

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

CISCO SYSTEMS, INC.

Petitioner,

v.

ESTECH SYSTEMS, INC.,

Patent Owner

---

**DECLARATION OF VIJAY K. MADISETTI, PH.D.**

**TABLE OF CONTENTS**

I. INTRODUCTION..... 3

II. BACKGROUND AND QUALIFICATIONS..... 4

III. LEGAL STANDARDS..... 12

    A. Presumption of Validity..... 12

    B. Anticipation..... 16

    C. Obviousness ..... 18

    D. Secondary Considerations..... 23

    E. Claim Construction ..... 24

    F. Person of Ordinary Skill in the Art..... 25

IV. OVERVIEW OF THE '298Patent ..... 27

    A. The '298 Patent ..... 27

V. SUMMARY OF MY OPINIONS REGARDING VALIDITY ..... 35

VI. DETAILED RESPONSE TO PETITIONER’S AND DR. SOURI’S  
INVALIDITY OPINIONS ..... 36

    A. The Petition Does Not Establish A Reasonable Likelihood That Claims 1-5  
    and 7-12 Of The '298 Patent Are Rendered Obvious By The Combination Of  
    Ludwig And Reid ..... 36

        1. Overview ..... 36

        2. Claim 1 ..... 38

        3. Claims 2-5 and 7..... 43



4. Claim 8 .....	44
5. Claims 9-12 .....	44
B. The Petition Does Not Establish A Reasonable Likelihood That Claims 1-5 and 7-12 Of The '298 Patent Are Rendered Obvious By The Combination Of Ludwig And Hori.....	44
1. Overview .....	44
2. Claim 1 .....	46
3. Claims 2-5 and 7.....	49
4. Claim 8 .....	49
5. Claims 9-12 .....	49
C. The Petition Does Not Establish A Reasonable Likelihood That Claims 1-5 and 7-12 Of The '298 Patent Are Rendered Obvious By The Combination Of Wilson, Guy, And Hori.....	50
1. Overview .....	50
2. Claim 1 .....	51
3. Claims 2-5 and 7.....	52
4. Claim 8 .....	52
5. Claims 9-12 .....	53
VII.....	CONCLUSION

I, Vijay K. Madiseti, do hereby make the following declaration:

**I. INTRODUCTION**

1. I am currently a fulltime professor of Electrical and Computer Engineering at Georgia Tech in Atlanta, Georgia.

2. I have been retained by retained Williams, Simons, & Landis, PLLC (hereinafter “WSL”), to provide various opinions regarding U.S. Patent No. 8,391,298 (“the ‘298 patent”) (Ex. 1001). I understand that my declaration is being submitted in connection with a Patent Owner Preliminary Response in an *inter partes review* of the ‘298 patent. Unless otherwise noted, the statements made herein are based on my personal knowledge and, if called to testify with regards to this declaration, I could and would do so competently and truthfully.

3. My analysis and basis for my opinions are set forth below. I reserve the right to supplement or amend my analysis, conclusions, and any opinions I make in this declaration in response to opinions expressed by Petitioner’s witnesses, or in light of any additional evidence, testimony, discovery, or other information that may be provided to me after the date of this declaration.

4. I have been retained in this matter by WSL as a technical expert in the field of electronics and electrical communications engineering. I am being compensated for my work in this matter at my usual and customary rate. I am also being reimbursed for all reasonable expenses that I incur during the course of this

work. My compensation does not depend upon the results of my analysis or the substance of my testimony. Nor does my compensation depend on the outcome of this *inter partes* review or any related proceeding, and it is not based on the result of any issue in this *inter partes* review. I have no personal interest in the outcome of this *inter partes* review.

## **II. BACKGROUND AND QUALIFICATIONS**

5. Provided below is a summary of my educational background, career history, and publications. My curriculum vitae is attached as Exhibit A to this declaration.

6. 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 Sciences (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.

7. 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.

8. 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).

9. 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.

10. 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."

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

12. 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).

13. 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 (Ex. A).

14. I have worked in areas of digital signal processing relating to speech, audio and image processing since the early 1980s.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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

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

20. 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
- V. Madisetti and A. Argyriou: A Transport Layer Technology for Improving QoS of Networked Multimedia Applications, IETF Draft July 25, 2002.

21. 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>).

**Integrated Softswitch/Media Server Platform, SNX 850**

- IP-centric switching
- One box for LAN switching, PBX/iPBX & VOIP
- Remote extension for SOHO or Branch office
- Centrex function co-located in ISP
- Very low cost per port



22. 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.

23. 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.

24. 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.

25. 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.

26. 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.

27. 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 commercial 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.

28. 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>)

29. 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 <https://www.thehindubusinessline.com/bline/2002/04/09/stories/2002040900660700.htm> for example URL

30. 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.

31. 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.

32. I have over thirty patent applications pending and am listed as inventor on over two dozen US patents.

33. 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. A list of other program committees and editorial boards I have served on can be found as part of my curriculum vitae.

### **III. LEGAL STANDARDS**

#### **A. Presumption of Validity**

34. I understand that all patents enjoy a presumption of validity. In other words, patents are presumed to have been correctly issued by the United States Patent and Trademark Office (USPTO) after undergoing a rigorous examination process that often lasts for years.

35. For this reason, I understand that Petitioner's burden to prove invalidity of the '298 patent claims is a high one. I understand that the Petitioner must show that there is a reasonable likelihood of success as to any of the claims challenged. I

understand that the Petitioner bears the burden of proving any instituted grounds of invalidity by a preponderance of the evidence. I understand that a “preponderance” means “more likely than not.” I understand that general and conclusory assertions, without underlying factual evidence, may not support a conclusion that something is “more likely than not.” Rather, the preponderance of the evidence standard requires that a reasonable finder of fact be convinced that the existence of a specific material fact is more probable than the non-existence of that fact. The preponderance of the evidence standard does not support speculation regarding specific facts and is instead focused on whether the evidence more likely than not demonstrates the existence or non-existence of specific material facts. Here, I understand that Petitioner has argued that the claims at issue are obvious over different grounds, some applying a single reference, and some applying a combination of multiple references.

36. I also understand that, in performing a proper unpatentability analysis, an expert must do more than simply provide quotes from the evidentiary record along with conclusory allegations of unpatentability. To the contrary, an expert’s conclusions regarding unpatentability must be supported by actual analysis and reasoning set forth in the expert declaration, such that the theoretical and factual foundation for the expert’s conclusions can be properly evaluated.

37. I understand that if the invention was known or used by others in this country or patented or described in a printed publication in this or a foreign country before the invention thereof by the applicant for a patent, it is considered prior art under pre-AIA 35 U.S.C. § 102(a).

38. I understand that if the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, it is considered prior art under pre-AIA 35 U.S.C. § 102(b).

39. I understand that under pre-AIA 35 U.S.C. §102(c), an inventor is not entitled to a patent if he has abandoned the invention.

40. I understand that if the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, it is considered prior art under pre-AIA 35 U.S.C. § 102(d).

41. I understand that if the invention was described in — (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by

the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language, it is considered prior art under pre-AIA 35 U.S.C. § 102(e).

42. I understand that under pre-AIA 35 U.S.C. §102(f) an inventor is not entitled to a patent if he did not himself invent the subject matter sought to be patented.

43. I understand that an inventor is not entitled to a patent if under pre-AIA 35 U.S.C. § 102(g)(1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

**B. Anticipation**

44. I understand that for a single prior art reference to be anticipating under 35 U.S.C. § 102, it must disclose each element of the claim, arranged as set forth in the claim. If a reference fails to expressly disclose one or more elements of the patent claim, the claim is anticipated only if the missing elements are disclosed inherently in the reference.

45. To establish such inherency, the evidence must make clear to a person of ordinary skill in the art that the missing claim element is necessarily present in the prior art reference or is the inevitable outcome of the process or thing that is explicitly described in the prior art. Inherency may not be established by a possibility, or even probability, that a certain result may arise from a given set of circumstances.

46. I understand that, to anticipate a patent claim, a prior art reference must have an enabling disclosure. That is, the reference must provide sufficient information to allow one skilled in the art to practice what is disclosed without undue experimentation.

47. I understand that, in order to show that a particular “publication” is prior art, the “publication” must have been sufficiently accessible to the public interested in the art, and that dissemination and public accessibility are keys to determining whether a reference was “published” in this sense. Accessibility goes to the issue of

whether interested members of the public could obtain the information if they wanted to.

48. I understand that a reference is “publicly accessible” upon a satisfactory showing that the document has been disseminated or otherwise made available so that persons interested and ordinarily skilled in the subject matter, exercising reasonable diligence, can locate it. By way of example, I understand that a document may not constitute a printed publication if a customary search would not have rendered the work reasonably accessible even to a person informed of its existence. In this context, I have been informed that the Copyright Office’s housing of a reference does not necessarily show that the reference was made available such that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it.

49. I understand that, in order to show that a particular product was prior art, one must establish that this prior art product was known or used by the public and was accessible to the public. The knowledge or use is accessible to the public if there has been no deliberate attempt to keep it secret. I understand that the secret use of the process coupled with the sale of the product does not result in a public use of the process unless the public could learn the claimed process by examining the product.



50. I understand that this knowledge or use must take place within the United States. Prior knowledge or use that is not present in the United States, even if widespread in a foreign country, cannot be used for purposes of establishing that a product is prior art to the '298 patent.

**C. Obviousness**

51. I understand that a patent claim can be invalid under 35 U.S.C. § 103 if the claimed subject matter would have been “obvious” to a person of ordinary skill in the art as of the priority date of the patent based upon one or more prior art references. I understand that an obviousness analysis should consider each of the following so-called “Graham factors”: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any (such as unexpected results, commercial success, long-felt but unsolved needs, failure of others, copying by others, licensing, and skepticism of experts).

52. I understand that a conclusion of obviousness may be based upon either a single prior art reference or a combination of prior art references. However, I understand that merely demonstrating that each of the claim elements was, independently, known in the prior art does not prove that a claim composed of several known elements is obvious. In other words, I have been informed that obviousness requires more than a mere showing that the prior art includes separate

references covering each limitation in a claim. Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those elements in the normal course of research and development to yield the claimed invention.

53. Moreover, I understand that it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in a way the claimed new invention does.

54. I further understand that, to determine obviousness, courts look to the interrelated teachings of multiple patents or other prior art references, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art.

55. I also understand that, in determining whether a combination of prior art references renders a claim obvious, it may be helpful to consider whether there is some teaching, suggestion, or motivation to combine the references and a reasonable expectation of success in doing so. I understand, however, that the teaching, suggestion, or motivation to combine inquiry is not required and may not be relied upon in lieu of the obviousness analysis outlined above.

56. I understand that the following exemplary rationales may lead to a conclusion of obviousness: the combination of prior art elements according to known methods to yield predictable results; the substitution of one known element

for another to obtain predictable results; and the use of known techniques to improve similar devices in the same way.

57. However, a claim is not obvious if the improvement is more than the predictable use of prior art elements according to their established functions. Similarly, a claim is not obvious if the application of a known technique is beyond the level of ordinary skill in the art.

58. Further, when the prior art teaches away from combining certain known elements, discovery of successful means of combining them is not obvious. I understand that similar subject matter may not be sufficient motivation for a person of skill in the art to combine references if the references have conflicting elements.

59. I understand that, in order to be used in an obviousness combination, a prior art reference must be “analogous.” I understand that a prior art reference may be analogous if it is in the same field of endeavor as the other references with which it is combined, or if the reference is reasonably pertinent to the solving the problems the inventors of the patent-at-issue sought to solve.

60. I understand that obviousness of a patent claim cannot properly be established through hindsight, and that elements from different prior art references, or different embodiments of a single prior art reference, cannot be selected to create the claimed invention using the invention itself as a roadmap. I understand that the claimed invention as a whole must be compared to the prior art as a whole, and courts

must avoid aggregating pieces of prior art through hindsight that would not have been combined absent the inventors' insight.

61. I understand that obviousness is not established by simply combining previously known elements from the prior art. A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. An invention is unpatentable as obvious if the differences between the patented subject matter and the prior art would have been obvious at the time of invention to a person of ordinary skill in the art.

62. I understand that obviousness of a patent cannot properly be established by mere conclusory statements. Instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. When an expert opines that all the elements of a claim disparately exist in the prior art, the expert should provide the rationale to combine the disparate references. A reason for combining disparate prior art references is a critical component of an obviousness analysis. The obviousness analysis should be made explicit and needs to provide an articulated reasoning with some rational underpinning to identify the reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed invention does.

63. I also understand that inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity

will be combinations of what, in some sense, is already known. This is another reason why merely pointing to the elements being known in the art in separate locations is not the end of the obviousness inquiry.

64. I understand that technical experts may testify to matters like the level of skill in the art at the time of the invention and what a skilled artisan might find obvious in light of the prior art without addressing objective indicia of non-obviousness. However, where an expert purports to testify not just to certain factual components underlying the obviousness inquiry, but to the ultimate question of obviousness, the expert must consider all factors relevant to that ultimate question, including all objective evidence of nonobviousness. Accordingly, I have undertaken such considerations here.

65. I understand that, to render obvious a patent claim the prior art references must be enabling. That is, the references must provide sufficient information to allow one skilled in the art to practice what is disclosed without undue experimentation. I understand that, while a prior art reference may support any finding apparent to a person of ordinary skill in the art, prior art references that address different problems may not, depending on the art and circumstances, support an inference that the skilled artisan would consult both of them simultaneously.

**D. Secondary Considerations**

66. I understand that one of the so-called *Graham* factors that must be considered in determining obviousness is the existence of any secondary considerations, which tend to show that a patent claim is not obvious. Such secondary considerations of nonobviousness of a patent include (1) long-felt and unmet need in the art that was satisfied by the claimed invention of the patent; (2) failure of others to achieve the results of the claimed invention; (3) commercial success or lack thereof of the products and processes covered by the claimed invention; (4) deliberate copying of the claimed invention by others in the field; (5) taking of licenses under the patent by others; (6) whether the claimed invention was contrary to the accepted wisdom of the prior art; (7) expression of disbelief or skepticism by those skilled in the art upon learning of the claimed invention; (8) unexpected results achieved by the claimed invention; (9) praise of the claimed invention by others skilled in the art; and (10) lack of contemporaneous and independent invention by others.

67. I understand that each of these considerations may form an independent basis for nonobviousness of a patent. I also understand that the fact that another person simultaneously and independently created the same invention claimed in an '298 patent can serve as an indication that the invention was obvious.

68. I also have been informed by counsel that there must be a nexus between any such secondary considerations and the claimed invention.

**E. Claim Construction**

69. I understand the district court in the related litigation has construed several terms of the '298 patent (Ex. B). Where the district court has provided a construction, I have applied that construction in my analysis. Where the district court has not provided a construction, I have applied the plain and ordinary meaning of the remaining claim terms as they would have been understood by a person of ordinary skill in the art at the time of the filing date of the respective '298 patent. My opinions would not change if the claim terms were construed based their plain and ordinary meaning.

70. The district court has preliminarily construed the following claim terms:<sup>1</sup>

<b>Term</b>	<b>Construction</b>
“a first local area network (‘LAN’) / a second LAN / a wide area network (‘WAN’) / a third LAN” [’298 Patent, Claims 1, 2, and 8]	the first LAN, second LAN, third LAN, and WAN are networks that are distinct from each other
“wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry	plain and ordinary meaning

---

<sup>1</sup> Should the Court modify its claim construction, I reserve the right to supplement my opinions accordingly.

<p>across the WAN”          [’298 Patent, Claim 1]</p>	
<p>“select between observing the list of the plurality of telecommunications extensions coupled to the second LAN or observing a list of the plurality of telecommunications extensions coupled to the third LAN”          [’298 Patent, Claim 1]</p>	<p>select which of two [lists of the plurality of telecommunications extensions] is to be audibly or visibly displayed to the user</p>
<p>“circuitry for automatically calling one of the plurality of telecommunications extensions in response to the user selecting one of the plurality of telecommunications extensions from the observed list, wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN”          [’298 Patent, Claims 1 &amp; 9]</p>	<p>plain and ordinary meaning</p>

71. For the purpose of my opinions in this report, I have been asked to assume that February 1, 2001, is the earliest effective filing date of the ’298 patent. Therefore, when I refer to a person of ordinary skill in the art in my opinions regarding the ’298 patent, I am referring a person of ordinary skill in the art as of February 1, 2001.

