See, e.g.*, Ex. 1005, ¶ 802 (“Having added another device to the master service account, the subscriber can manage all devices in the device group and can share one or more service plans among devices in the device group.”), Ex. 1005, ¶ 804 (“FIGS. 11B and 11C illustrate that before sharing the ‘Starter Plan,’ all of the ‘250 Minutes of Talk’ service plan is allocated to the master device (‘Jeff Master’), and that none of the ‘250 Minutes of Talk’ service plan is allocated to the child device that is now also associated with the master service account.”).

60. “Figure 15I illustrates a system configuration 1580 including a network that the devices use to communicate with the Sign-Up Request Processor in accordance with some embodiments.” *Id.*, ¶ 927. The Sign-Up Request Processor may include “common APIs for functions like add new service, delete service, add a device to a master service account, device group, or multi-device service plan, delete a device from a master service account, device group, or multi-device service plan, manage quotas on a shared plan, etc. . . .” *Id.*, ¶ 926. Figure 15I does not show that adding a service to a master service account results in subscribing each member of a group to a service.

61. “FIG. 11A illustrates a representative screen 1100 presenting an

example of a service plan bundle, called ‘Starter Plan,’ that has been purchased from the master device. The illustrated service plan bundle includes service plans for 100 text messages, 20 hours of application use, and 250 minutes of phone calls.” Ex. 1005, ¶ 803. Figure 11D shows that the plan sharing options include “simple” sharing in which minutes, etc. are shared without limiting an individual device’s portion of the plan allotment, but to prevent “hogging” an advanced share may be selected in which individual devices are allocated discrete portions of the plan. *Id.*, ¶ 805-806. Figures 11A and 11D do not show that adding a service to a master service account results in subscribing each member of a group to a service.

62. Figures 12A-12B illustrate representative screens “for a master device that has a service plan (‘iStoryBooks’) that is available to both the master device and the child device.” *E.g., id.*, ¶ 841. “[T]he service usage of the master device is separated from the service usage of the child device.” *E.g., id.* Figures 12A-12B do not show that adding a service to a master service account results in subscribing each member of a group to a service.

63. Again, none of these figures in Raleigh show that adding a service to a master service account results in subscribing multiple subscribers to a service. At most, once a service is added to a master account, a master device can “share” the service with other devices in the master service account. And even if Raleigh’s

service plan is later shared, there is no single request for each member of the group, and the users are not each subscribers of a service but are merely sharing a single service.

64. The Petition contains conclusory statements such as “[i]t would have been obvious to a POSITA for the service plan selection to be a service plan that is shared by and available to the devices on the master service account, as illustrated in the examples of FIGS.11A and 11D, as well as FIGS.12A-12B.” Pet. 29. Consistent with the concluding sentence of that paragraph, I understand such statements to mean that Petitioner asserts “it would have been obvious to a POSITA for the service plan selected by the user in FIG.36A to be for a master service account (*for a group plan*).” *Id.* As explained herein, merely requesting to add a service to a master account is not a request to subscribe each device in a group to a service, even if a device in the master account can then, in an optional and separate process, share the service with other devices in the master account.

65. To the extent Petitioner contemplates some other modification of Raleigh, such modifications are not clearly explained, let alone a sufficient rationale given specific to such vague modifications for why one of ordinary skill in the art would have modified Raleigh in a way to satisfy individual claim limitations or claim 1 as a whole. The Petition’s generic allegations in its “reasons

to combine” section similarly do not explain why one of ordinary skill in the art would have modified Raleigh in a way to satisfy individual claim limitations or claim 1 as a whole. Statements, for example, that “a POSITA would have understood that these aspects are part of an overall cohesive system and framework, rather than alternative embodiments or configurations” or that “[n]othing in Raleigh would suggest to a POSITA that these aspects are incompatible or inconsistent with one another” do not explain why one of ordinary skill in the art would have made particular modifications to Raleigh that would result in the claimed invention, particularly where the modification being proposed in the Petition is that “the service selection and activation procedures of FIGS.35A-36B would be performed for a ‘master service account,’ using integrated APIs to ‘assist in providing a uniform and consistent service selection and purchase process.’” Pet. 18. Likewise, the Petition’s list of figures and assertion that Raleigh “states that the descriptions of those figures ‘can apply equally’ to the aspects of the service plan activation and service provider selection processes of 35A-36B” do not add any detail to the alleged combination/modification or explain a reason for making specific modifications that would result in a method meeting the limitations of any claim.

66. The Petition does not put forth any modification of Raleigh that

results in a request to subscribe each member of a group to a service, and therefore does not show that Raleigh teaches or suggests the claimed “subscription request for a service for a group plan.” And even if vague statements in the Petition were somehow interpreted to propose such a modification, the Petition does not articulate a rational underpinning for why one of ordinary skill in the art would have made the specific modification. Thus, in my opinion, Petitioner does not meet its burden to show obviousness by a preponderance of the evidence.

2. Raleigh does not teach at least limitations and [1.4]-[1.7] because Raleigh does not teach subscribing each member of a group to a service.

67. Claim limitations [1.4]-[1.7] implement the subscription request of limitations [1.1]-[1.2]. This is accomplished by:

[1.4] sending, by the unified services platform system, an activation request for the group plan to the third party application service provider system;

[1.5] receiving an activation response from the third party application service provider system;

[1.6] associating the service with each telephone number of the plurality of telephone numbers;

[1.7] providing access to the service for each telephone number based on the associating.

68. Because limitations [1.4]-[1.7] implement the subscription request of elements [1.1]-[1.2], limitations [1.4]-[1.7] are not met for at least the same reasons given above for limitations [1.1]-[1.2], which are incorporated herein by reference. For example, Raleigh’s “activation request” for selecting a service provider as identified in the Petition does not result in each member of the group being subscribed to a service, so it cannot be the claimed “activation request” for at least that reason.

69. Limitation [1.4] requires “an activation request for the group plan,” which relates back to the subscription request for the service for the group plan in limitation [1.1]. For the same reasons given above for limitation [1.1], “an activation request for the group plan” in claim limitation [1.4] requires a request to activate a subscription for the service for each member of the group. The Petition does not attempt to show that Raleigh teaches such an activation request. Instead, the Petition refers to Raleigh’s Figure 35A process “to activate an association between a service provider and mobile wireless communication device.” Ex. 1005, ¶ 1840. A request for such an association is not a request to activate a subscription for a service, let alone a request to activate a subscription for the service for each member of the group. Even if the Petition had shown that it would have been obvious to modify Raleigh such that the “activation request” was for a service

(which it did not, as discussed further below), Raleigh teaches at most that a service is added to a master service account for a master device, and the service may then be shared by the master device with secondary devices, as discussed above. Thus, the activation request is not a request to activate a subscription for the service identified in limitation [1.1] for each member of the group.

70. Like the claimed “activation request” in limitation [1.4], the “activation response” in limitation [1.5] also corresponds to the subscription request for the service for the group plan in limitation [1.1]. For the same reasons that the Petition does not show Raleigh teaches the claimed “activation request,” it does not show the claimed “activation response.”

71. In limitations [1.6] and [1.7], the service corresponding to the subscription request in limitation [1.1] is associated with each telephone number and access to the service is provided to each telephone number, confirming that the “subscription request,” “activation request,” and “activation response” are all for each number in the plurality recited.

72. The Petition does not show that Raleigh teaches at least providing access to the service for each telephone number based on the associating. The Petition relies on Raleigh’s teaching of a master device sharing a service plan with other devices on the master account. *See* Pet. 40. “Sharing” as used in Raleigh

refers to multiple users dividing an allotment of resources provided by the service. Such use of the service is not “providing access to the service” as contemplated by the ’047 Patent, which does not refer to access that depends also on another user’s use of the service.

73. As discussed above for limitations [1.2], Raleigh’s “FIG. 11A illustrates a representative screen 1100 presenting an example of a service plan bundle, called ‘Starter Plan,’ that has been purchased from the master device. The illustrated service plan bundle includes service plans for 100 text messages, 20 hours of application use, and 250 minutes of phone calls.” Ex. 1005, ¶ 803. Figure 11D shows that the plan sharing options include “simple” sharing in which minutes, etc. are shared without limiting an individual device’s portion of the plan allotment, but to prevent “hogging” an advanced share may be selected in which individual devices are allocated discrete portions of the plan. *Id.*, ¶ 805-806. Figures 12A-12B illustrate representative screens “for a master device that has a service plan (‘iStoryBooks’) that is available to both the master device and the child device.” *E.g., id.*, ¶ 841. “[T]he service usage of the master device is separated from the service usage of the child device.” *E.g., id.* Whether the sharing is simple or advanced, or displayed separately or together, the only way multiple users in Raleigh can use the same service is by dividing the service. Such use is not

“providing access to the service” as contemplated by the ’047 Patent, which does not refer to access that depends also on another user’s use of the service.

74. Accordingly, for at least the foregoing reasons, in my opinion the Petition does not meet its burden to show that Raleigh teaches limitations [1.4]-[1.7].

3. Raleigh does not teach “sending, by the unified services platform system, an activation request for the group plan to the third party application service provider system” [1.4] or “receiving an activation response from the third party application service provider system” [1.5] at least because Raleigh’s “activation request” is not for a service.

75. Petitioner argues Raleigh’s service provider selection process illustrated in Figures 35A-B shows the claimed “sending” and “receiving” steps of limitations [1.4] and [1.5].

76. In Raleigh, “FIGS. 35A and 35B illustrate representative processes to activate an association between a service provider and the mobile wireless communication device 105, e.g., to establish a new service account or associate the mobile wireless communication device with an existing service account of the service provider.” Ex. 1005, ¶ 1840. “Figure 35A illustrates a first alternative process by which a service provider is activated for the mobile wireless communication device 105 based on information obtained from the mobile wireless communication device 105 and provided to a service provider system by

the third party service partner system.” Ex. 1005, ¶ 1840. A request for such an association is not a request to activate a subscription for a service.