**F. Person of Ordinary Skill in the Art**

72. I understand that there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including the educational level of active



workers in the field at the time of the invention, the sophistication of the technology, the type of problems encountered in the art, and the prior art solutions to those problems.

73. Based on my experience in industry and academia, it is my opinion that a person of ordinary skill in the art at the time of the inventions of the '298 patent would have had a Bachelor's Degree in Computer Science or Computer Engineering or related field and two years of experience working in the field of communications and networking. An individual with less technical education but more experience, or vice versa, could also qualify as a person of ordinary skill in the art.

74. I understand that Dr. Souri opined that a person of ordinary skill in the art for the '298 patent "would have had a bachelor's degree in Electrical Engineering, Computer Engineering, or an equivalent field, and at least two years of experience working in the fields of microelectronics or telecommunications, or associated network engineering or design." Ex. 1002 ¶45. Although I disagree with Dr. Souri's opinions to the extent they diverge from my own, my opinions regarding validity of the '298 patent remain the same under either opinion regarding a person of ordinary skill in the art.

#### **IV. OVERVIEW OF THE '298 Patent**

##### **A. The '298 Patent**

75. The '298 patent was filed on May 29, 2003, and issued on March 5, 2013. It is a continuation-in-part of U.S. App. No. 09/775,018, which was filed on February 1, 2001, and issued as U.S. Patent No. 7,068,684 (“the '684 patent”). The '298 patent is titled “Phone Directory in a Voice Over IP Telephone System.” The Abstract of the '298 patent provides an overview of the claimed subject matter: “In a Voice over IP system, a user can dial numbers stored in a series of lists, which are stored in the system and displayed to the user of an IP telephone. One implementation will allow a user to scroll through a list of remote sites. When the user finds the desired site, the user is then presented with the same options as a user local to that site. All of this can be performed without the need for an operator or a printed directory. This system provides an ability for a user to scroll through a list of names and phone numbers and then call a person once their name and phone number is displayed.” Ex. 1001, Abstract.

76. The invention of the '298 patent can be used in a network architecture consisting of LANs interconnected by a WAN, an example of which is depicted in Figure 3. *See id.* at 2:3-4.

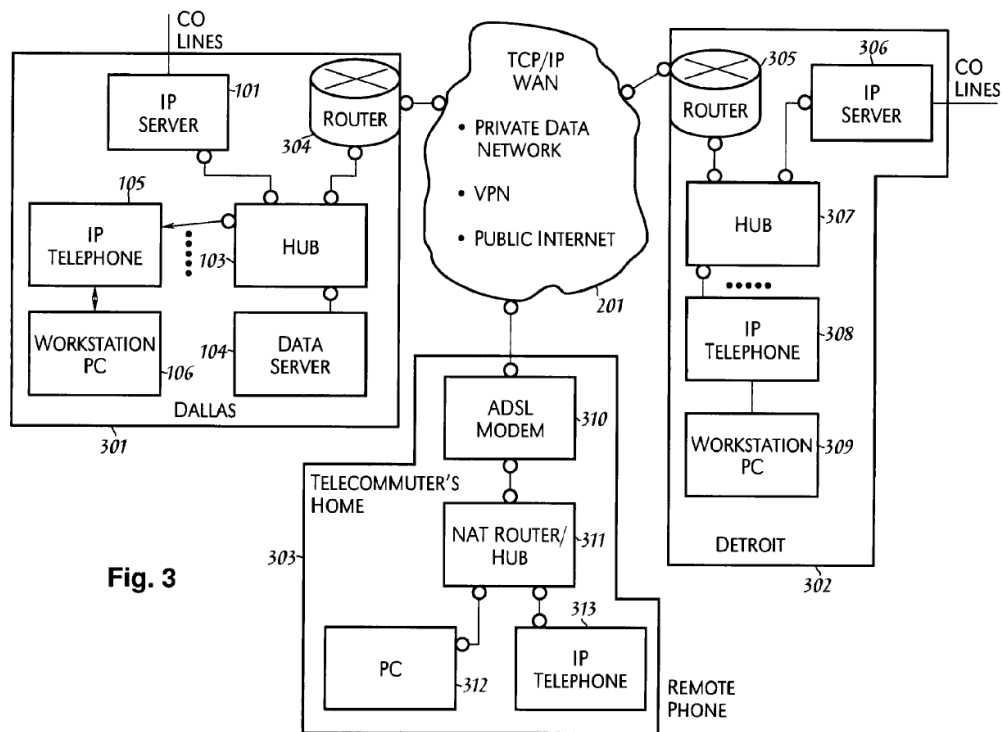


Fig. 3

Ex. 1001, Fig. 3.

77. “An embodiment of the present invention permits a user at a remote site to easily scroll through a phone listing of users through the WAN 201.” *Id.* at 9:53-55. The phone listing can be displayed to the user or the phone listing can be vocally listed to a user. *See id.* at 9:66-10:4. In some embodiments, the listing can be limited to the same LAN as the user, or listing from other LANs that are connected via a WAN. *See id.* at 9:55-59, Fig. 11. The user can automatically dial the number of an individual listing by, for example, pressing a button on a VoIP telephone. *See id.* at 9:60-64, Fig. 11.

78. I understand that Dr. Souri was instructed that the ‘298 patent is not entitled to the priority date of February 1, 2001, but did not provide any analysis regarding whether the ‘298 patent is entitled to that priority date. Ex. 1002, ¶37. I disagree. The claims of the ‘298 patent are supported by U.S. Patent Application No. 09/775,018. U.S. Patent Application No. 09/775, 018 issued as the ’684 patent, so I will refer to the specification of the ’684 patent when identifying portions of U.S. Patent Application No. 09/775,018.

79. It is my opinion that the disclosure of U.S. Patent Application No. 09/775,018 makes it clear that the inventors of the ’298 patent possessed as of February 1, 2001, the invention recited in the claims of the ’298 patent. It is my opinion that the claims of the ’298 patent are supported by at least the following disclosures in the specification of U.S. Patent Application No. 09/775, 018:<sup>2</sup>

Claim	Support in U.S. Patent Application No. 09/775,018 (’684 Patent)
<b>Claim 1</b>	
<b>1[pre]</b> An information handling system comprising:	Figs. 1-3.
<b>1[a]</b> a first local area network (“LAN”);	4:54-58, Figs. 1-3.
<b>1[b]</b> a second LAN;	4:54-58, Figs. 1-3.

---

<sup>2</sup> Reference to a figure includes the accompanying text in the specification referring to, describing, or relating to the figure.

<p><b>1[c]</b> a wide area network (“WAN”) coupling the first LAN to the second LAN;</p>	<p>4:54-58, Figs. 1-3.</p>
<p><b>1[d]</b> a third LAN coupled to the first and second LANs via the WAN;</p>	<p>4:54-58, Figs. 1-3.</p>
<p><b>1[e]</b> a first telecommunications device coupled to the first LAN;</p>	<p>4:54-58, Figs. 1-3.</p>
<p><b>1[f]</b> a plurality of telecommunications extensions coupled to the second LAN;</p>	<p>4:13-29, 4:54-58, Figs. 1-3.</p>
<p><b>1[g]</b> the first LAN including first circuitry for enabling a user of the first telecommunications device to observe a list of the plurality of telecommunications extensions;</p>	<p>10:44-55, 16:4-12, Fig. 8.</p>
<p><b>1[h]</b> the first LAN including second circuitry for automatically calling one of the plurality of telecommunications extensions in response to the user selecting one of the plurality of telecommunications extensions from the observed list, wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN; and</p>	<p>10:44-55, 16:4-12, Fig. 8.</p>
<p><b>1[i]</b> a plurality of telecommunications extensions coupled to the third LAN, the first LAN including circuitry for enabling the user to select between observing the list of the plurality of telecommunications extensions coupled to the second LAN or observing a list of the plurality of</p>	<p>10:44-55, 16:4-12, Fig. 8.</p>

telecommunications extensions coupled to the third LAN.	
<b>Claim 2</b>	
<b>2[pre]</b> The system as recited in claim 1,	
<b>2[a]</b> wherein communication among the first LAN, second LAN, and WAN uses an IP protocol.	4:54-58, Figs. 1-3.
<b>Claim 3</b>	
<b>3[pre]</b> The system as recited in claim 2,	
<b>3[a]</b> wherein the list of the plurality of telecommunications extensions is displayed to the user of the first telecommunications device.	10:44-55, 16:4-12, Fig. 8.
<b>Claim 4</b>	
<b>4[pre]</b> The system as recited in claim 3,	
<b>4[a]</b> wherein the first telecommunications device is an IP telephone having a display for showing the list of the plurality of telecommunications extensions,	10:44-55, 16:4-12, Fig. 8.
<b>4[b]</b> wherein the second circuitry includes a key for enabling the user to tacitly selecting one of the plurality of telecommunications extensions from the displayed list.	10:44-55, 16:4-12, Fig. 8.
<b>Claim 5</b>	

<p><b>5[pre]</b> The system as recited in claim 4,</p>	
<p><b>5[a]</b> wherein the tactile selection of one of the plurality of telecommunications extensions from the displayed list by the user results in an initiation of a call from the first telecommunications device to the selected one of the plurality of telecommunications extensions across the WAN.</p>	<p>4:54-58, 10:44-55, 16:4-12, Figs. 1-3, 8.</p>
<p><b>Claim 7</b></p>	
<p><b>7[pre]</b> The system as recited in claim 1,</p>	
<p><b>7[a]</b> wherein the first telecommunications device includes circuitry for enabling the user to scroll through the displayed list of the plurality of telecommunications extensions.</p>	<p>10:44-55, 16:4-12, Fig. 8.</p>
<p><b>Claim 8</b></p>	
<p><b>8[pre]</b> An information handling system comprising:</p>	<p><i>See</i> Claim 1[pre].</p>
<p><b>8[a]</b> a first local area network (“LAN”) operating under an IP protocol;</p>	<p><i>See</i> Claims 1[a], 2[a]</p>
<p><b>8[b]</b> a first IP telephone coupled to the first LAN, the first IP telephone having a display and a set of keys for enabling a user to enter inputs;</p>	<p><i>See</i> Claims 1[e], 4[a], 4[b]</p>
<p><b>8[c]</b> a second LAN operating under the IP protocol;</p>	<p><i>See</i> Claims 2[b], 2[a]</p>

<p><b>8[d]</b> second and third telephone extensions coupled to the second LAN;</p>	<p><i>See Claim 1[f]</i></p>
<p><b>8[e]</b> a wide area network (“WAN”) operating under the IP protocol coupling the first LAN to the second LAN;</p>	<p><i>See Claim 1[c]</i></p>
<p><b>8[f]</b> a third LAN coupled to the first and second LANs via the WAN;</p>	<p><i>See Claim 1[d]</i></p>
<p><b>8[g]</b> the first LAN including first circuitry for enabling a user of the first IP telephone to view a list including the second and third telephone extensions, wherein the list is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN; and</p>	<p><i>See Claims 1[g]</i></p>
<p><b>8[h]</b> a plurality of telephone extensions coupled to the third LAN, the first LAN including circuitry for enabling the user to select between viewing the list of the telephone extensions coupled to the second LAN or viewing a list of the plurality of telephone extensions coupled to the third LAN.</p>	<p><i>See Claims 1[i]</i></p>
<p><b>Claim 9</b></p>	
<p><b>9[pre]</b> The system as recited in claim 8, further comprising:</p>	
<p><b>9[a]</b> the first LAN including second circuitry for automatically calling the second telephone extension in response to the user selecting the second telephone extension from the viewed list.</p>	<p><i>See Claim 1[h]</i></p>



<b>Claim 10</b>	
<b>10[pre]</b> The system as recited in claim 9,	
<b>10[a]</b> wherein selection of the second telephone extension from the viewed list by the user is accomplished by selection of one of the set of keys.	<i>See Claims 4[a], 4[b]</i>
<b>Claim 11</b>	
<b>11[pre]</b> The system as recited in claim 10,	
<b>11[a]</b> wherein the selection of one of the set of keys results in an initiation of a call from the first IP telephone to the second telephone extension across the WAN.	<i>See Claim 5[a]</i>
<b>Claim 12</b>	
<b>12[pre]</b> The system as recited in claim 8,	
<b>12[a]</b> wherein the first IP telephone includes circuitry for enabling the user to scroll through the displayed list.	<i>See Claim 7[a]</i>

80. It is my opinion that the challenged claims of the '298 patent are entitled to the priority date of U.S. Patent Application No. 09/775, 018, which is February 1, 2001, for at least these reasons.

**V. SUMMARY OF MY OPINIONS REGARDING VALIDITY**

81. After considering the material available to me in this case in view of my experience in the fields of communications and networking, it is my opinion that Dr. Souri has proven by preponderance of the evidence that any challenged claims of the ‘684 patent are invalid.

- Claims 1-5 and 7-12 of the ’298 Patent are not rendered obvious by the combination of Ludwig and Reid;
- Claims 1-5 and 7-12 of the ’298 Patent are not rendered obvious by the combination of Ludwig and Hori;
- Claims 1-5 and 7-12 of the ’298 Patent are not rendered obvious by the combination of Wilson, Guy, and Hori.

82. Accordingly, as I will explain in greater detail in the following section, it is my opinion that the challenged claims of the ’298 patent are valid over the art and arguments presented in the Petition. The bases for my opinions are in the following sections.

83. If I do not rebut any specific opinion, it should not be construed as any admission on my part, but only that the rebuttal is provided as part of other rebuttals and disagreements I have provided in my opinions and their bases.

## **VI. DETAILED RESPONSE TO PETITIONER'S AND DR. SOURI'S INVALIDITY OPINIONS**

84. In this section, I will show how each of the Petitioner's and Dr. Souri's invalidity arguments fail. Note that my decision not to discuss a particular limitation in detail here is not an indication that I agree that that limitation is found in the prior art. Rather, I have elected to focus my opinions on the most glaring deficiencies in Petitioner's and Dr. Souri's invalidity analysis, recognizing that it is his and Petitioner's burden to show invalidity by preponderance of the evidence.

### **A. The Petition Does Not Establish A Reasonable Likelihood That Claims 1-5 and 7-12 Of The '298 Patent Are Rendered Obvious By The Combination Of Ludwig And Reid**

#### **1. Overview**

85. I disagree with the Petitioner and Dr. Souri that a person of ordinary skill in the art would have had any reason or motivation to combine Ludwig and Reid.

86. Ludwig and Reid are directed towards different fields of technology. Ludwig is directed towards an enhanced collaboration system between individuals who are separated. Ex. 1006, 1:9-12. More specifically, Ludwig is directed towards a "collaborative multimedia collaborative multimedia workstation (CMW) system wherein very high-quality audio and video capabilities can be readily superimposed onto an enterprise's existing computing and network infrastructure, including

workstations, LANs, WANs, and building wiring.” Ex. 1006, 3:21-26. On the other hand, Reid is directed towards computer “computer networks for managing enterprise network access and providing enterprise network security.” Ex. 1007, 1:8-10. More specifically, Reid “ extends the concept of directory services to the management and control of enterprise networks by integrating directory technology, router/gateway management, and server management to form an enterprise network management and network security solution.” Ex. 1007, 5:24-27. Reid focuses on security and not multimedia collaboration.

87. Ludwig and Reid are also directed towards addressing different problems. Ludwig focuses on replicating the experience of in-person collaborative work environments using a computer environment when individuals cannot be in person. Ex. 1006, 1:12-17. Reid is directed towards enhanced security for remote networks. Ex. 1007, 1:8-10; 5:24-47.

88. Accordingly, the Petitioner and Dr. Souri have provided no evidence that a skilled artisan would tackle the significant task of incorporating Reid’s teachings into Ludwig without using the ’298 patent and hindsight as motivators

89. Dr. Souri states that he was instructed by counsel that the priority date for the ’298 Patent is May 29, 2003, even though the ’298 Patent claims priority to App. No. 09/775,018, which was filed on February 1, 2001. Dr. Souri does not

conduct any analysis regarding the priority date of the '298 Patent. Ex. 1002, ¶37.

I disagree for the reasons set forth in Section IV(A) above.

2. Claim 1

90. The Petition does not establish a reasonable likelihood that claim 1 is invalid over the combination of Ludwig and Reid.

91. Claim 1[i] recites “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN.” A POSITA would understand that claim 1[i] requires that the list of the plurality of extensions is stored in a second LAN and a user located in a different LAN is able to access these extensions across the WAN.

92. Claim 1 requires first, second, and third local area networks (“LAN”), wherein the first, second, and third LANs are coupled to each other through a wide area network (“WAN”). *See* Ex. 1001, Claim. 1. The claim further requires “a plurality of telecommunications extensions coupled to the second LAN.” “[T]he first LAN include[es] first circuitry for enabling a user of the first telecommunications device to observe a list of the plurality of telecommunications extensions.” Ex. 1001, Claim 1[g]. The “first telecommunications device [is] coupled to the first LAN (Ex. 1001, Claim 1[e]).

93. Therefore, a POSITA would understand that “the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN” recited by claim 1[i] requires that a user on the first LAN be able to observe a list of a plurality of telecommunications extensions “stored in a server in the second LAN” by accessing that list “across the WAN.”

94. Dr. Souri does not opine that either Ludwig or Reid affirmatively discloses “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN.” *See generally* Ex. 1002, ¶¶153-172. I agree that neither Ludwig nor Reid teach claim 1[i], and it is further my opinion that neither Ludwig nor Reid, taken alone or in combination, suggests claim 1[i] to a POSITA.

95. Ludwig teaches away from the arrangement recited by claim 1[i], disclosing instead a graphical rolodex 163 that is included in software installed on an MLAN server 60 within each MLAN 10. Ex. 1006, 18:36-43, 18:64-19:5, FIGS. 1 and 3. Thus, Ludwig discloses only that a graphical rolodex 163 is maintained within each MLAN and the graphical rolodex is accessed only by users within the same MLAN. There is no disclosure or suggestion in Ludwig of a user on a first LAN accessing a directory stored on a second LAN.

96. Reid also fails to teach or suggest a network architecture “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN,” as recited by claim 1[i]. Reid discloses a Master Directory Server. Ex. 1007, Abstract; 5:23-35. The Master Directory Server 100 is located at one of several LANs on a network of LANs connected through a WAN. Ex. 1007, Abstract; 7:58-61; FIG. 4. Each LAN on the network includes a distributed directory 105. *Id.* at 7:56-58. The distributed directories “can be synchronous with the master directory,” indicating that they can exist at the same time and contain the same information as the master directory. *Id.* at 7:59-61. Reid explains that master directory 100 and distributed directories 105 contain objects that include IP addresses, locations, which LAN the user is on, etc. *Id.* at 7:58-8:5. This disclosure that distributed directories 105 contain information about which LAN a particular user is on would be understood by a POSITA to show that the distributed directories of Reid, just like the directories of Ludwig, include information about extensions on other LANs, not only the LAN on which each distributed directory 105 is stored.

97. Dr. Souri opines that Reid discloses that a remote user can access resources within a LAN after using the Directory Server to find the available resources for that user on the LAN by searching the directory. *See* Ex. 1002, at

¶¶164-165 (citing Ex. 1007, 9:20-38). But Fig. 7 and the cited passages of Reid merely discloses that a user accesses a “directory” through a browser.

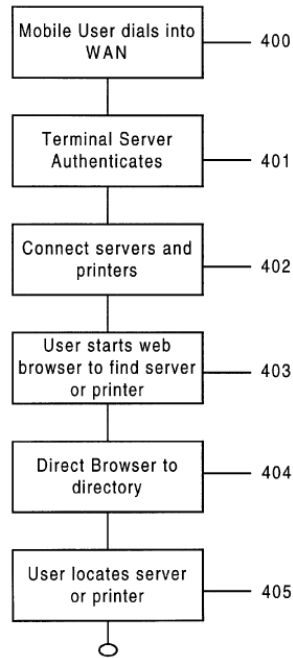


Figure 7

Ex. 1007, FIG. 7 (*see* step 404). Reid does not disclose the location of the directory accessed at step 404, and in view of Reid’s disclosure that the distributed directories contain information on which LAN an extension resides on, there is every indication that the directory referenced in step 404 is on the same LAN as the user dialing into the WAN. Perhaps recognizing this glaring deficiency in its arguments, Dr. Souri does not even affirmatively argue that the directory of step 404 is on a different LAN than that of the mobile user referenced in step 400. *See generally* Ex. 1002, ¶¶153-172. Therefore, Dr. Souri fails to establish that either Ludwig or Reid, taken alone



or in combination, teach or suggest “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN.”

98. Dr. Souri’s remaining arguments rely on the proposition that, even though neither reference teaches or suggests this limitation, a POSITA would have modified the combination such that the combined system would allow a user on the first LAN be able to observe a list of a plurality of telecommunications extensions “stored in a server in the second LAN,” as required by claim 1. Dr. Souri presents several proposed rationales for their modifications. *See* Ex. 1002, ¶¶168-172. But those arguments boil down to the proposition that a POSITA would have modified the combination of Ludwig and Reid to arrive at this key limitation simply because doing so would result in a system with significant advantages over the systems disclosed by Ludwig and Reid. That rationale is insufficient to establish obviousness, Dr. Souri’s proposed rationales to modify are simply the result of hindsight bias and the use of the purported “common sense” of a POSITA to reconstruct the limitations of claim 1[i], which are not disclosed or suggested by the prior art.

99. For at least these reasons, it is my opinion that neither Ludwig nor Reid, taken alone or in combination, teach or suggest “wherein the list of the plurality of

telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN” as recited by claim 1[i].

100. Claim 1[k] recites “the first LAN including circuitry for enabling the user to select between observing the list of the plurality of telecommunications extensions coupled to the second LAN or observing a list of the plurality of telecommunications extensions coupled to the third LAN.” I disagree with the Dr. Souri conclusion that the combination of Ludwig and Reid discloses or suggests claim 1[k].

101. Contrary to Dr. Souri’s assertion, neither Ludwig nor Reid discloses that a user is able to look at directories on different LANs for at least the reasons I discussed above with respect to claim 1[i]. In addition, even under the interpretation adopted by Petitoiner and Dr. Souri, neither Ludwig nor Reid discloses filtering a directory by LAN, as required by claim 1[i], and Dr. Souri does not affirmatively render an opinion to that effect. *See* Ex. 1002, ¶¶175-180.

102. For at least these reasons, neither Ludwig nor Reid, taken alone or in combination, render obvious claim 1.

3. Claims 2-5 and 7

103. Claims 2-5 and 7 depend from and add limitations to claim 1, and for at least that reason it is my opinion that neither Ludwig nor Reid, taken alone or in combination, render claims 2-5 or 7 invalid.

4. Claim 8

104. Claim 8[h] recites “wherein the list is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN.” For at least the reasons discussed above with respect to claim 1[i], I disagree that the combination of Ludwig and Reid discloses claim 8[h].

105. Claim 8[i] recites “the first LAN including circuitry for enabling the user to select between viewing the list of the telephone extensions coupled to the second LAN or viewing a list of the plurality of telephone extensions coupled to the third LAN.” For at least the reasons discussed above with respect to claim 1[k], I disagree that the combination of Ludwig and Reid discloses claim 8[i].

5. Claims 9-12

106. Claims 9-12 depend from and add limitations to claim 1, and for at least that reason it is my opinion that neither Ludwig nor Reid, taken alone or in combination, render claims 9-12 invalid.

**B. The Petition Does Not Establish A Reasonable Likelihood That Claims 1-5 and 7-12 Of The '298 Patent Are Rendered Obvious By The Combination Of Ludwig And Hori**

1. Overview

107. I disagree with the Petitioner and Dr. Souris that a person of ordinary skill in the art would have had any reason or motivation to combine Ludwig and Hori.

108. As discussed above with respect to my opinions regarding the combination of Ludwig and Reid, Ludwig is directed towards a collaborative environment for remote workers that replicates the in-person experience. On the other hand, Hori is directed towards computer “web phone dialer system that links the web system on an Intranet or an Internet with an automatic telephone dialing system.” Ex. 1010, 1:7-9. More specifically, Hori relates to a “web phone dialer system to obtain telephone number, IP address, mail address of receiving clients or operators” and towards confirming the “presence/absence of receiving operator.” Ex. 1010, 1:8-13.

109. Ludwig and Hori are also directed towards addressing different problems. As discussed above with respect to my opinions regarding the combination of Ludwig and Reid, Ludwig focuses on replicating the experience of in-person collaborative work environments using a computer environment when individuals cannot be in person. Hori focuses on providing a web phone dialer system that allows a user to call another individual even if their telephone number has changed. Ex. 1010, 1:35-37.

110. Accordingly, the Petitioner and Dr. Souri have provided no evidence that a skilled artisan would tackle the significant task of incorporating the teachings of Ludwig and Hori, without using the '298 patent and hindsight as motivators.

111. Dr. Souri states that he was instructed by counsel that the priority date for the '298 Patent is May 29, 2003, even though the '298 Patent claims priority to App. No. 09/775,018, which was filed on February 1, 2001. Dr. Souri does not conduct any analysis regarding the priority date of the '298 Patent. Ex. 1002, ¶37. I disagree for the reasons set forth in Section IV(A) above.

2. Claim 1

112. The Petitioner and Dr. Sourit fail to show by a preponderance of the evidence that claim 1 is invalid over the combination of Ludwig and Reid.

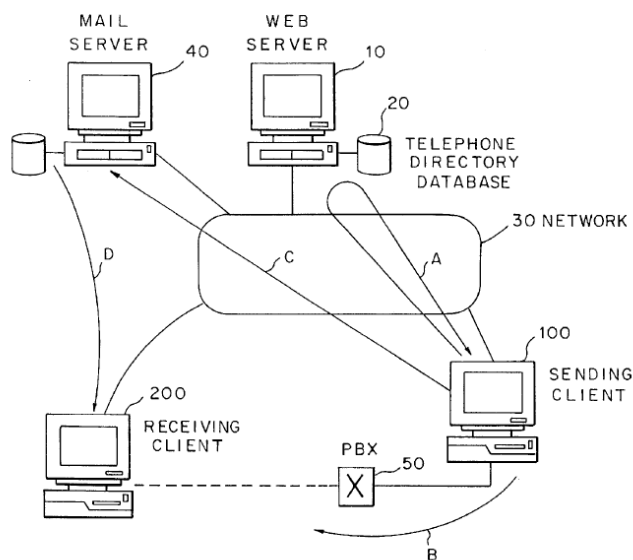
113. Claim 1[i] recites “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN” as required by claim 1. As I discussed above in my opinions regarding the combination of Ludwig and Reid, Ludwig does not teach claim 1[i].

114. It is further my opinion that Hori does not cure this defect of Ludwig because Hori discloses only a single centralized telephone directory that resides on a dedicated web server. As detailed below, Hori does not disclose that the web server is on a LAN or that any telecommunications extensions are coupled to the web server, and therefore does not teach or suggest that a user on a first LAN is able to observe a list of a plurality of telecommunications extensions “stored in a server in

the second LAN” by accessing that list “across the WAN,” as required by this limitation of claim 1[i].

115. Hori describes a web system that includes a web server, sending client, receiving client, mail server, a plurality of clients connected using a network. Ex. 1010, 3:18-21. The web server has a centralized telephone directory 20 that contains information for individuals on the network. *Id.* at 4:22-27; 8:6-9; Fig. 1.

FIG. 1



116. Hori explicitly teaches that the “telephone directory database is controlled to be centralized.” *Id.* at 1:59-60; 8:6-7. Hori does not disclose that telephone directory 20 is on a LAN, or that any telecommunications extensions are coupled to telephone directory 20 or web server 10.

117. Dr. Sourì opines that, even though neither Ludwig nor Hori discloses claim 1[i], a POSITA would have modified the combination such that the combined system would allow a user on the first LAN be able to observe a list of a plurality of telecommunications extensions “stored in a server in the second LAN.” I disagree.

118. Dr. Sourì presents a single rationale for why a POSITA would completely modify the combined systems of Ludwig and Hori. That rationale is that modifying the combined system to copy the limitations of claim 1[i] of the '298 patent would result in a system in which “the user’s information can be more easily updated” than in the combined systems of Ludwig and Hori. Ex. 1002, at ¶¶ 233-236 (Ex. 1010, Hori at 7:6-20). But the section of Hori cited in support of this rationale does not support Dr. Sourì’s opinion. In fact, to the extent the cited section relates at all to updating user information, it is explaining why it is advantageous to use a single centralized database on a web server as opposed to accessing individual lists of telecommunications extensions stored on a LAN, as required by claim 1[i].

119. In my opinion, Dr. Sourì’s proposed rationale to modify is simply the result of hindsight and the use of the purported “common sense” of a POSITA to reconstruct the limitations of claim 1[i], which are not disclosed or suggested by the prior art. For at least these reasons, neither Ludwig nor Hori, taken alone or in combination, teach or suggest “wherein the list of the plurality of

telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN.”

3. Claims 2-5 and 7

120. Claims 2-5 and 7 depend from and add limitations to claim 1, and for at least that reason it is my opinion that neither Ludwig nor Hori, taken alone or in combination, render claims 2-5 or 7 invalid.

4. Claim 8

121. Claim 8[h] recites “wherein the list is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN.” For at least the reasons discussed above with respect to claim 1[i], I disagree that the combination of Ludwig and Hori discloses claim 8[h].

5. Claims 9-12

122. Claims 9-12 depend from and add limitations to claim 1, and for at least that reason it is my opinion that neither Ludwig nor Hori, taken alone or in combination, render claims 9-12 invalid.



**C. The Petition Does Not Establish A Reasonable Likelihood That Claims 1-5 and 7-12 Of The '298 Patent Are Rendered Obvious By The Combination Of Wilson, Guy, And Hori**

1. Overview

123. I disagree with the Petitioner and Dr. Souri that a person of ordinary skill in the art would have had any reason or motivation to combine Wilson, Guy, and Hori.

124. Guy, Wilson, and Hori address different problems. Hori focuses on providing a web phone dialer system that allows a user to call another individual even if their telephone number has changed. Ex. 1010, 1:35-37. Guy is directed to solving problems with aural information on wide area networks. Ex. 10108, 3:20-36. Wilson is directed to solving the problem of using internet phone technology with traditional phone systems. Ex. 1009, 6:59-2:5; 2:20-23.

125. The Petitioner and Dr. Souri have not adequately explained why a person of ordinary skill would stitch together numerous disparate references in this manner. Apart from a hindsight-driven desire to invalidate claims 1-5 and 7-12 of the '298 patent, it is my opinion that there would not be sufficient reason or motivation to have done so. Accordingly, the Petitioner and Dr. Souri have provided no evidence that a skilled artisan would tackle the significant task of incorporating the teachings of three different patents, Guy, Wilson, and Hori, without using the '298 patent and hindsight as motivators.

126. Dr. Souri states that he was instructed by counsel that the priority date for the '298 Patent is May 29, 2003, even though the '298 Patent claims priority to App. No. 09/775,018, which was filed on February 1, 2001. Dr. Souri does not conduct any analysis regarding the priority date of the '298 Patent. Ex. 1002, ¶37. I disagree for the reasons set forth in Section IV(A) above.

2. Claim 1

127. The Petition does not establish a reasonable likelihood that claim 1 is invalid over the combination of Guy, Wilson, and Hori.

128. Claim 1[i] recites “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN” as required by claim 1. The combination of Guy and Wilson was considered during the prosecution of the '298 patent, and it is my opinion that Dr. Souri has not presented a compelling reason why the Court should consider this combination after the USPTO has already considered it during prosecution.

129. Dr. Souri does not expressly opine that Guy or Wilson, taken alone or in combination, disclose “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN” as required by claim 1[i]. Ex. 1002, ¶¶ 342-346. Instead, Dr. Souri relies on the Examiner’s previously presented arguments, during the

prosecution of the '298 patent, before amendments that incorporated limitations from previously dependent claims (previously numbered dependent claim 10 was incorporated into issued independent claims 1). *Id.* at ¶¶ 278-287, 342-346. The Patent Trial and Appeal Board has already considered this combination, and Dr. Souri has not opined why the Court should reconsider this combination. As I discussed above in my opinions regarding the combination of Ludwig and Hori, Hori does not teach this element of claim 1[i].

130. For at least these reasons, Guy, Wilson, and Hori taken alone or in combination, render obvious claim 1.

3. Claims 2-5 and 7

131. Claims 2-5 and 7 depend from and add limitations to claim 1, and for at least that reason it is my opinion that neither Guy, Wilson, nor Hori, taken alone or in combination, render claims 2-5 or 7 invalid.