77. Once the service provider is selected, services may then be selected as illustrated in Figures 36A-B. *See* Ex. 1005, ¶ 1846. Raleigh’s statement that “[i]n some embodiments, selection of a service is conducted in conjunction with selection of a service provider as described above” (¶ 1846) means that a user can be prompted to select services immediately after selecting the service provider. This is evidenced by the next sentence, which presents an alternative in which selection of a service is prompted at a later time in response to certain conditions. Ex. 1005, ¶ 1846 (“In some embodiments, selection of a service is prompted by a notification trigger condition for the mobile wireless communication device 105, e.g., detection of no service plans, detection of an expiring or expired service plan, monitoring of particular service activities, monitoring of service usage, detection of a change in network state, etc.”).

78. The Petition appears to use Raleigh’s statement that selection of a service can be done “in conjunction with selection of a service provider” as an excuse to conflate the two processes. *See* Pet. 22, 33-35. Reading claim 1 as a whole, the activation request for the group plan sent by the unified services platform system to the third party application service provider system relates to the

subscription request for a service for a group plan, as recited in limitation [1.1]. In other words, the “activation request” and “activation response” in limitations [1.4] and [1.5] are for activating the service for a group plan that is the subject of the subscription request in limitation [1.1]. *See* claim limitation [1.10] reciting “sending, by the unified services platform system, *a second activation request for the service* to the second third party application service provider system.” The Petition does not show that Raleigh teaches such an activation request and response, and instead relies on the prerequisite process of selecting a service provider. *See* Pet. 33-36. Thus, in my opinion the Petition does not show that Raleigh teaches the limitations of claim elements [1.4] and [1.5].

79. The Institution Decision states that “Petitioner asserts that one having ordinary skill in the art would combine the service provider selection process of Figure 35 with the service plan selection process of Figure 36.” Inst. Dec. 12. The Decision appears to rely on the Petition’s citation of Raleigh paragraph 1846, which states that “[i]n some embodiments, selection of a service is conducted in conjunction with selection of a service provider as described above.” It is unclear from the Petition or the Institution Decision what specific steps are taken in this hypothetical process, and how this would result in an activation request and response being sent to correspond with the service rather than the service provider.

There is no articulated rationale for making any specific combination that results in such an activation response. In the absence of such an articulated rationale, in my opinion Petitioner has not met its burden to show obviousness by a preponderance of the evidence.

80. Accordingly, there is no activation request sent “to the third party application service provider system” or activation response received “from the third party application service provider system,” as required by claim 1 of the ’047 Patent. For these additional reasons, Petitioner has not shown that Raleigh teaches the limitations of claim elements [1.4] and [1.5].

4. Raleigh does not teach “sending, by the unified services platform system, a second activation request for the service to the second third party application service provider system” [1.10] or “receiving a second activation response from the second third party application service provider system” [1.11]

81. For limitations [1.10] and [1.11], the Petition refers to its arguments for limitations [1.4] and [1.5]. *See* Pet. 48. The Petition does not show that Raleigh teaches limitations [1.10] and [1.11] at least because the “activation request” identified by the Petition is not for a service, for the reasons explained above in Section VIII.A.3 for limitations [1.4] and [1.5]. In addition, claim element [1.10] explicitly recites sending “a second activation request *for the service*,” emphasizing that the activation request refers back to the service and is not met by

an activation related to selecting a service provider as alleged in the Petition.

B. Petitioner Has Not Shown That Raleigh Renders Obvious Dependent Claims 4-7

82. For at least the reasons discussed in the preceding paragraphs (incorporated by reference herein), Petitioner has not shown that Raleigh teaches or renders obvious claims 4-7, which depend from claim 1.

IX. ADDITIONAL REMARKS

83. I currently hold the opinions expressed in this Declaration. But my analysis may continue, and I may acquire additional information and/or attain supplemental insights that may result in added observations.

I hereby declare that all statements made are of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare 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 the Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this proceeding. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on: 3/18/24

By: Vijay K Madiseti
Dr. Vijay Madiseti

Appendix A

Dr. Vijay K. Madiseti

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Employment:

- 1989-present: Full Professor of Cybersecurity & Privacy, and Electrical & Computer Engineering (**Georgia Tech, Atlanta, GA 30332**).

Areas of Technical Interest – Topics in Computer Science, Electrical Engineering, and Computer Engineering.

Education: **PhD** (EECS, University of California at Berkeley, 1989), **B.Tech** (Hons) in Electronics and Electrical Communications Engineering (Indian Institute of Technology, Kharagpur, 1984).

Startup Companies:

Director, **VP Technologies, Inc.** (1995-): A startup commercialized through Georgia Tech's Advanced Technology Development Corporation (ATDC) focusing on digital software and hardware design services for military market. <http://www.vptinc.net>

Director, **Soft Networks, LLC** (2001-2007): A startup commercialized through Georgia Tech support focusing on software development tools and compilers for Cellular/WiFi/VOIP/telecommunication products. <http://www.soft-networks.com>

Director, **Elastic Video Inc.** (2007- 2009): A startup commercialized through Georgia Tech's VentureLab (<http://venturelab.gatech.edu>) development image and video processing software for wireless & IP networking.