4. Claim 8

132. Claim 8[h] recites “wherein the list is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN[.]” For at least the reasons discussed above with respect to claim 1[i], Dr. Souri and Petitioner has failed to present new and compelling arguments as to why the Court should consider prior art that was previously considered during the prosecution of the '298 patent.

Additionally, for at least the same reasons discussed above with respect to claim 1[i], I disagree that the combination Guy, Wilson, and Hori discloses claim 8[i].

5. Claims 9-12

133. Claims 9-12 depend from and add limitations to claim 8, and for at least that reason it is my opinion that neither Guy, Wilson, nor Hori, taken alone or in combination, render claims 9-12 invalid

**VII. CONCLUSION**

134. Based on my review of Ludwig, Hori, Reid, Guy, and Wilson, and the '298 Patent, and for the reasons stated herein, it is my opinion that Ch Ludwig, Hori, Reid, Guy, and Wilson, whether considered alone or in combination, would not render claims 1-5 and 7-12 of the '298 Patent obvious to one of skill in the art.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed on Dated: April 13, 2021.

Dated: April 13, 2021



Vijay K. Madiseti, Ph.D

# EXHIBIT A

**Dr. Vijay K. Madiseti**  
**Fellow, IEEE**

[vkm@madiseti.com](mailto:vkm@madiseti.com)

Cell: 770-527-0177

**Address:**

**56 Creekside Park Drive**  
**Johns Creek, GA 30022**

**Employment:**

- 1984-1989: Post Graduate Researcher (UC Berkeley),
- 1989-present: Full Professor of Electrical & Computer Engineering (**Georgia Tech, Atlanta, GA 30332**).

**Areas of Technical Interest** – Wireless & Mobile Communications, Computer Engineering, Circuit Design (Analog/Digital), Biomedical Instrumentation Hardware/Software, Software Engineering, Digital Signal Processing, Wireline & Wireless Computer Networks, Software Systems, Control Systems, Cloud Computing.

**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 (2015-2021) 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-ccv-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**

Case No: 3:17-cv-01375-DMS-MDD (SD Cal)

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. Xyxel/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

**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

**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**

Case No. 2:20-cv-00007-RWS

Expert for General Access (GAS)

Technology: LTE

Submitted Expert Reports/Deposition (9/21-)

Additional matters include declarations supporting IPRs at the PTAB for Google (US Patent 8,601,154), On Semiconductor (US Patent 6,212,079), Ubisoft (US Patent 5,490,216), Lumens JDA (2017-2019), Broadcom (WiFi), Sony (US Patent 6,101,534), Kia, (US Patent 5,530,431), Qualcomm, and Ericsson, Amazon, Ring, Digital Ally, On Semiconductor, United Patents, Lenovo, BMC Software, BMW, Daimler.

**Earned Degrees**

**1. B. Tech (Hons), Electronics & Electrical Comm. Engineering**

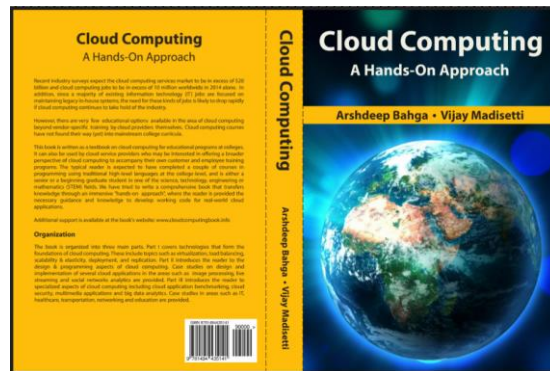
*Indian Institute of Technology (IIT), Kharagpur, India*

1984.

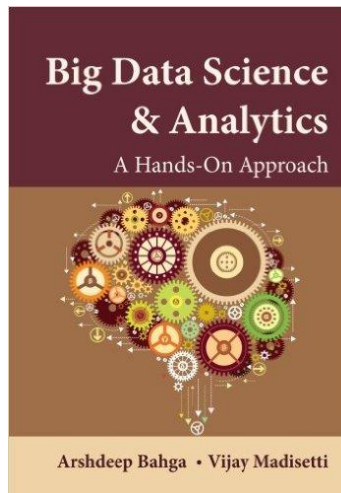
- 2. Ph.D., Electrical Engineering & Computer Sciences (EECS)**  
*University of California (UC), Berkeley. CA*  
1989.

## **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)**  
*Madiseti, V. K., Williams, D. (Editors)*  
CRC Press, Boca Raton, Fla, 1998, 2500 pp.
- 4. VHDL: Electronics Systems Design Methodologies.**  
*Madiseti, V. K. (Editor)*  
Boston: MA, IEEE Standards Press, 2000, ISBN 0-7381-1878-8.
- 5. Platform-Centric Approach to System-on-Chip (SoC) Design.**  
*Madiseti, V. K., Arpnikanondt, A.*  
Springer, Boston: MA, Springer, 2004, 280 pp.
- 6. The Digital Signal Processing Handbook – Second Edition.**  
*Madiseti, V. K. (2009)*  
CRC Press, Boca Raton, Fla.
- 7. Cloud Computing: A Hands-On Approach**  
*A Bahga, V. Madiseti (2013)*  
Amazon CreateSpace Publishing, 2013, 454 pp.
- 8. Internet of Things: A Hands-On Approach**  
*A Bahga, V. Madiseti (2014)*  
Amazon CreateSpace Publishing, 2014, 450 pp.



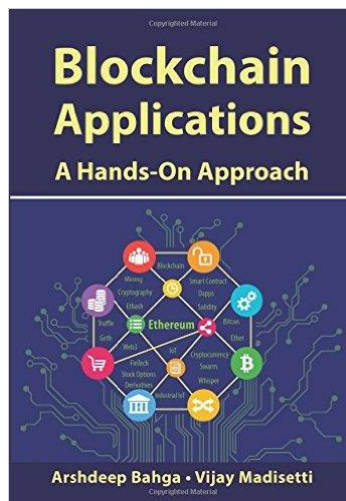
**9. Big Data Science & Analytics: A Hands-On Approach**  
*A Bahga, V. Madiseti (2016)*  
Amazon CreateSpace Publishing, 2016, 542 pp.



**10. Blockchain Applications: A Hands-On Approach**

*A Bahga, V. Madiseti (2017)*

Amazon CreateSpace Publishing, 2017, 380 pp.



**Edited Books & Collection of Papers**

**1. Advances in Parallel & Distributed Simulation**

*Madiseti, V.K.; Nicol, D., Fujimoto, R. (Editors)*

San Diego, CA: SCS Press, 1991, 200 pp.

**2. Modeling, Analysis, Simulation of Computer & Telecommunications Systems**

*Madiseti, V., Gelenbe, E., Walrand, J. W. (Editors)*

Los Alamitos: CA, IEEE Computer Society Press, 1994, 425 pp.

**3. Modeling & Simulations on Microcomputers**

*Madiseti, V.K. (Editor)*

San Diego, CA: SCS Press, 138 pp. 1990.

**Editorship of Journals & Transactions**

**1. IEEE Design & Test of Computers**

Special Issue: Reengineering Digital Systems

April – June 1999 (Vol 16, No 2)

*Madiseti, V.K (Editor)*

Los Alamitos: CA, IEEE Computer Society Press, 1999.

**2. IEEE Design & Test of Computers**

Special Issue: Rapid Prototyping of Digital Systems

Fall 1996 (Vol 13, No 3)

*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**

*Associate Editor: 1990-1993*

**5. International Journal in VLSI Signal Processing**

*Editorial Board: 1995 - Present*

**Issued US Patents**

- [1] [10,503,927](#) [Method and system for securing cloud storage and databases from insider threats and optimizing performance](#), Issued Dec 10, 2019
- [2]. [10,460,283](#) [Smart contract optimization for multiparty service or product ordering system](#), Issued Oct 29, 2019
- [3]. [10,459,946](#) [Method and system for tuning blockchain scalability, decentralization, and security for fast and low-cost payment and transaction processing](#), Issued Oct 29, 2019

- [4]. [10,402,589](#) [Method and system for securing cloud storage and databases from insider threats and optimizing performance](#), Issued Sep 3, 2019
- [5]. [10,394,845](#) [Method and system for tuning blockchain scalability for fast and low-cost payment and transaction processing](#), Issued Aug 27, 2019
- [6]. [10,289,631](#) [Method and system for tuning blockchain scalability for fast and low-cost payment and transaction processing](#), Issued May 24, 2019
- [7]. [10,255,342](#) [Method and system for tuning blockchain scalability, decentralization, and security for fast and low-cost payment and transaction processing](#), Issued April 9, 2019
- [8]. [10,243,743](#) [Tokens or crypto currency using smart contracts and blockchains](#), Issued March 26, 2019
- [9]. [10,204,339](#) [Method and system for blockchain-based combined identity, ownership, integrity and custody management](#), Issued February 12, 2019
- [10]. [10,204,148](#) [Method and system for tuning blockchain scalability, decentralization, and security for fast and low-cost payment and transaction processing](#), Issued Feb 12, 2019
- [11]. [10,121,143](#) [Method and system for blockchain-based combined identity, ownership, integrity and custody management](#), Issued Nov 6, 2018
- [12]. [10,102,526](#) [Method and system for blockchain-based combined identity, ownership, integrity and custody management](#), October 16, 2018
- [13]. [10,102,265](#) [Method and system for tuning blockchain scalability for fast and low-cost payment and transaction processing](#), October 16, 2018
- [14]. [9,935,772](#) [Methods and systems for operating secure digital management aware applications](#), April 3, 2018
- [15]. [9,769,213](#) [Method and system for secure digital object management](#), Issued Sep 19, 2017

## Refereed Journal Publications

### 1. Trends in the Electronic Control of Mine Hoists

*Madiseti, V. and Ramlu, M.,  
IEEE Transactions on Industry Applications, Vol IA-22, No. 6,  
November/December 1986. Pages 1105-1112*

### 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  
Pages:169 – 174

**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  
Pages:1642 – 1654

**4. Asynchronous algorithms for the parallel simulation of event-driven dynamical systems**

*Madiseti, V.K.; Walrand, J.C.; Messerschmitt, D.G.:*  
ACM Transactions on Modeling and Computer Simulation, v 1, n 3, July 1991,  
Pages: 244-74

**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  
Signal Processing, IEEE Transactions on] ,Volume: 41 , Issue: 1 , January  
1993  
Pages:365-378

**7. The fast discrete Radon transform. I. Theory**

*Kelley, B.T.; Madiseti, V.K.;*  
Image Processing, IEEE Transactions on ,Volume: 2 , Issue: 3 , July 1993  
Pages:382 – 400

**8. The Georgia Tech digital signal multiprocessor**

*Barnwell, T.P., III; Madiseti, V.K.; McGrath, S.J.A.;*  
Signal Processing, IEEE Transactions on [see also Acoustics, Speech, and  
Signal Processing, IEEE Transactions on] ,Volume: 41 , Issue: 7 , July 1993  
Pages:2471 – 2487

**9. The MIMDIX Environment for Parallel Simulation**

*Madiseti, V.K.; Hardaker, D.; Fujimoto, R.M.:*  
Journal of Parallel and Distributed Computing, v18, no. 4, August 1993,  
Pages: 473-83.

- 10. LMSGEN: a prototyping environment for programmable adaptive digital filters in VLSI**  
*Romdhane, M.S.B.; Madiseti, V.K.;*  
Chapter in VLSI Signal Processing, VII, 1994.,  
Pages:33 – 42
- 11. Fixed-point co-design in DSP**  
*Egolf, T.W.; Famorzadeh, S.; Madiseti, V.K.;*  
Chapter in VLSI Signal Processing, VII, 1994.,  
Pages:113 - 126
- 12. A fast spotlight-mode synthetic aperture radar imaging system**  
*Madiseti, V.K.;*  
Communications, IEEE Transactions on ,Volume: 42 , Issue: 234 , February-April 1994  
Pages:873 – 876
- 13. Rapid prototyping on the Georgia Tech digital signal multiprocessor**  
*Curtis, B.A.; Madiseti, V.K.;*  
Signal Processing, IEEE Transactions on [see also Acoustics, Speech, and Signal Processing, IEEE Transactions on] ,Volume: 42 , Issue: 3 , March 1994  
Pages:649 – 662
- 14. Low-power signaling in asymmetric noisy channels via spectral shaping**  
*Sipitca, M.; Madiseti, V.K.;*  
Signal Processing Letters, IEEE, Volume: 1 , Issue: 8 , Aug 1994  
Pages:117 – 118
- 15. A quantitative methodology for rapid prototyping and high-level synthesis of signal processing algorithms**  
*Madiseti, V.K.; Curtis, B.A.;*  
Signal Processing, IEEE Transactions on [see also Acoustics, Speech, and Signal Processing, IEEE Transactions on] ,Volume: 42 , Issue: 11 , Nov. 1994  
Pages:3188 – 3208
- 16. Computer Simulation of Application-Specific Signal Processing Systems**  
*Casinovi, G.; Madiseti, V.K.;*  
International Journal in Computer Simulation, Vol. 4, No. 4, Nov 1994.
- 17. System partitioning of MCMs for low power**  
*Khan, S.A.; Madiseti, V.K.;*  
Design & Test of Computers, IEEE ,Volume: 12 , Issue: 1 , Spring 1995  
Pages:41 – 52



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

*Jaejin Lee; Madiseti, V.K.;*

Magnetics, IEEE Transactions on ,Volume: 31 , Issue: 6 , Nov. 1995

Pages:3084 – 3086

**19. Virtual prototyping of embedded microcontroller-based DSP systems**

*Madiseti, V.K.; Egolf, T.W.;*

Micro, IEEE ,Volume: 15 , Issue: 5 , Oct. 1995

Pages:9 – 21

**20. Constrained multitrack RLL codes for the storage channel**

*Lee, J.; Madiseti, V.K.;*

Magnetics, IEEE Transactions on ,Volume: 31 , Issue: 3 , May 1995

Pages:2355 – 2364

**21. Rapid digital system prototyping: current practice, future challenges**

*Madiseti, V.K.;*

Design & Test of Computers, IEEE ,Volume: 13 , Issue: 3 , Fall 1996

Pages:12 – 22

**22. Conceptual prototyping of scalable embedded DSP systems**

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

Design & Test of Computers, IEEE ,Volume: 13 , Issue: 3 , Fall 1996

Pages:54 – 65

**23. Advances in rapid prototyping of digital systems**

*Madiseti, V.K.; Richards, M.A.;*

Design & Test of Computers, IEEE ,Volume: 13 , Issue: 3 , Fall 1996

Pages:9

**24. Combined modulation and error correction codes for storage channels**

*Jaejin Lee; Madiseti, V.K.;*

Magnetics, IEEE Transactions on ,Volume: 32 , Issue: 2 , March 1996

Pages:509 – 514

**25. Model-based architectural design and verification of scalable embedded DSP systems-a RASSP approach**

*Dung, L.-R.; Madiseti, V.K.; Hines, J.W.;*

Chapter in VLSI Signal Processing, IX, 1996.

Pages:147 – 156

**26. Low-power digital filter implementations using ternary coefficients**

*Hezar, R.; Madiseti, V.K.;*  
Chapter in VLSI Signal Processing, IX, 1996.,  
Pages:179 – 188

**27. All-digital oversampled front-end sensors**

*Romdhane, M.S.B.; Madiseti, V.K.;*  
Signal Processing Letters, IEEE, Volume: 3 , Issue: 2 , Feb. 1996  
Pages:38 – 39

**28. Modeling COTS components in VHDL**

*Calhoun, S., Reese, R; Egolf, T., Madiseti, V.K.;*  
Journal of VLSI Signal Processing, Volume: 14 , Issue: 2 , Nov 1996  
Pages: 24 – 31

**29. VHDL-Based Rapid Systems Prototyping**

*Egolf, T.; Madiseti, V.K.;*  
Journal of VLSI Signal Processing, Volume: 14 , Issue: 2 , Nov 1996  
Pages: 40-52

**30. Interface design for core-based systems**

*Madiseti, V.K.; Lan Shen;*  
Design & Test of Computers, IEEE ,Volume: 14 , Issue: 4 , Oct.-Dec. 1997  
Pages:42 - 51

**31. Incorporating cost modeling in embedded-system design**

*Debardelaben, J.A.; Madiseti, V.K.; Gadiant, A.J.;*  
Design & Test of Computers, IEEE ,Volume: 14 , Issue: 3 , July-Sept. 1997  
Pages:24 – 35

**32. On homomorphic deconvolution of bandpass signals**

*Marenco, A.L.; Madiseti, V.K.;*  
Signal Processing, IEEE Transactions on [see also Acoustics, Speech, and  
Signal Processing, IEEE Transactions on] ,Volume: 45 , Issue: 10 , Oct. 1997  
Pages:2499 – 2514

**33. A case study in the development of multi-media educational material:  
the VHDL interactive tutorial**

*Gadiant, A.J.; Stinson, J.A., Jr.; Taylor, T.C.; Aylor, J.H.; Klenke, R.H.;*  
*Salinas, M.H.; Madiseti, V.K.; Egolf, T.; Famorzadeh, S.; Karns, L.N.; Carter,*  
*H.W.;*  
Education, IEEE Transactions on ,Volume: 40 , Issue: 4 , Nov. 1997  
Pages:17 pp.