Litigation Experience (2016-2024) With Testimony

(Note: There may be multiple cases between the parties, e.g., District Court v. ITC, US versus Foreign Cases)

Chrimar v. Adtran, Alcatel, et al.

Technology: Power over Ethernet (2015-2017)

Submitted reports & Deposition & Trial

Chamberlain v. Ryobi/TTI

Case No: 1:16-cv-06097 (ND Illinois)

Expert for Ryobi

Technology: Wireless/IoT/Barrier Movement (2016 – 2019)

Submitted reports & deposition & trial testimony

IOEngine v. IMC/Imation

Case No: cv-14-1572-GMS (US Delaware)

Expert for IMC/Imation

Technology: Networked Storage Device (2016-2017)

Submitted reports & deposition & trial testimony

Huawei v. Samsung

Case No: 3:16-cv-2787-WHO (ND Cal)

Expert for Samsung

Technology: 4G/LTE Random Access Protocols (2016-2019)

Submitted reports & deposition

Hitachi Maxell v. ZTE/Huawei

Case No: 5:16-cv-00178-RWS (ED Texas)

Expert for Hitachi Maxell

Technology: Digital Cameras

Submitted reports & deposition (2017 – 2018)

Hitachi Maxell v. Apple

Case No: 5:19-cv-00036-RWS

Expert for Hitachi Maxell

Technology: Digital Cameras

Submitted Expert Reports (2020-)

Qualcomm v. Apple

Case No: 17-cv-0108-GPC-MDD (SD Cal) Also, Related ITC/FTC Matters

Expert for Qualcomm

Technology: 4G/Wireless Communications/Smartphones (2017-2019)

Submitted Reports and Deposition

Qualcomm v. Apple

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Expert for Qualcomm
Technology: 4G/Wireless Communications/Smartphones (2017-2019)
Submitted Reports and Deposition

Optis v. Huawei

Case No: 2:17-cv-123 (E.D. Texas)
Expert for Optis Wireless
Technology: 4G/Video (2017-2019)
Submitted reports & deposition

Beckman Coulter v. Sysmex

Case No: 1:17-cv-24049-DPG (ND Illinois)
Expert for Sysmex
Technology: Medical Instrumentation Automation (2017-present)
Testifying Expert

TQ Delta v. Xyvel/Adtran

Expert for TQ Delta
Technology: DSL Technologies (2018-present)
Testifying Expert

3GL/KPN v. LG, Blackberry, HTC

Expert for 3GL/KPN
Technology: 4G/LTE Protocols (2018-present)
Reports and Deposition / Testifying Expert

Rovi v. Comcast

ITC No. 337-TA-1103 (ITC)
Expert for Rovi
Technology: Digital Video & interactive GUI (Jan 2018-May 2018)
Reports and Deposition

Cirba/Densify v. VMWare

Case No: 1:19-cv-00742-LPS
Expert for Cirba/Densify
Technology: Virtualization (2019-present)
Reports Deposition/PI Hearing / Testifying Expert, Trial

Power Integrations v. On Semiconductor

Case No: 17-cv-03189-BLF
Expert for On Semiconductor
Technology: Power Electronics (2018-2019)
Reports & Deposition/Testifying Expert.

Pathway v. Lumens, IPEVO, Aver JDA

Case No: ITC 337-TA-1045

Expert for Lumens JDA
Technology: Document Cameras (2016-2019)
Reports & Deposition (for IPR/ITC, no trial)

Wilan v. Apple

Case No: 3:14-cv-2235
Expert for WiLan
Technology: Voice over LTE/LTE Protocols (2017-2020)
Reports and Testified through Deposition/Trials

St. Lawrence Comm. v. Amazon

Case No. 2:19-CV-00027-JRG
Expert for Amazon
Technology: Multimedia Codecs
Submitted Expert Reports/Deposition (2020-2020)

PanOptis v. Apple

Case No. 2:19-CV-00066-JRG
Expert for PanOptis
Technology: LTE
Submitted Expert Reports/Deposition/Trial (2019-2020)

GAS v. Sprint Communications, Verizon et al.

Case No. 2:20-cv-00007-RWS
Expert for General Access (GAS)
Technology: LTE/5G
Submitted Expert Reports/Deposition (9/21-)

Causam v. Ecobee, Itron, et al

Case No. ITC 337-TA-1277
Expert for Causum
Technology: Load Management
Submitted Expert Reports and Deposition (6/22)

Masimo v. Apple

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Expert for Masimo (2018-)
Technology: Pulse Oximetry
Submitted Expert Reports, Deposition & Trial

TQ Delta v. Nokia, Adtran, CommScope, 2Wire, et al

Cases in Delaware & Texas
Expert for TQ Delta (2019 -)
Technology: DSL and Cable Modems
Submitted Expert Reports, Depositions & Hearings.