- 34. Adaptive mobility management in wireless networks**  
*Jeongwook Kim; Madiseti, V.K.;*  
Electronics Letters ,Volume: 34 , Issue: 15 , 23 July 1998  
Pages:1453 – 1455
- 35. Efficient implementation of two-band PR-QMF filterbanks**  
*Hezar, R.; Madiseti, V.K.;*  
Signal Processing Letters, IEEE ,Volume: 5 , Issue: 4 , April 1998  
Pages:92 – 94
- 36. On fast algorithms for computing the inverse modified discrete cosine transform**  
*Yun-Hui Fan; Madiseti, V.K.; Mersereau, R.M.;*  
Signal Processing Letters, IEEE ,Volume: 6 , Issue: 3 , March 1999  
Pages:61 – 64
- 37. System on chip or system on package?**  
*Tummala, R.R.; Madiseti, V.K.;*  
Design & Test of Computers, IEEE ,Volume: 16 , Issue: 2 , April-June 1999  
Pages:48 – 56
- 38. Reengineering legacy embedded systems**  
*Madiseti, V.K.; Jung, Y.-K.; Khan, M.H.; Kim, J.; Finnessy, T.;*  
Design & Test of Computers, IEEE ,Volume: 16 , Issue: 2 , April-June 1999  
Pages:38 – 47
- 39. Reengineering digital systems**  
*Madiseti, V.K.;*  
Design & Test of Computers, IEEE ,Volume: 16 , Issue: 2 , April-June 1999  
Pages:15 – 16
- 40. Parameter optimization of robust low-bit-rate video coders**  
*Sangyoun Lee; Madiseti, V.K.;*  
Circuits and Systems for Video Technology, IEEE Transactions on, Volume: 9  
Issue: 6 , Sept. 1999  
Pages:849 – 855
- 41. Closed-form for infinite sum in bandlimited CDMA**  
*Jatunov, L.A.; Madiseti, V.K.;*  
Communications Letters, IEEE ,Volume: 8 , Issue: 3 , March 2004  
Pages:138 – 140
- 42. A new protocol to enhance path reliability and load balancing in mobile ad hoc networks**  
*Argyriou, A.; Madiseti, V.K.;*

Journal of Ad Hoc Networks, Elsevier Press, 2004

- 43. Closed-form analysis of CDMA systems using Nyquist pulse**  
*Jatunov, L.A.; Madiseti, V. K.;*  
Communications Letters, IEEE (Under Revision), 2005.
- 44. Systematic Design of End-to-End Wireless Mobility Management Protocols,**  
*Argyriou, A.; Madiseti, V. K.;*  
ACM/Springer Wireless Networks (WINET), Accepted 2005.
- 45. A Novel End-to-End Approach for Video Streaming Over the Internet,**  
*Argyriou, A.; Madiseti, V. K.;*  
Kluwer Telecommunications Systems, Vol. 28, No. 2, Pages 133-150, Jan 2005. *Special Issue on Multimedia Streaming.*
- 46. An Analytical Framework of RD Optimized Video Streaming with TCP,**  
*Argyriou, A.; Madiseti, V. K.;*  
IEEE Transactions on Multimedia, Submitted for review in March 2005.
- 47. Modeling the Effect of Handoffs on Transport Protocol Performance,**  
*Argyriou, A.; Madiseti, V. K.;*  
IEEE Transactions on Mobile Computing, Submitted for review in March 2005
- 48. Throughput Models for Transport Protocols with CBR and VBR Traffic Workloads",**  
*Argyriou, A.; Madiseti, V. K.;*  
ACM Transactions on Multimedia Computing, Communications & Applications, Submitted for review in April 2005.
- 49. "Electronic System, Platform & Package Codesign",**  
*Madiseti, V. K.*  
*IEEE Design & Test of Computers*, Volume 23, Issue 3, June 2006. pages 220-233.
- 50. "The Design of an End-to-End Handoff Management Protocol",**  
*A. Argyriou, Madiseti, V. K.*  
*Wireless Networks, Springer, May 2006.*
- 51. "A Soft-Handoff Transport Protocol for Media Flows in Heterogeneous Mobile Networks ",**  
*A. Argyriou, Madiseti, V. K.*  
*Computer Networks, Vol 50, Issue 11, Pages 1860-1871, August 2006.*

- 52. "Computationally Efficient SNR Estimation for Bandlimited WCDMA Systems"**  
*L. Jatunov, Madiseti, V. K.*  
*IEEE Transactions on Wireless Communications, Volume 5, Issue 13,*  
*December 2006, Pages 3480-3491.*
- 53. "Space-Time Codes for Wireless & Mobile Applications",**  
*M. Sinnokrot, Madiseti, V.K.*  
*DSP Handbook, Second Edition, 2009 (to be published)*
- 54.A. Bahga, V. Madiseti, "Rapid Prototyping of Advanced Cloud-Based Systems",** *IEEE Computer*, vol. 46, no. 11, Nov 2013, pp 76-83, 2013
- 55.A. Bahga, V. Madiseti, "Cloud-Based Information Integration & Informatics Framework for Healthcare Applications",** *IEEE Computer*, February 2015.
- 56.A. Bahga, V. Madiseti, "A Cloud-based Approach for Interoperable EHRs",** *IEEE Journal of Biomedical and Health Informatics*, vol. 17, no. 5, Sep 2013, pp. 894-906, 2013
- 57.A. Bahga, V. Madiseti, "Cloud-Based Information Technology Framework for Data Driven Intelligent Transportation Systems",** *Journal of Transportation Technologies*, vol.3 no.2, April 2013
- 58.A. Bahga, V. Madiseti, "Performance Evaluation Approach for Multi-tier Cloud Applications",** *Journal of Software Engineering and Applications*, vol. 6, no. 2, pp. 74-83, Mar 2013.
- 59. Yusuf, A., V. Madiseti, "Configuration for Predicting Travel Time Using Wavelet Packets and Support Vector Regression",** *Journal of Transportation Technologies*, vol 3, no. 3, June 2013.
- 60.A. Bahga, V. Madiseti, "Analyzing Massive Machine Maintenance Data in a Computing Cloud",** *IEEE Transactions on Parallel and Distributed Systems*, vol. 23, no. 10, pp. 1831 - 1843, 2012.
- 61.N. Radia. Y. Zhang, M. Tatimapula, V. Madiseti, "Next Generation Applications on Cellular Networks: Trends, Challenges, and Solutions,"** *Proceedings of the IEEE*, Vol 100, Issue 4, pp. 841-854, 2012.
- 62.A. Bahga, V. Madiseti, "Rapid Prototyping of Advanced Cloud-Based Systems",** *IEEE Computer*, vol. 46, no. 11, Nov 2013, pp 76-83, 2013

- 63.**A. Bahga, V. Madiseti, "**A Cloud-based Approach for Interoperable EHRs**", *IEEE Journal of Biomedical and Health Informatics*, vol. 17, no. 5, Sep 2013, pp. 894-906, 2013
- 64.**A. Bahga, V. Madiseti, "**Cloud-Based Information Integration & Informatics Framework for Healthcare Applications**", *IEEE Computer*, February 2015.

## Peer Reviewed Conference Publications

- 1. Dynamically-reduced complexity implementation of echo cancelers**  
*Madiseti, V.; Messerschmitt, D.; Nordstrom, N.;*  
Acoustics, Speech, and Signal Processing, IEEE International Conference on ICASSP '86. ,Volume: 11 , Apr 1986
- 2. Seismic migration algorithms using the FFT approach on the NCUBE multiprocessor**  
*Madiseti, V.K.; Messerschmitt, D.G.;*  
Acoustics, Speech, and Signal Processing, 1988. ICASSP-88., 1988 International Conference on , 11-14 April 1988
- 3. Seismic migration algorithms on multiprocessors**  
*Madiseti, V.K.; Messerschmitt, D.G.;*  
Acoustics, Speech, and Signal Processing, 1988. ICASSP-88., 1988 International Conference on , 11-14 April 1988  
Pages:2124 - 2127 vol.4
- 4. WOLF: A rollback algorithm for optimistic distributed simulation systems**  
*Madiseti, V.; Walrand, J.; Messerschmitt, D.;*  
Simulation Conference Proceedings, 1988 Winter , December 12-14, 1988  
Pages:296 - 305
- 5. Efficient distributed simulation**  
*Madiseti, V.; Walrand, J.; Messerschmitt, D.;*  
Simulation Symposium, 1989. The 22nd Annual , March 28-31, 1989  
Pages:5 - 6
- 6. High speed migration of multidimensional seismic data**  
*Kelley, B.; Madiseti, V.;*

Acoustics, Speech, and Signal Processing, 1991. ICASSP-91., 1991  
International Conference on , 14-17 April 1991  
Pages:1117 - 1120 vol.2

**7. Performance of a fast analog VLSI implementation of the DFT**

*Buchanan, B.; Madiseti, V.; Brooke, M.;*  
Circuits and Systems, 1992., Proceedings of the 35th Midwest Symposium on  
, 9-12 Aug. 1992  
Pages:1353 - 1356 vol.2

**8. Task scheduling in the Georgia Tech digital signal multiprocessor**

*Curtis, B.A.; Madiseti, V.K.;*  
Acoustics, Speech, and Signal Processing, 1992. ICASSP-92., 1992 IEEE  
International Conference on ,Volume: 5 , 23-26 March 1992  
Pages:589 - 592 vol.5

**9. The fast discrete Radon transform**

*Kelley, B.T.; Madiseti, V.K.;*  
Acoustics, Speech, and Signal Processing, 1992. ICASSP-92., 1992 IEEE  
International Conference on ,Volume: 3 , 23-26 March 1992  
Pages:409 - 412 vol.3

**10. Yield-based system partitioning strategies for MCM and ASEM design**

*Khan, S.; Madiseti, V.;*  
Multi-Chip Module Conference, 1994. MCMC-94, Proceedings., 1994 IEEE,15-  
17 March 1994  
Pages:144 - 149

**11. Multitrack RLL codes for the storage channel with immunity to intertrack interference**

*Lee, J.; Madiseti, V.K.;*  
Global Telecommunications Conference, 1994. GLOBECOM '94.  
'Communications: The Global Bridge', IEEE,Volume: 3 , 28 Nov.-2 Dec. 1994  
Pages:1477 - 1481 vol.3

**12. A parallel mapping of backpropagation algorithm for mesh signal processor**

*Khan, S.A.; Madiseti, V.K.;*  
Neural Networks for Signal Processing [1995] V. Proceedings of the 1995  
IEEE Workshop , 31 Aug.-2 Sept. 1995  
Pages:561 - 570

**13. Virtual prototyping of embedded DSP systems**

*Madiseti, V.K.; Egolf, T.; Famorzadeh, S.; Dung, L.-R.;*  
Acoustics, Speech, and Signal Processing, 1995. ICASSP-95., 1995

International Conference on ,Volume: 4 , 9-12 May 1995  
Pages:2711 - 2714 vol.4

**14. Assessing and improving current practice in the design of application-specific signal processors**

*Shaw, G.A.; Anderson, J.C.; Madiseti, V.K.;*  
Acoustics, Speech, and Signal Processing, 1995. ICASSP-95., 1995  
International Conference on ,Volume: 4 , 9-12 May 1995  
Pages:2707 - 2710 vol.4

**15. Introduction to ARPA's RASSP initiative and education/facilitation program**

*Corley, J.H.; Madiseti, V.K.; Richards, M.A.;*  
Acoustics, Speech, and Signal Processing, 1995. ICASSP-95., 1995  
International Conference on ,Volume: 4 , 9-12 May 1995  
Pages:2695 - 2698 vol.4

**16. DSP design education at Georgia Tech**

*Madiseti, V.K.; McClellan, J.H.; Barnwell, T.P., III;*  
Acoustics, Speech, and Signal Processing, 1995. ICASSP-95., 1995  
International Conference on ,Volume: 5 , 9-12 May 1995  
Pages:2869 - 2872 vol.5

**17. Rapid prototyping of DSP systems via system interface module generation**

*Famorzadeh, S.; Madiseti, V.K.;*  
Acoustics, Speech, and Signal Processing, 1996. ICASSP-96. Conference Proceedings., 1996 IEEE International Conference on ,Volume: 2 , 7-10 May 1996  
Pages:1256 - 1259 vol. 2

**18. Rapid prototyping of DSP chip-sets via functional reuse**

*Romdhane, M.S.B.; Madiseti, V.K.;*  
Acoustics, Speech, and Signal Processing, 1996. ICASSP-96. Conference Proceedings., 1996 IEEE International Conference on ,Volume: 2 , 7-10 May 1996  
Pages:1236 - 1239 vol. 2

**19. A constructive deconvolution procedure of bandpass signals by homomorphic analysis**

*Marenco, A.L.; Madiseti, V.K.;*  
Geoscience and Remote Sensing Symposium, 1996. IGARSS '96. 'Remote Sensing for a Sustainable Future.', International ,Volume: 3 , 27-31 May 1996  
Pages:1592 - 1596 vol.3



- 20. BEEHIVE: an adaptive, distributed, embedded signal processing environment**  
*Famorzadeh, S.; Madiseti, V.; Egolf, T.; Nguyen, T.;*  
Acoustics, Speech, and Signal Processing, 1997. ICASSP-97., 1997 IEEE International Conference on ,Volume: 1 , 21-24 April 1997  
Pages:663 - 666 vol.1
- 21. Target detection from coregistered visual-thermal-range images**  
*Perez-Jacome, J.E.; Madiseti, V.K.;*  
Acoustics, Speech, and Signal Processing, 1997. ICASSP-97., 1997 IEEE International Conference on ,Volume: 4 , 21-24 April 1997  
Pages:2741 - 2744 vol.4
- 22. Variable block size adaptive lapped transform-based image coding**  
*Klausutis, T.J.; Madiseti, V.K.;*  
Image Processing, 1997. Proceedings., International Conference on ,Volume: 3 , 26-29 Oct. 1997  
Pages:686 - 689 vol.3
- 23. A Rate 8/10 (0, 6) MTR Code And Its Encoder/decoder**  
*Jaejin Lee; Madiseti, V.K.;*  
Magnetics Conference, 1997. Digests of INTERMAG '97., 1997 IEEE International , 1-4 April 1997  
Pages:BS-15 - BS-15
- 24. VHDL models supporting a system-level design process: a RASSP approach**  
*DeBardelaben, J.A.; Madiseti, V.K.; Gadiant, A.J.;*  
VHDL International Users' Forum, 1997. Proceedings , 19-22 Oct. 1997  
Pages:183 - 188
- 25. A performance modeling framework applied to real time infrared search and track processing**  
*Pauer, E.K.; Pettigrew, M.N.; Myers, C.S.; Madiseti, V.K.;*  
VHDL International Users' Forum, 1997. Proceedings , 19-22 Oct. 1997  
Pages:33 - 42
- 26. System design and re-engineering through virtual prototyping: a temporal model-based approach**  
*Khan, M.H.; Madiseti, V.K.;*  
Signals, Systems & Computers, 1998. Conference Record of the Thirty-Second Asilomar Conference on ,Volume: 2 , 1-4 Nov. 1998  
Pages:1720 - 1724 vol.2

**27. A debugger RTOS for embedded systems**

*Akgul, T.; Kuacharoen, P.; Mooney, V.J.; Madiseti, V.K.;*  
Euromicro Conference, 2001. Proceedings. 27th , 4-6 Sept. 2001  
Pages:264 - 269

**28. Adaptability, extensibility and flexibility in real-time operating systems**

*Kuacharoen, P.; Akgul, T.; Mooney, V.J.; Madiseti, V.K.;*  
Digital Systems, Design, 2001. Proceedings. Euromicro Symposium on , 4-6  
Sept. 2001  
Pages:400 - 405

**29. Effect of handoff delay on the system performance of TDMA cellular systems**

*Turkboylari, M.; Madiseti, V.K.;*  
Mobile and Wireless Communications Network, 2002. 4th International  
Workshop on , 9-11 Sept. 2002  
Pages:411 - 415

**30. Enforcing interdependencies and executing transactions atomically over autonomous mobile data stores using SyD link technology**

*Prasad, S.K.; Bourgeois, A.G.; Dogdu, E.; Sunderraman, R.; Yi Pan; Navathe, S.; Madiseti, V.;*  
Distributed Computing Systems Workshops, 2003. Proceedings. 23rd  
International Conference on , 19-22 May 2003  
Pages:803 - 809

**31. Performance evaluation and optimization of SCTP in wireless ad-hoc networks**

*Argyriou, A.; Madiseti, V.;*  
Local Computer Networks, 2003. LCN '03. Proceedings. 28th Annual IEEE  
International Conference on , 20-24 Oct. 2003  
Pages:317 - 318

**32. Implementation of a calendar application based on SyD coordination links**

*Prasad, S.K.; Bourgeois, A.G.; Dogdu, E.; Sunderraman, R.; Yi Pan; Navathe, S.; Madiseti, V.;*  
Parallel and Distributed Processing Symposium, 2003. Proceedings.  
International , 22-26 April 2003  
Pages:8 pp.