Paltalk Holdings v. Cisco Systems Inc.

Western District of Texas (6:21-CV-00757-ADA)

Expert for Paltalk Holdings (2022-)

Technology: VOIP Technologies

Submitted Expert Reports and Deposition

Ollnova Technologies v. Carrier Group, Ecobee, et al

Southern District of Florida (Case 9:22-cv-80388-DMM) & ED Texas

Expert for Ollnova (2022-)

Technology: IoT

Submitted Report and Deposition & Trial

VideoLabs v. Asus, et al

Case No: ITC 337-TA-1323

Expert for VideoLabs (2022-2023)

Technology: Video Conferencing

Reports and Depositions

ViaTech v. Adobe

District of Delaware (CA No. 20-358-RGA-MPT)

Expert for ViaTech (2019-2023)

Technology: Software Licensing

Reports, Deposition, and Trial Testimony

Zilkr v. Cisco

ED Texas, Marshall (Case 2:22-CV-166-JRB-RSP)

Expert for Zilkr (2022-)

Technology: Webex

Reports & Deposition

HouseCanary versus Amrock/Intuit

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Expert for House Canary (2023-)

Technology: Machine Learning

Reports & Deposition

SpaceTime 3D v. Apple

WD Texas Waco (1-23-cv-00553-ADA)

Expert for SpaceTime 3D

Technology: User Interfaces

Reports & Deposition

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Patent 5,490,216), Lumens JDA (2017-2019), Broadcom (WiFi), Sony (US Patent 6,101,534), Kia, (US Patent 5,530,431), Qualcomm, Ericsson, Daimler Benz, VW, Estech, Amazon, Ring, Digital Ally, On Semiconductor, LoganTree, Unified Patents, BMC Software, Masimo, Sentius, BMW, Facebook, LG, PAWS, Google, Daimler, FedEx, Surge LLC, and Dolby.

Earned Degrees

- 1. B. Tech (Hons), Electronics & Electrical Comm. Engineering**
Indian Institute of Technology (IIT), Kharagpur, India
1984.
- 2. Ph.D., Electrical Engineering & Computer Sciences (EECS)**
University of California (UC), Berkeley. CA
1989.

Books

- 1. VLSI Digital Signal Processors**
Madiseti, V.K.;
Boston: MA, IEEE Press: Butterworth Heinemann, 1995, 525 pp.
- 2. Quick-Turnaround ASIC Design in VHDL**
Romdhane, M., Madiseti, V.K., Hines, J.
Boston: MA, Kluwer Academic Press, 1996, 190 pp.
- 3. The Digital Signal Processing Handbook (First Edition)**
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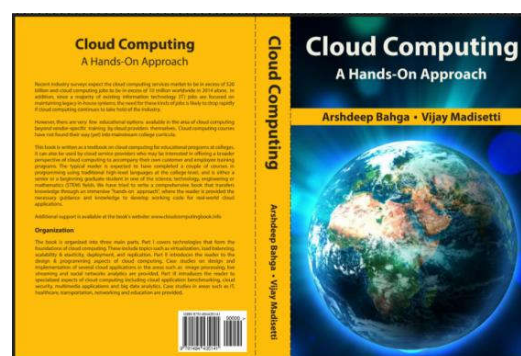
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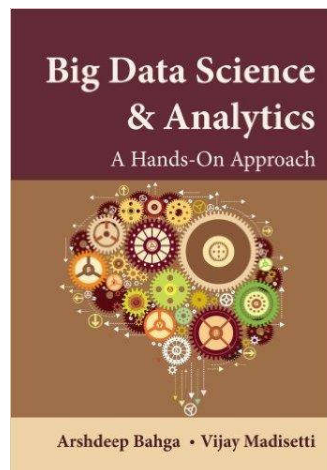
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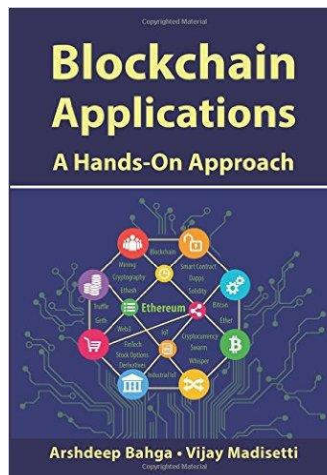
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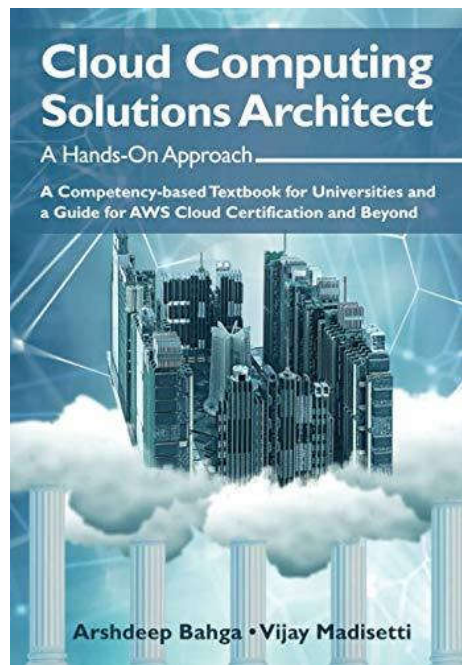
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2. IEEE Design & Test of Computers

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Madiseti, V., Richards, M. (Editors)
Los Alamitos: CA, IEEE Computer Society Press, 1994, 425 pp.