**33. Bandwidth aggregation with SCTP**

*Argyriou, A.; Madiseti, V.;*  
Global Telecommunications Conference, 2003. GLOBECOM '03. IEEE Volume:  
7 , 1-5 Dec. 2003  
Pages:3716 - 3721 vol.7

**34. Software streaming via block streaming**

*Kuacharoen, P.; Mooney, V.J.; Madiseti, V.K.;*  
Design, Automation and Test in Europe Conference and Exhibition, 2003  
, 2003  
Pages:912 - 917

**35. Frequency-dependent space-interleaving for MIMO OFDM systems**

*Mohajerani, P.; Madiseti, V.K.;*  
Radio and Wireless Conference, 2003. RAWCON '03. Proceedings , Aug. 10-13, 2003  
Pages:79 - 82

**36. A media streaming protocol for heterogeneous wireless networks**

*Argyriou, A.; Madiseti, V.;*  
Computer Communications, 2003. CCW 2003. Proceedings. 2003 IEEE 18th Annual Workshop on , 20-21 Oct. 2003  
Pages:30 - 33

**37. Realizing load-balancing in ad-hoc networks with a transport layer protocol**

*Argyriou, A.; Madiseti, V.;*  
Wireless Communications and Networking Conference, 2004. WCNC. 2004 IEEE ,Volume: 3 , 21-25 March 2004  
Pages:1897 - 1902 Vol.3

**38. Streaming H.264/AVC video over the Internet**

*Argyriou, A.; Madiseti, V.;*  
Consumer Communications and Networking Conference, 2004. CCNC 2004. First IEEE , 5-8 Jan. 2004  
Pages:169 - 174

## Other Publications

- 1. A Transport Layer Technology for Improving the QoS of Networked Multimedia Applications <draft-madiseti-arguriou-qos-sctp-00.txt>.**  
*Madiseti, V., Argyriou, A.*  
IETF Internet-Draft, Jul 25, 2002.
- 2. Voice & Video over Mobile IP Networks <draft-madiseti-arguriou-voice-video-mip-00.txt>**  
*Madiseti, V., Argyriou, A.*  
IETF Internet-Draft, Nov 20, 2002.
- 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.

**21. Antonios Argyriou, 2005**, Serving in Hellenic Army.

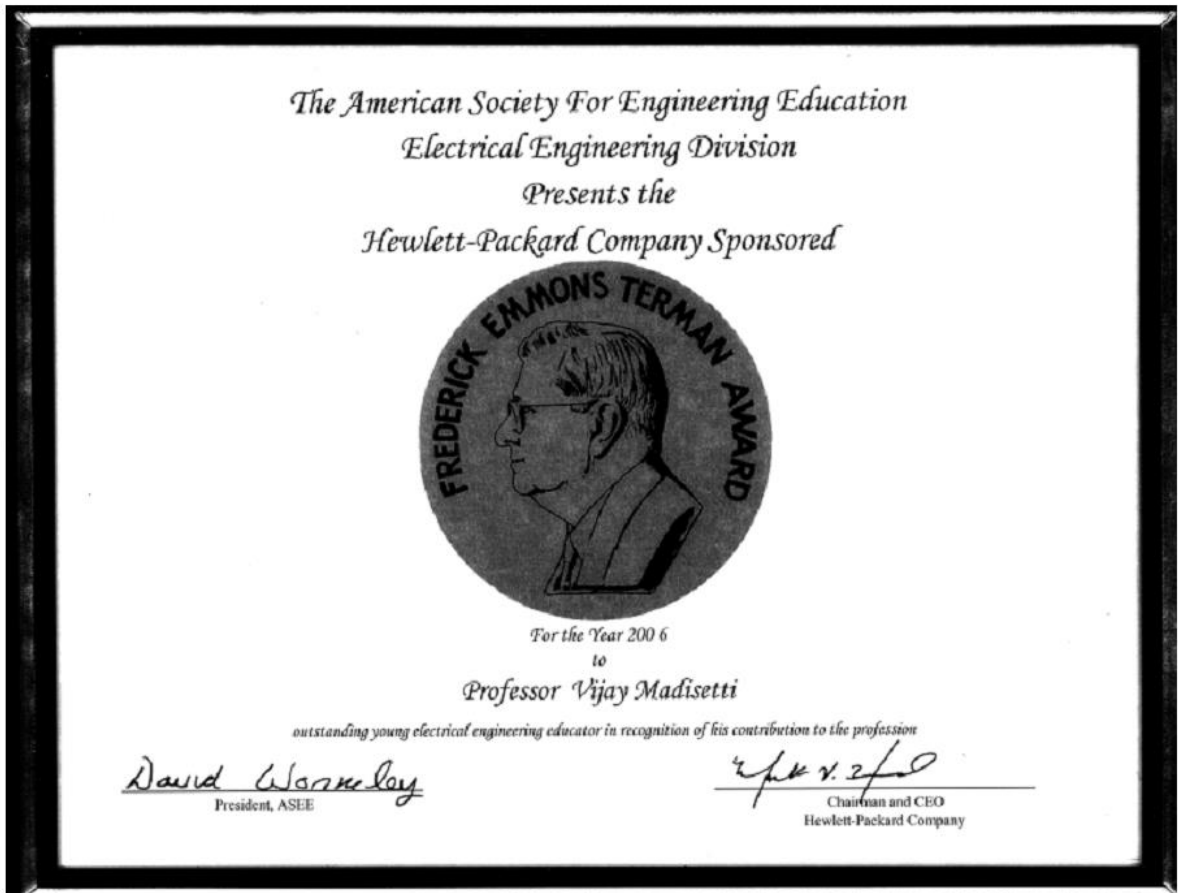
**22. Pilho Kim, 2009, Scientist, VP Technologies, Inc.**

**23. M. Sinnokrot, 2009, Staff Engineer, Qualcomm.**

## **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)

**Issued Patents:** 9,935,772, 9,769,213



# EXHIBIT B



Before the Court is the opening claim construction brief of Estech Systems, Inc. (“Plaintiff”), filed on January 21, 2021. Dkt. No. 126.<sup>1</sup> On February 4, 2021, Target Corporation, PlainsCapital Bank, BOKF, National Association, BBVA USA, Wells Fargo & Company, and Wells Fargo Bank, N.A. (collectively the “Defendants”) filed their response. Dkt. No. 133. On February 10, 2021, Plaintiff filed its reply. Dkt. No. 135. On March 4, 2021, the Court held a hearing on the issues of claim construction and claim definiteness. Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order.

---

<sup>1</sup> Citations to the parties’ filings are to the filing’s number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.

**Table of Contents**

**I. BACKGROUND ..... 5**

A. U.S. Patent No. 6,067,349..... 5

B. U.S. Patents No. 7,068,684, No. 7,123,699, and No. 8,391,298 ..... 6

**II. LEGAL PRINCIPLES ..... 8**

A. Claim Construction..... 8

B. Departing from the Ordinary Meaning of a Claim Term..... 11

C. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA) ..... 12

**III. AGREED CONSTRUCTIONS..... 14**

**IV. CONSTRUCTION OF DISPUTED TERMS..... 15**

A. U.S. Patent No. 6,067,349..... 15

A-1. “wherein the caller ID information is stored in association with a voice message”..... 15

A-2. “automatically dialing the telephone number at a request of the called party while the called party is listening to the voice message” ..... 17

B. U.S. Patent No. 7,068,684..... 20

B-1. “a data server coupled to the hub” ..... 20

B-2. “sufficiently throttling the data sent from the workstation to the telephone to increase a rate of transfer of the audio information during the communicating step” ..... 22

B-3. “reducing a future amount of data from being transferred from the workstation if the amount of data exceeds a predetermined threshold” ..... 24

C. U.S. Patent No. 7,123,699..... 26

C-1. “coupling a second LAN to the first LAN over a WAN” ..... 26

C-2. “coupling an audio path over the channel between the telecommunications device and the voice mail box” ..... 28

C-3. “in response to an input at the telecommunications device, sending a user mail box connection message from the second LAN to the first LAN requesting a channel” ..... 30

C-4. “direct station select input” ..... 32

D. U.S. Patent No. 8,391,298..... 35

D-1. “a first local area network (‘LAN’),” “a second LAN,” “a wide area network (‘WAN’),” and “a third LAN” ..... 35

D-2. “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN” ..... 37

D-3.	“select between observing the list of the plurality of telecommunications extensions coupled to the second LAN or observing a list of the plurality of telecommunications extensions coupled to the third LAN” .....	40
D-4.	“circuitry for automatically calling ...” .....	43
<b>V.</b>	<b>CONCLUSION</b> .....	<b>47</b>

## I. BACKGROUND

Plaintiff alleges infringement of four U.S. Patents: No. 6,067,349 (the “’349 Patent”), No. 7,068,684 (the “’684 Patent”), No. 7,123,699 (the “’699 Patent”), and No. 8,391,298 (the “’298 Patent”) (collectively, the “Asserted Patents”).

### A. U.S. Patent No. 6,067,349

In general, the ’349 Patent is directed to technology for using caller ID for dialing out and creating calling (speed-dial) lists.

The ’349 Patent issued from an application filed on December 31, 1997. The abstract of the ’349 Patent provides:

A telephone and voice mail (voice processing) system, which is implemented using only a single processing system for controlling operation of both the telephone system and the voice mail system, permits a user to call back a party using caller ID data stored with a voice mail message left by the party calling into the system. This is accomplished by storing caller ID information associated with an incoming call along with the message placed by the incoming caller and stored within the mailbox associated with the called party. Additionally, the caller ID information may be used to create a speed dial list within the telephone and voice mail system for later use by the user. Such caller ID information may be retrieved from a voice mail message left by the calling party, or may be retrieved while conducting a conversation with the incoming call.

’349 Patent *Abstract*. Claim 1 of the ’349 Patent, an exemplary asserted claim, provides as follows:

A method comprising the steps of:  
receiving an incoming call from a calling party over a switched telephone network, wherein the incoming call includes caller ID information, wherein the caller ID information includes a telephone number of the calling party;  
connecting the incoming call to a voice mailbox;  
storing the caller ID information in association with the voice mailbox, wherein the voice mailbox is associated with a called party, and ***wherein the caller ID information is stored in association with a voice message*** left by the calling party for the called party in the voice mailbox; and  
***automatically dialing the telephone number at a request of the called party while the called party is listening to the voice message.***

’349 Patent col.11 ll.29–44 (emphasis added).

**B. U.S. Patents No. 7,068,684, No. 7,123,699, and No. 8,391,298**

The '684, '699, and '298 Patents are each generally directed to technology for improving Voice over IP systems. The '684 Patent is generally directed to technology for improved bandwidth sharing between data and IP telephony systems on a network. The '699 Patent is generally directed to technology for improving voice mail in an IP telephony system. The '298 Patent is generally directed to technology for improving phone-number directories in an IP telephony system.

These patents are related through priority claims. Each patent lists a priority claim to the application that issued as the '684 Patent, which was filed on February 1, 2001. The '699 Patent issued from an application that is a continuation-in-part of the '684 Patent's application. Similarly, the '298 Patent issued from an application that is a continuation-in-part of the '684 Patent's application.

The abstract of the '684 Patent provides:

An information handling system comprises a TCP/IP network connecting a hub to a multimedia server and the hub to a data server, and the hub to an IP telephony device that is then coupled to a network device. Data sent from the network device is addressed for transmission to the data server and is transmitted through the IP telephony device to the TCP/IP network. The IP telephony device monitors when an amount of data being received over the network falls below a predetermined threshold. If this occurs, the IP telephony device will send a signal to the multimedia server, which will then generate a congestion signal to send to all or selected IP telephony devices in the network to throttle data being received by the IP telephony devices from their respective connected network devices.

'684 Patent *Abstract*.

The abstract of the '699 Patent provides:

In a voice over IP system, an IP telephone includes an LED lamp that indicates a voice message has been stored in a remote voice mail system. The IP telephone can then access that voice message. The message can also be moved from one remote site to another.

'699 Patent *Abstract*.

The abstract of the '298 Patent provides:

In a Voice over IP system, a user can dial numbers stored in a series of lists, which are stored in the system and displayed to the user of an IP telephone. One implementation will allow a user to scroll through a list of remote sites. When the user finds the desired site, the user is then presented with the same options as a user local to that site. All of this can be performed without the need for an operator or a printed directory. This system provides an ability for a user to scroll through a list of names and phone numbers and then call a person once their name and phone number is displayed.

'298 Patent *Abstract*.

Claim 29 of the '684 Patent, Claim 1 of the '699 Patent, and Claim 1 of the '298 Patent are exemplary asserted claims. They recite:

In an information handling system comprising a hub, a multimedia server ("multimedia server") coupled to the hub, a telephone coupled to the hub, a workstation coupled to the hub through the telephone, and ***a data server coupled to the hub***, a method comprising the steps of:

transferring data from the workstation to the telephone, wherein the data sent from the workstation is addressed for transmission to the data server;

communicating audio information between the telephone and the multimedia server; and

***sufficiently throttling the data sent from the workstation to the telephone to increase a rate of transfer of the audio information during the communicating step***, wherein the throttling step further comprises the step of monitoring an amount of the audio information being received by the telephone from the multimedia server.

'684 Patent col.19 ll.4–29 (emphasis added);

In a telecommunications system, a method comprising the steps of:  
storing a voice mail message in a voice mail box in a voice mail system within a first LAN;

***coupling a second LAN to the first LAN over a WAN***, wherein the first LAN, the second LAN, and the WAN operate under a mutable network protocol;

providing a sensory indication on a telecommunications device within the second LAN that the voice message is stored in the voice mail box within the first LAN; and

the telecommunications device accessing the voice mail system within the first LAN to listen to the voice message stored in the voice mail box,

wherein the step of the telecommunications device accessing the voice mail system within the first LAN to listen to the voice message stored in the voice mail box further comprises the steps of:



establishing a channel between the first and second LANs over the WAN;  
*coupling an audio path over the channel between the telecommunications device and the voice mail box*; and  
streaming voice data containing the voice message from the voice mail box to the telecommunications device over the audio path, wherein the establishing step further comprises the steps of:  
*in response to an input at the telecommunications device, sending a user mail box connection message from the second LAN to the first LAN requesting a channel*, wherein the user mail box connection message includes an extension associated with the telecommunications device and an identification of the voice mail box;  
assigning the channel by the first LAN; and  
sending a connection established message from the first LAN to the second LAN.

'699 Patent col.12 l.53 – col. 13 l.21 (emphasis added); and

An information handling system comprising:  
*a first local area network (“LAN”)*;  
*a second LAN*;  
*a wide area network (“WAN”)* coupling the first LAN to the second LAN;  
*a third LAN* coupled to the first and second LANs via the WAN;  
a first telecommunications device coupled to the first LAN;  
a plurality of telecommunications extensions coupled to the second LAN;  
the first LAN including first circuitry for enabling a user of the first telecommunications device to observe a list of the plurality of telecommunications extensions;  
the first LAN including *second circuitry for automatically calling one of the plurality of telecommunications extensions in response to the user selecting one of the plurality of telecommunications extensions from the observed list, wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN*; and  
a plurality of telecommunications extensions coupled to the third LAN, the first LAN including circuitry for enabling the user to *select between observing the list of the plurality of telecommunications extensions coupled to the second LAN or observing a list of the plurality of telecommunications extensions coupled to the third LAN*.

'298 Patent col. 15 l.58 – col. 16 l.19.

## II. LEGAL PRINCIPLES

### A. Claim Construction

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312

(Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Phillips*, 415 F.3d at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *Id.* at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) (“There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.”) (vacated on other grounds).

“The claim construction inquiry ... begins and ends in all cases with the actual words of the claim.” *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). “[I]n all aspects of claim construction, ‘the name of the game is the claim.’” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). First, a term’s context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim’s meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term’s meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314–15.

“[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Markman*, 52 F.3d at 979 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficoso N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). But, “[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. “[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office (“PTO”) and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, “because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.* at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be “unhelpful as an interpretive resource”).

Although extrinsic evidence can also be useful, it is “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Id.* at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *See id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert’s conclusory, unsupported assertions as to a term’s definition are not helpful to a court. *See id.* Extrinsic evidence is “less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.* The Supreme Court has explained the role of extrinsic evidence in claim construction:

In some cases, however, the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be “so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning”). In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the “evidentiary underpinnings” of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.

*Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331–32 (2015).

## **B. Departing from the Ordinary Meaning of a Claim Term**

There are “only two exceptions to [the] general rule” that claim terms are construed according to their plain and ordinary meaning: “1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the

specification or during prosecution.”<sup>2</sup> *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (“[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal.”). The standards for finding lexicography or disavowal are “exacting.” *GE Lighting Solutions*, 750 F.3d at 1309.

To act as his own lexicographer, the patentee must “clearly set forth a definition of the disputed claim term,” and “clearly express an intent to define the term.” *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee’s lexicography must appear “with reasonable clarity, deliberateness, and precision.” *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee’s statements in the specification or prosecution history must amount to a “clear and unmistakable” surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 (“The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.”). “Where an applicant’s statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.” *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

### **C. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)**

A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in

---

<sup>2</sup> Some cases have characterized other principles of claim construction as “exceptions” to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a “means ... for performing a specified function” and that an act may be claimed as a “step for performing a specified function.” *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes “means” or “step for” terms, and that it does not apply in the absence of those terms. *See Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when “the claim language, read in light of the specification, recites sufficiently definite structure” (quotations omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when “the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure”); *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an “act” corresponding to “how the function is performed”); *Personalized Media Communications, L.L.C. v. International Trade Commission*, 161 F.3d 696, 704 (Fed. Cir. 1998) (§ 112, ¶ 6 does not apply when the claim includes “sufficient structure, material, or acts within the claim itself to perform entirely the recited function ... even if the claim uses the term ‘means.’” (quotation marks and citation omitted)).

When it applies, § 112, ¶ 6 limits the scope of the functional term “to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof.” *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation

involves multiple steps. “The first step ... is a determination of the function of the means-plus-function limitation.” *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). “[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof.” *Medtronic, Inc.*, 248 F.3d at 1311. A “structure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *Id.* The focus of the “corresponding structure” inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is “clearly linked or associated with the [recited] function.” *Id.* The corresponding structure “must include all structure that actually performs the recited function.” *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005). However, § 112 does not permit “incorporation of structure from the written description beyond that necessary to perform the claimed function.” *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

For § 112, ¶ 6 limitations implemented by a programmed general-purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general-purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

### III. AGREED CONSTRUCTIONS

The parties have agreed to constructions set forth in their Joint Claim Construction Chart Pursuant to Rule 4-5(d). Dkt. No. 140. Based on the parties’ agreement, the Court hereby adopts the agreed constructions.

**IV. CONSTRUCTION OF DISPUTED TERMS**

**A. U.S. Patent No. 6,067,349**

**A-1. “wherein the caller ID information is stored in association with a voice message”**

<b>Disputed Term<sup>3</sup></b>	<b>Plaintiff’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“wherein the caller ID information is stored in association with a voice message”  • ’349 Patent Claim 1	Plain and ordinary meaning; no construction necessary.	the voice message file and the caller ID information are stored on the same hard disk

**The Parties’ Positions**

Plaintiff submits: The meaning of this term is plain without construction, and it is not what Defendants propose. For example, storing the caller ID in association with a voice message is not coextensive with storing the caller ID and voice message on the same hard disk. In fact, the claim does not require storing the voice message at all. And the ’349 Patent describes that the caller ID may be stored on memory other than a hard disk (citing ’349 Patent col.8 ll.6–9). Dkt. No. 126 at 32–33.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’349 Patent col.8 ll.6–9.

Defendants respond: As described in the ’349 Patent, the caller ID information and the voice mail message are stored together on a hard disk. “Further, the only description of how the stored caller ID information and the stored message are ‘connected’ or in any way related is by indexing them and storing them with a data structure on hard disk 107.” “There is simply no other way

---

<sup>3</sup> For all term charts in this order, the claims in which the term is found are listed with the term but: (1) only the highest-level claim in each dependency chain is listed, and (2) only asserted claims identified in the parties’ Joint Claim Construction Chart Pursuant to Rule 4-5(d) (Dkt. No. 140) are listed.



described of storing the caller ID information and stored message.” Notably, the patent does not describe storing called ID information in one memory and the voice message in a different memory, it “provides no enablement for such an idea.” And while the patent describes that the caller ID may be stored in some other memory means, “it does not provide any information as to what these ‘other memory means’ are or how the system would store this caller ID information in a first memory ‘in association’ with voice message information stored in another location.” Dkt. No. 133 at 11–13.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’349 Patent col.2 ll.53–55, col.2 ll.59–64, col.3 ll.44–47, col.8 ll.6–9, col.8 ll.16–17, col.8 ll.32–35, col.8 ll.46–47, col.9 ll.6–15, col.9 ll.22–24, col.9 ll.36–40.

Plaintiff replies: “Defendants are conflating claim construction with enablement/written description.” Dkt. No. 135 at 7–8.

### **Analysis**

There appear to be two issues in dispute. First, whether the claim language requires storing the voice message. It does not, though the voice message is inherently stored. Second, whether the claim language requires that the caller ID information and the voice message be stored on the same hard disk. It does not.

The voice message of the claim is inherently stored, though the claim does not affirmatively require “storing” the voice message. Claim 1 provides significant guidance on this point:

A method comprising the steps of:  
receiving an incoming call from a calling party over a switched telephone network, wherein the incoming call includes caller ID information, wherein the caller ID information includes a telephone number of the calling party;  
connecting the incoming call to a voice mailbox;  
***storing the caller ID information in association with the voice mailbox***, wherein the voice mailbox is associated with a called party, and ***wherein the caller***

***ID information is stored in association with a voice message left by the calling party for the called party in the voice mailbox;*** and automatically dialing the telephone number at a request of the called party while the called party is listening to the voice message.

'349 Patent col.11 ll.29–44 (emphasis added). Notably, the voice message is “left ... in the voice mailbox.”

The caller ID and voice message are not necessarily stored on the same hard disk. Indeed, the '349 Patent expressly provides an embodiment in which the caller ID information is stored in memory other than the hard drive on which the voice message is stored. For instance, the patent describes an embodiment in which “[h]ard disk 107 stores ... voice mail messages” and “caller ID information ... [is sent] for storage within hard disk 107 *or some other memory means.*” '349 Patent col.2 ll.54–55, col.8 ll.6–9 (emphasis added). In other words, the patent teaches away from the limitation advocated by Defendants. Whether the patent enables or adequately describes the other-memory-means embodiment is not an issue of claim construction.

Accordingly, the Court rejects Defendants’ proposed construction and determines that this term has its plain and ordinary meaning without the need for further construction.

**A-2. “automatically dialing the telephone number at a request of the called party while the called party is listening to the voice message”**

<b>Disputed Term</b>	<b>Plaintiff’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“automatically dialing the telephone number at a request of the called party while the called party is listening to the voice message” <ul style="list-style-type: none"> <li>• '349 Patent Claim 1</li> </ul>	Plain and ordinary meaning; no construction necessary.	while a voice message is audibly played to the called party, initiating a connection request for a call from the called party to the calling party without the called party dialing any digit of the telephone number of the calling party

### **The Parties' Positions**

Plaintiff submits: The meaning of this term is plain without construction, and it is not what Defendants propose. For example, nothing in the '349 Patent precludes a called party from selecting a number that happens to be in a telephone number to request the automatic dialing of the telephone number. The other changes to the claim language that Defendants propose are similarly unsupported. Dkt. No. 126 at 34–35.

Defendants respond: As described in the '349 Patent a user listening to a voicemail message may request automatic dialing of the phone number that left the message by pressing a “redial key” to initiate the dialing task. The “redial key” “is not a digit of the phone number.” Plaintiff “has not identified any other embodiments beyond the repeated description of this action.” And this term should be construed to “ensure the claims of the '349 Patent are afforded their scope as evidenced by what the applicant had in its possession as of the filing of the '349 Patent.” Dkt. No. 133 at 13–14.

In addition to the claims themselves, Defendants cite the following intrinsic evidence to support their position: '349 Patent col.8 ll.43–49, col.9 ll.8–11, col.9 ll.29–35; Dkt. No. 133-5 at 110–15, 114; Dkt. No. 133-5 at 118–26, 119; Dkt. No. 133-5 at 127–29.

Plaintiff replies: Defendants' improperly present an “enablement/written description argument” as a claim-construction argument. Dkt. No. 135 at 9–10.

### **Analysis**

The issue in dispute appears to distill to whether the “request” in the phrase “automatically dialing the telephone number at a request of the called party” necessarily excludes selecting a digit of the telephone number. It does not.

Defendants' negative limitation is not supported by the record. Defendants rely on the following description of an embodiment in which a redial key is used to initiate the automatic dialing:

Referring next to FIGS. 10A and 10B, there is illustrated a process for re-dialing using the caller ID information stored in the manner illustrated above with respect to FIG. 9. In step 1001, a user at an extension is listening to the voice mail message left to them by an outside call (see step 908). In step 1002, if the user has not pressed a redial key 1410, then the user continues to listen to the voice mail message until the voice mail message ends in step 1003. However, ***if the user presses the redial key 1410 while listening to the voice mail message, then the process proceeds to step 1004 whereby the caller ID data stored along with the message within the mailbox message structure is retrieved to speed dial data structures in DRAM 112, which are then supplied to the dialing task.***

'349 Patent col.8 ll.36–49 (emphasis added). This does not establish that the use of the redial key, or any particular key to initiate the dialing task, is an important or inherent feature of the invention. Indeed, the patent suggests the opposite, that the use of the redial key (or any particular key) is merely exemplary:

The process described above with respect to FIGS. 9 and 10A-10B ***enables a user at a telephone extension coupled to system 100 to merely press one key, such as a redial button, on their telephone while listening to a voice mail message in order to make an outgoing telephone call*** to the calling party who left the voice mail message. This is accomplished by storing the caller ID information retrieved from the incoming call along with the voice mail message so that the present invention may retrieve that caller ID information if such a redial procedure is enabled by the user.

*Id.* at col.9 ll.6–15 (emphasis added). Ultimately, the context provided by the patent does not support Defendants' proposed negative limitation. Again, whether the patent enables or adequately describes using a digit of the telephone number to request the automatic dialing of the number is not an issue of claim construction.

Accordingly, the Court rejects Defendants' proposed construction and determines that this term has its plain and ordinary meaning without the need for further construction.

**B. U.S. Patent No. 7,068,684**

**B-1. “a data server coupled to the hub”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a data server coupled to the hub”  • ’684 Patent Claims 29, 36, 37	Plain and ordinary meaning; no construction necessary.	a data server wired to the hub  alternatively, • a data server connected to the hub where the connection is a wired connection.

**The Parties’ Positions**

Plaintiff submits: The term “coupled” is used according to its customary meaning, which is not limited to a wired connection. And the description of embodiments of the invention do not support narrowing the meaning of “coupled” to a wired connection. Notably, while the ’684 Patent describes using Ethernet as a data transfer protocol, Ethernet is expressly an exemplary protocol and is not limited to a wired connection in any event. Dkt. No. 126 at 10–13.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’349 Patent col.3 l.67 – col.4 l.1.

Defendants respond: “The ’684 Patent consistently, and exclusively, uses the word ‘coupled’ to describe a wired connection.” Further, in the relevant time period, “coupling” meant a wired connection because “wireless connections were not contemplated for the connections in the described systems.” Thus, the Court should “limit the scope of the claims of the ’684 Patent to what was actually in the Applicants’ possession in 2001.” Dkt. No. 133 at 14–16.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’684 Patent col.4 ll.6–12, col.5 ll.23–25, col.5 ll.36–42, col.10 ll.40–43. col.11 ll.2–4, col.11 ll.65–67.

### Analysis

The issue in dispute is whether the coupling of the data server to the hub necessarily excludes all coupling other than a wired connection. It does not.

The “coupled” of the claims refers to a communicative connection but not necessarily a wired connection. For instance, Claim 29 provides:

In an information handling system comprising a hub, a multimedia server (“multimedia server”) coupled to the hub, a telephone coupled to the hub, a workstation coupled to the hub through the telephone, and a data server coupled to the hub, a method comprising the steps of:  
transferring data from the workstation to the telephone, wherein the data sent from the workstation is addressed for transmission to the data server;  
communicating audio information between the telephone and the multimedia server; and  
sufficiently throttling the data sent from the workstation to the telephone to increase a rate of transfer of the audio information during the communicating step, wherein the throttling step further comprises the step of monitoring an amount of the audio information being received by the telephone from the multimedia server.

’684 Patent col.19 ll.4–19. The claim is plainly directed to various devices (e.g., servers, hub, telephone, workstation) that are connected to enable communication. Nothing in the claims or the description of the embodiments mandates that the communicative connection is limited to a wired connection.

Defendants’ argument is in large part premised on a fact that Defendant failed to establish. Namely, that wireless connections were not contemplated in the art in 2001 for server-hub coupling. But even if that is true, “[t]he law *does not require that an applicant describe* in his specification every conceivable and possible *future embodiment* of his invention.” *SuperGuide Corp. v. DirecTV Enters.*, 358 F.3d 870, 878–81 (Fed. Cir. 2004) (emphasis added). Indeed, Federal Circuit “case law allows for after-arising technology to be captured within the literal scope of valid claims that are drafted broadly enough.” *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1371 (Fed. Cir. 2008).

Accordingly, the Court construes this term as follows:

- “a data server coupled to the hub” means “a data server communicatively connected to the hub.”

**B-2. “sufficiently throttling the data sent from the workstation to the telephone to increase a rate of transfer of the audio information during the communicating step”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“sufficiently throttling the data sent from the workstation to the telephone to increase a rate of transfer of the audio information during the communicating step”  • ’684 Patent Claims 29, 36, 37	Plain and ordinary meaning; no construction necessary.	reducing the number of data packets sent from the workstation to the telephone to comply with a predetermined quality of service level of audio allowing for no discernable audio decrease in quality

**The Parties’ Positions**

Plaintiff submits: The meaning of this term is plain without construction. It is not limited to reducing the “number of data packets,” or complying “with a predetermined quality of service level of audio,” or “allowing for no discernable audio decrease in quality.” The description of embodiments of the invention does not support limiting this term as Defendants suggest. In fact, the ’684 Patent describes throttling of “data” rather than “data packets” and allowing a decrease in audio quality rather than precluding it. Dkt. No. 126 at 13–15.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’684 Patent col.12 ll.36–45.

Defendants respond: The only guide to the sufficiency of throttling provided in the ’684 Patent is “the use of Quality of Service (‘QoS’)-based throttling.” And “[g]iven the patent’s use of the term *amount*, it is clear that what is contemplated by throttling, in part, is the *number* of data

packets (e.g., a level)” (Defendants’ emphasis). In fact, the patent describes that the throttling is triggered by a threshold number of data packets. Dkt. No. 133 at 16–18.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’684 Patent *Abstract*, col.1 ll.56–58, col.4 ll.43–46, col.12 l.13, col.12 ll.36–45, col.13 ll.17–49, col.13 l.54 – col.14 l.12, col.14 ll.41–46; Dkt. No. 133-6 at 304–24, 322.