3. IEEE Transactions on Circuits & Systems II

Associate Editor: 1993-1995.

4. International Journal in Computer Simulation

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5. International Journal in VLSI Signal Processing

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- [3] 11,553,039 Service meshes and smart contracts for zero-trust systems, Issued January 10, 2023
- [4] 11,538,031 Method and system for identity and access management for blockchain interoperability, Issued December 27, 2022
- [5] 11,528,147 Verifying integrity and secure operations of cloud-based software services, Issued December 13, 2022

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- [14] 11,250,394 Method and system for blockchain-based gemstone ownership, identity, custody, supply-chain transfer, trading, and secure payments, Issued February 15, 2022
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- [32] 10,204,339 Method and system for blockchain-based combined identity, ownership, integrity and custody management, Issued February 12, 2019
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Ranked #8 in the list of issued US patents in the area of blockchain

Ranking in the area of US patents issued in the area of blockchain technology in 2020

Table 3. Patent by assignee

Applicant (Assignee)	Patents	%	Applicant (Assignee)	Patents	%
IBM	47	14.0%	Wells Fargo Bank	4	1.2%
Accenture Global Solutions	28	8.4%	Alibaba	3	0.9%
Bank of America	24	7.2%	Dell	3	0.9%
Capital One Services	12	3.6%	The Bank Of New York Mellon	3	0.9%
Mastercard	11	3.3%	The Toronto-Dominion Bank	3	0.9%
Guardtime IP Holdings Limited	8	2.4%	Verizon Patent And Licensing	3	0.9%
Madiseti Vijay K.	8	2.4%	Winklevoss I.P.	3	0.9%
Black Gold Coin, Inc.	7	2.1%	SAP	2	0.6%
Cisco	7	2.1%	Sony	2	0.6%
Acronis International	5	1.5%	Stampery	2	0.6%
Blockchain Asics	5	1.5%	Uipco	2	0.6%
Tran Bao	5	1.5%	Vmware	2	0.6%
Intel	4	1.2%	Walmart Apollo	2	0.6%
Northern Trust	4	1.2%	Wiig Rex	2	0.6%
Shocard	4	1.2%	Xage Security	2	0.6%

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*Madiseti, V. and Ramlu, M.,
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2. Multilevel range/NEXT performance in digital subscriber loops

Brand, G.; Madiseti, V.; Messerschmitt, D.G.;
Communications, Speech and Vision, IEE Proceedings I [see also IEE
Proceedings-Communications] ,Volume: 136 , Issue: 2 , April 1989
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3. Seismic migration algorithms on parallel computers

Madiseti, V.K.; Messerschmitt, D.G.;
Signal Processing, IEEE Transactions on [see also Acoustics, Speech, and
Signal Processing, IEEE Transactions on], Volume: 39 , Issue: 7 , July 1991
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4. Asynchronous algorithms for the parallel simulation of event-driven dynamical systems

Madiseti, V.K.; Walrand, J.C.; Messerschmitt, D.G.:
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5. Synchronization mechanisms for distributed event-driven computation

Madiseti, V.K.; Hardaker, D.:

ACM Transactions on Modeling and Computer Simulation, v 2, n 1, Jan. 1992,
Pages: 12-51

6. Efficient VLSI Architectures for the Arithmetic Fourier Transform (AFT)

Kelley, B.T.; Madiseti, V.K.;

Signal Processing, IEEE Transactions on [see also Acoustics, Speech, and
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7. The fast discrete Radon transform. I. Theory

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8. The Georgia Tech digital signal multiprocessor

Barnwell, T.P., III; Madiseti, V.K.; McGrath, S.J.A.;

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10.LMSGEN: a prototyping environment for programmable adaptive digital filters in VLSI

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13. Rapid prototyping on the Georgia Tech digital signal multiprocessor

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Sipitca, M.; Madiseti, V.K.;

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15. A quantitative methodology for rapid prototyping and high-level synthesis of signal processing algorithms

Madiseti, V.K.; Curtis, B.A.;

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16. Computer Simulation of Application-Specific Signal Processing Systems

Casinovi, G.; Madiseti, V.K.;

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17. System partitioning of MCMs for low power

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18. Error correcting run-length limited codes for magnetic recording

Jaejin Lee; Madiseti, V.K.;

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Dung, L.-R.; Madiseti, V.K.;

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24. Combined modulation and error correction codes for storage channels

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Hezar, R.; Madiseti, V.K.;

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27. All-digital oversampled front-end sensors

Romdhane, M.S.B.; Madiseti, V.K.;

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Jatunov, L.A.; Madiseti, V.K.;

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3. **Seismic migration algorithms on multiprocessors**
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4. **WOLF: A rollback algorithm for optimistic distributed simulation systems**
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8. Task scheduling in the Georgia Tech digital signal multiprocessor

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3. **Enhancements to ECRTTP with Applications to Robust Header Compression for Wireless Applications. <draft-madiseti-rao-suresh-rohc-00.txt>**
Madiseti, V.; Rao, S., Suresh, N.
IETF Internet-Draft, June 30, 2003.

Ph.D. Students Graduated

1. **Brian T. Kelley, 1992**
VLSI Computing Architectures for High Speed Signal Processing
Member of Technical Staff, Motorola

Winner of Dr. Thurgood Marshall Dissertation Fellowship Award
2. **Bryce A. Curtis, 1992**
Special Instruction Set Multiple Chip Computer for DSP
Member of Technical Staff, IBM
3. **Jaejin Lee, 1994**
Robust Multitrack Codes for the Magnetic Channel
Professor, Yonsei University, Korea
4. **Mohamed S. Ben Romdhane, 1995**
Design Synthesis of Application-Specific IC for DSP
Director of IP, Rockwell
5. **Shoab A. Khan, 1995**
Logic and Algorithm Partitioning on MCMs
Professor, National University of Science & Technology, Pakistan
6. **Lan-Rong Dung, 1997**
VHDL-based Conceptual Prototyping of Embedded DSP Architectures
Professor, National Chaio Tung University, Taiwan

Winner of VHDL International Best PhD Thesis Award, 1997

- 7. Thomas W. Egolf, 1997**
Virtual Prototyping of Embedded DSP Systems
Distinguished Member of Technical Staff, Agere
- 8. Alvaro Marenco, 1997**
On Homomorphic Deconvolution of Bandpass Signals
Professor, Texas A&M University

Winner of GIT ECE Outstanding Teaching Assistant Award
- 9. Shahram Famorzadeh, 1997**
BEEHIVE: A Distributed Environment for Adaptive Signal Processing
Member of Technical Staff, Rockwell
- 10. Timothy J. Klausutis, 1997**
Adaptive Lapped Transforms with Applications to Image Coding.
US Air Force/Univ. of Florida
- 11. Lan Shen, 1998**
Temporal Design of Core-Based Systems
Member of Technical Staff, IBM
- 12. James DeBardelaben, 1998**
Optimization Based Approach to Cost Effective DSP Design
Research Scientist, Johns Hopkins University

Georgia Tech ECE Faculty Award
- 13. Sangyoun Lee, 1999**
Design of Robust Video Signal Processors
Professor, Yonsei University

US Army Sensors Lab Research Excellence Award, 1999
- 14. Rahmi Hezar, 2000**
Oversampled Digital Filters
Member of Technical Staff, Texas Instruments
- 15. Yong-kyu Jung, 2001**
Model-Based Processor Synthesis
Professor, Texas A&M University
- 16. Mustafa Turkboylari, 2002**
Handoff Algorithms for Wireless Applications
Member of Technical Staff, Texas Instruments
- 17. Yun-Hui Fan, 2002**
A Stereo Audio Coder with Nearly Constant Signal to Noise Ratio
Post-Doctoral Research Associate, Northeastern University
- 18. Subrato K. De, 2002**
Design of a Retargetable Compiler for DSP

Member of Technical Staff, Qualcomm

US Army Sensors Lab Research Excellence Award, 1999

19. Chonlameth Aripnikanondt, 2004

System-on-Chip Design with UML

Professor, King Mongkut's University, Thailand

US Army Sensors Lab Research Excellence Award, 1999

20. Loran Jatunov, 2004

Performance Analysis of 3G CDMA Systems

Senior Research Scientist, Soft Networks, LLC. Now at Samsung

21. Antonios Argyriou, 2005, Research Scientist, Philips

22. Pilho Kim, 2009, Scientist, VP Technologies, Inc.

23. M. Sinnokrot, 2009, Staff Engineer, Apple

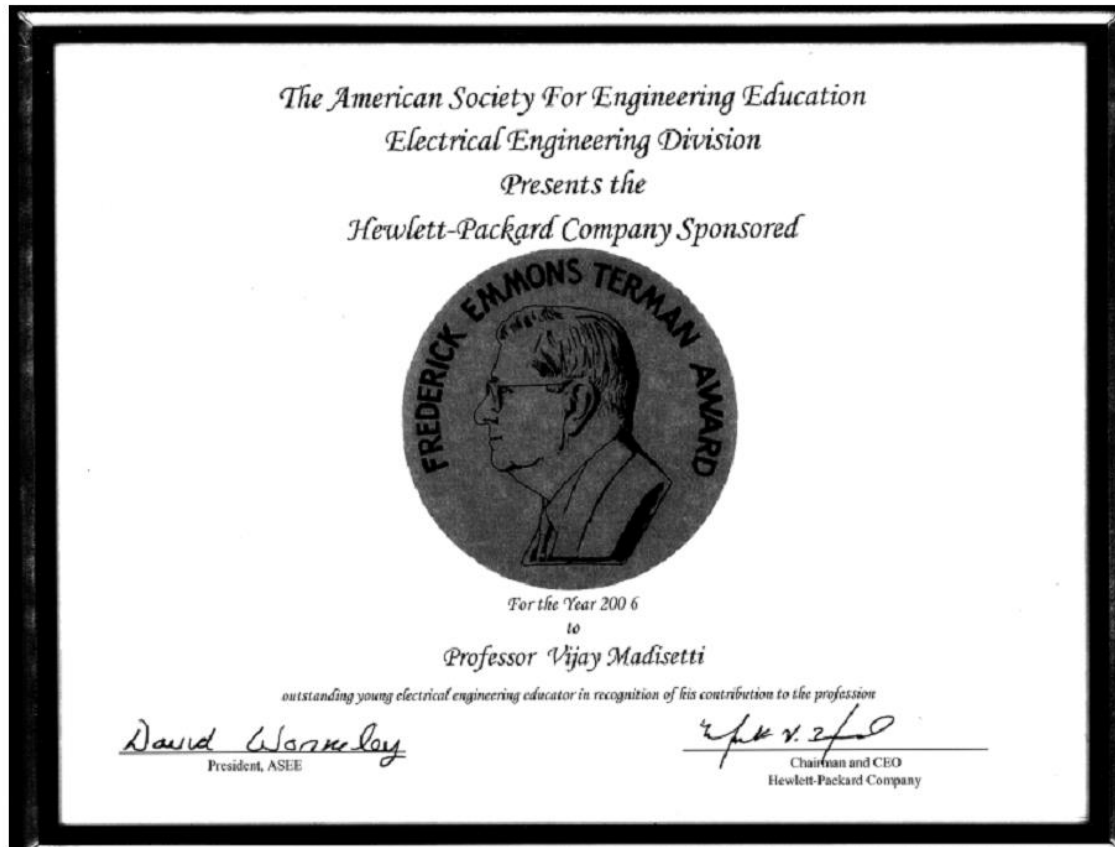
24. A. Yusuf, 2013, Professor, National University, Pakistan

25. Joel Corporan, 2023, Senior Scientist, Warner Media, USA

Awards & Honors

1. **Jagasdis Bose National Science Talent Fellowship**, Indian Institute of Technology, Kharagpur, 1980-1984
2. **General Proficiency Prize**, Indian Institute of Technology, Kharagpur, 1984
3. **Demetri Angelakos Outstanding Graduate Student Award**, Univ. of California, Berkeley, 1989
4. **Ira Kay IEEE/ACM Best Paper Award** for Best Paper presented at IEEE Annual Simulation Symposium, 1989
5. **IBM Faculty Development Award** 1990
6. **Technical Program Chair**, IEEE Workshop on Parallel and Distributed Simulation. 1990
7. **Technical Program Chair**, IEEE MASCOTS'94
8. **NSF RI Award**, 1990
9. **VHDL International Best PhD Dissertation Advisor Award**, 1997

10. Georgia Tech Outstanding Doctoral Dissertation Advisor Award, 2001
11. ASEE 2006 Frederick Emmons Terman Medal, 2006
12. Fellow of IEEE



Intellectual Property Disclosures (Georgia Tech)

<u>Patent</u>	<u>Date</u>	<u>Description</u>
2843	2004	Method and Apparatus for Improving the Performance of Wireless LANs
2825	2003	Method and Apparatus for Optimal Partitioning and Ordering of Antennas for Layered Space-Time Block Codes in MIMO Communications Systems
2815	2003	How to Rapidly Develop a SyD Application
GSU-023	2003	Rapid Development of SyD Applications

2810	2003	System on Mobile Devices Middleware Design
2718	2003	A Transport Layer Algorithm for Improved Anycast Communication
2717	2003	A Novel Transport Layer Load-Balancing Algorithm
2716	2003	A Transport Layer QoS Algorithm
2715	2003	A Novel Transport Layer Algorithm for MPLS Performance
2659	2002	A New Algorithm and Technology for Implementing Mobile IP with Applications to Voice and Video over Mobile IP
2656	2002	Debugging with Instruction-Level Reverse Execution
2655	2002	Embedded Software Streaming
2539		System of Databases: An Enabling Technology for Programming
2517	2002	A Dynamic Instantiated Real-Time Operating System Debugger
2516	2002	A Dynamic Real-Time Operating System
GSU-009	2001	System of Databases: Architecture,, Global Queries, Triggers and Constraints
2480	2001	Mobile Fleet Application based on SyD Technology
2479	2001	System of Databases: A model with coordination links and a calendar application
1893	1999	Beehive
1726	1995	Very High Scale Integrated Circuit Hardware Description Language Models (VHDL Models)
1401	1995	Self-Compensation Receiver (SCR)