### **Analysis**

There appear to be two issues in dispute. First, whether “throttling the data” necessarily entails “reducing the number of data packets.” It does not. Second, whether “sufficiently” throttling the data “to increase a rate of transfer of the audio information” necessarily entails “comply[ing] with a predetermined quality of service level of audio allowing for no discernable audio decrease in quality.” It does not.

The claim language is not limited as the Defendants suggest. The plain meaning of the term at issue is broader than the described embodiments the Defendants’ cite to limit the meaning of the claims. For example, “sufficiently throttling data ... to increase a rate of transfer” of audio information plainly states that the throttling is sufficient if it increases a rate of transfer of audio information, regardless of whether the increase in the rate of transfer is sufficient to satisfy some unrecited quality of service level. While the ’684 Patent may describe throttling that is sufficient to satisfy a quality of service level, the Defendants have not identified any description that rises to the exacting standard to limit the broad plain meaning of the claim language to require compliance with a quality of service level. Similarly, “throttling data” is broader than “reducing a number of data packets” and the Defendants have not identified anything that rises to the exacting standard to so limit it. Notably, the Defendants have not established that an amount of data is limited to a number of data packets. Ultimately, the patent teaches that “[t]he throttling can be performed using



many different methods” rather than being limited as the Defendants suggest. ’684 Patent col.13 ll.50–51.

Accordingly, the Court rejects the Defendants’ proposed construction and determines that this term has its plain and ordinary meaning without the need for further construction.

**B-3. “reducing a future amount of data from being transferred from the workstation if the amount of data exceeds a predetermined threshold”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“reducing a future amount of data from being transferred from the workstation if the amount of data exceeds a predetermined threshold”  • ’684 Patent Claim 36	Plain and ordinary meaning; no construction necessary.	reducing the number of data packets to be transferred from the workstation when a predetermined level of data is exceeded

**The Parties’ Positions**

Plaintiff submits: The meaning of this term is plain without construction. Defendants’ proposed construction improperly changes the scope of this term by eliminating the “future” limitation, changing “amount of data” to “number of data packets,” and by changing “threshold” to “level of data.” With respect to “threshold,” while the patent uses the phrase “threshold, or level,” it does so in the context of describing when the number of packets in a buffer “falls below a predetermined threshold” rather than “when the amount of data exceeds a predetermined threshold.” Dkt. No. 126 at 15–17 (emphasis omitted).

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’684 Patent col.12 ll.11–19.

Defendants respond: As described in the ’684 Patent, throttling is triggered by congestion which is determined based on whether the number of packets in a buffer reaches a “predetermined number of packets (e.g., a level of data).” Thus, reducing the number of data packets to be

transferred is triggered when the amount of data exceeds a predetermined level of data. Dkt. No. 133 at 18–19.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’684 Patent col.12 ll.11–19, col.12 l.46 – col.15 l.13.

### **Analysis**

The dispute distills to two issues. First, whether “reducing a future amount of data” necessarily entails “reducing the number of data packets.” It does not. Second, whether a “predetermined threshold” refers to a level of data. It does.

For the reasons set forth in the section on “sufficiently throttle,” the Court declines to limit throttling or reducing data to reducing the number of data packets.

“Threshold” in the term plainly refers to a level of data. To begin, the “amount of data” in the claim is compared to the threshold to determine whether to reduce the future amount of data. This alone suggests that the threshold represents an amount of data. And while the ’684 Patent may not describe an embodiment in which throttling is triggered by an amount of data exceeding a threshold, it does describe an embodiment in which throttling is triggered when an amount of data “falls below the predetermined threshold, or level.” ’684 Patent col.12 ll.11–19. Again, this indicates that the threshold against which the amount of data is compared is a level of data.

Accordingly, the Court construes this term as follows:

- “reducing a future amount of data from being transferred from the workstation if the amount of data exceeds a predetermined threshold” means “reducing a future amount of data from being transferred from the workstation if the amount of data exceeds a predetermined level of data.”

**C. U.S. Patent No. 7,123,699**

**C-1. “coupling a second LAN to the first LAN over a WAN”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“coupling a second LAN to the first LAN over a WAN”  • ’699 Patent Claim 1	Plain and ordinary meaning; no construction necessary.	creating a dedicated connection between a second LAN and the first LAN via a WAN

**The Parties’ Positions**

Plaintiff submits: The term “coupling” is used according to its customary meaning, which is the same in the ’699 Patent as it is in the related ’684 Patent. Defendants’ proposed “dedicated connection” limitation is not supported by the evidence. Rather, the ’699 Patent explains that dedicated circuits between facilities are not required, and in fact may be eliminated by the invention. Dkt. No. 126 at 17–19 (citing ’699 Patent col.1 ll.10–12, col.1 ll.37–41).

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’699 Patent col.1 ll.10–12, col.1 ll.37–41.

Defendants respond: “Throughout the specification, the term ‘coupling’ or ‘coupled’ is used to mean the act of creating a dedicated, wired connection between specific components.” The dedicated connection “serves the purpose of streaming voice mail data,” it “is used specifically for accessing voice mail messages.” And when its purpose is served, “the connection is torn down.” That it is torn down once its purpose is served indicates that the connection is dedicated to the purpose. Dkt. No. 133 at 20–21.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’699 Patent col.2 ll.60–61, col.9 ll.23–24, col.10 l.66 – col.11 l.4, col.11 ll.31–35, col.11 ll.55–63.

### Analysis

The issue in dispute distills to whether “coupling” in this term is limited to creating a dedicated connection. It is not.

Defendants have not identified anything that rises to the exacting standard to take the plain meaning of “coupling” two LANs and limit it to require a “dedicated” connection between the LANs. Indeed, the ’699 Patent teaches that Voice over IP technology “can eliminate the need for expensive, dedicated circuits between facilities.” ’699 Patent col.1 ll.35–41. And the patent’s description of tearing down a connection that Defendants suggest indicates a dedicated connection between the LANs refers to only one of at least two communication routes between the coupled LANs. For example, with reference to Figure 11, the patent describes: (1) sending a message between two LANs over a WAN to indicate the presence of a voicemail message, *id.* at col.10 ll.43–50 (item 1101); (2) sending a connection request between the LANs in response to this message, *id.* at col.10 l.66 – col.11 l.4; (3) establishing a voice channel between the LANs in response to this connection request, *id.* at col.11 ll.19–35, and (4) tearing down the voice channel, *id.* at col.11 ll.55–63. Even if tearing down the voice channel indicates that the voice channel is dedicated (which the Court does not hold), it does not indicate that all communication routes between the coupled LANs are dedicated in that not all are torn down. Thus, this description does not indicate that coupling two LANs is necessarily through a dedicated connection.

Accordingly, the Court construes this term as follows:

- “coupling a second LAN to the first LAN over a WAN” means “communicatively connecting a second LAN to the first LAN over a WAN.”

**C-2. “coupling an audio path over the channel between the telecommunications device and the voice mail box”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“coupling an audio path over the channel between the telecommunications device and the voice mail box”  • ’699 Patent Claim 1	Plain and ordinary meaning; no construction necessary.	creating a dedicated electrical connection for the flow of audio information between the telecommunications device and the voice mail box

**The Parties’ Positions**

Plaintiff submits: The meaning of this term is plain without construction. “Coupling” has its customary meaning, just as in the “... coupled to the hub” and the “coupling a second LAN ...” limitations. Coupling an audio path over a channel does not require a dedicated electrical connection. Further, the claim recites streaming voice data, not “audio information,” over the audio path. Dkt. No. 126 at 19–20.

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Dkt. No. 126-7 at 6.

Defendants respond: For the reasons set forth for the “coupling a second LAN ...” limitation, “coupling an audio path” requires creating a dedicated connection. Further, the audio path is coupled over a “channel.” “As used in the context of communications, the channel serves to carry or transfer information.” Thus, the channel of the audio path is “an electrical connection used for the flow of audio information.” Dkt. No. 133 at 21–23.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence:** ’699 Patent col.11 ll.11–16, col.11 ll.31–33, col.11 ll.55–63. **Extrinsic evidence:** Dkt. No. 133-9 at 5.

### **Analysis**

There appear to be three issues in dispute. First, whether the “coupling” requires creating a dedicated connection. It does not. Second, whether the coupling is necessarily “electrical.” It is not. Third, whether the channel is necessarily for transferring audio information. It is, in the sense that audio path coupled over the channel is necessarily capable of transferring audio information.

The “coupling” at issue is not limited to creating a dedicated electrical connection. For the reasons set forth in the section on “coupling a second LAN ...,” the Court rejects that coupling is limited to a dedicated connection. And the Court rejects that “coupling” is limited to an electrical connection as the Defendants offer no sufficient reason for this limitation.

The audio path that is coupled over the channel is for transferring audio information. This is plain from the surrounding claim language. For instance, the claim recites “streaming voice data containing the voice message from the voice mail box to the telecommunications device over the audio path.” ’699 Patent col.13 ll.8–10. The Court understands that “voice data” is audio information. Thus, the audio path must be capable of transferring audio information.

Accordingly, the Court construes this term as follows:

- “coupling an audio path over the channel between the telecommunications device and the voice mail box” means “communicatively connecting a path capable of transferring audio information such as voice data over the channel between the telecommunications device and the voice mail box.”

**C-3. “in response to an input at the telecommunications device, sending a user mail box connection message from the second LAN to the first LAN requesting a channel”**

<b>Disputed Term</b>	<b>Plaintiff’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“in response to an input at the telecommunications device, sending a user mail box connection message from the second LAN to the first LAN requesting a channel”  • ’699 Patent Claim 1	Plain and ordinary meaning; no construction necessary.	requesting a dedicated electrical connection between the first LAN and second LAN for the transfer of real-time audio data in response to an input at the telecommunications device

**The Parties’ Positions**

Plaintiff submits: The meaning of this term is plain without construction. As with the “channel” of the “coupling an audio path ... over the channel ...” limitation, the “channel” here is not limited to a “dedicated electrical connection.” Further, the claim recites streaming voice data, without mention of the “real-time audio” limitation Defendants propose. Dkt. No. 126 at 21–22.

Defendants respond: For the reasons set forth for “coupling an audio path over the channel,” the channel is a dedicated electrical connection. And as described in the ’699 Patent, the audio information is transferred over the channel in real time. Dkt. No. 133 at 23–24.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence:** ’699 Patent col.10 ll.16–17, col.11 ll.31–35, col.11 ll.55–63, col.11 l.66 – col.12 l.9. **Extrinsic evidence:** Dkt. No. 133-9 at 5.

**Analysis**

There are two issue in dispute. First, whether the channel is limited to “a dedicated electrical connection.” It is not. Second, whether the channel is necessarily for “transfer of real-time audio data.” It is not.

The “channel” at issue is the same “channel” of the “coupling an audio ...” limitation and the Court reiterates its reasoning set forth in that section. Claim 1 of the ’699 Patent provides as follows:

In a telecommunications system, a method comprising the steps of:  
storing a voice mail message in a voice mail box in a voice mail system within a first LAN;  
coupling a second LAN to the first LAN over a WAN, wherein the first LAN, the second LAN, and the WAN operate under a mutable network protocol;  
providing a sensory indication on a telecommunications device within the second LAN that the voice message is stored in the voice mail box within the first LAN; and  
the telecommunications device accessing the voice mail system within the first LAN to listen to the voice message stored in the voice mail box, wherein the step of the telecommunications device accessing the voice mail system within the first LAN to listen to the voice message stored in the voice mail box further comprises the steps of:  
***establishing a channel between the first and second LANs over the WAN;***  
coupling an audio path ***over the channel*** between the telecommunications device and the voice mail box; and  
streaming voice data containing the voice message from the voice mail box to the telecommunications device over the audio path, ***wherein the establishing step further comprises the steps of:***  
***in response to an input at the telecommunications device, sending a user mail box connection message from the second LAN to the first LAN requesting a channel,*** wherein the user mail box connection message includes an extension associated with the telecommunications device and an identification of the voice mail box;  
assigning the channel by the first LAN; and  
sending a connection established message from the first LAN to the second LAN.

’699 Patent col.12 l.53 – col.13 l.21 (emphasis added). The claim requires “establishing a channel” and further requires that this establishing includes a number of steps, including sending a message “requesting a channel” “in response to an input.” From this, the Court understands the term at issue relates to establishing the channel over which the audio path is coupled. Thus, as stated above in the section on the “coupling and audio path over the channel ...” limitation, neither “coupling” nor “channel” are limited to a “dedicated electrical connection” and the audio path coupled over the channel is necessarily capable of transferring audio information. The Court further rejects



Defendants’ proposed real-time limitation. Defendants’ have failed to identify anything that rises to the exacting standard required to effectively rewrite “audio” as “real-time audio.”

Accordingly, the Court rejects Defendants’ proposed construction and determines that this term has its plain and ordinary meaning without the need for further construction.

**C-4. “direct station select input”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“direct station select input” • ’699 Patent Claim 2	Plain and ordinary meaning; no construction necessary.	an input from a DSS console having LED lamps and programmable function keys to monitor the status of individual stations, trunks or features

**The Parties’ Positions**

Plaintiff submits: As is well known in the art, a “direct station select input’ is simply an input that allows access to an associated function.” In the claim, this input is from an IP telephone, not a “DSS console,” and without mention of the other limitations Defendants propose. Dkt. No. 126 at 22–24.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’699 Patent col.9 ll.20–26, col.9 ll.28–31.

Defendants respond: During prosecution, the applicant distinguished the prior art to overcome a rejection on the basis that the “selection of a direct station select input at an IP telephone” required an input from the DSS console. Dkt. No. 133 at 25.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: Dkt. No. 133-7 at 292–301, 298.<sup>4</sup>

---

<sup>4</sup> Defendants cite “Ex. G, 49” which is a page of July 22, 2002 Declaration and Power of Attorney for Patent Application. Defendants quote material that is found on page 7 of the March 16, 2005 Amendment.

Plaintiff replies: “DSS (direct station select) is not a piece of hardware. DSS is a technique for allowing a device to perform a function through a single action, such as pressing a key or button.” The applicant explained during prosecution that “‘direct station select input’ is the input that allows access to an associated function.” “It does not require (1) a DSS console, (2) LED lamps, or (3) any of the other restrictions that Defendants attempt to import into the claim language.” Dkt. No. 135 at 5–6.

Plaintiff cites further **intrinsic evidence** to support its position: Dkt. No. 133-7 at 292–301, 298.

### **Analysis**

The issue in dispute is whether the “direct station select input” is necessarily an input from a DSS console, as that term is defined in the ’699 Patent. It is.

The surrounding claim language provides some context informing the meaning of this term. Specifically, Claim 2 of the ’699 Patent provides as follows:

In an information handling system comprising a first LAN, a second LAN, and a WAN coupling the first LAN to the second LAN using a TCP/IP protocol, a method comprising the steps of:  
in response to selection of a voice mail access input and *selection of a direct station select input at an IP telephone* within the first LAN, sending a request from the first LAN to the second LAN over the WAN to establish a connection between the first LAN and the second LAN, wherein the direct station select input identifies a voice mail box within the second LAN;  
establishing an audio path over the connection between the voice mail box and the IP telephone; and  
playing a voice message stored in the voice mail box over a speaker in the IP telephone as a result of sending audio data containing the voice message over the audio path.

’699 Patent col.13 1.22 – col.14 1.4 (emphasis added). Thus, the “direct station select input” is something that is selected at an IP telephone.

This claim language was further explained by the applicant during prosecution of the '699 Patent. Specifically, the applicant explained as follows:

Claim 17 recites a request to establish a connection between the LANs over the WAN in response to selection of a voicemail access input and selection of a **direct station select input** at a telephone within the first LAN, wherein the direct station select input identifies a voicemail box within the second LAN. Contrary to the Examiners' assertions, this claim limitation is not taught or suggested within either of the prior art references. With respect to this specific claim recitation, the Examiner has asserted that the direct station select input is taught in *Pandharipande* at column 5, lines 40-66. More specifically, the Examiner asserts that the language within this recitation that describes how ANI information identifies the direct station for which a message will be delivered disclosed this claim limitation. This is not correct. **A direct station select, or DSS, is specifically described in the Specification on pages 16-17, and shown in Figure 8. A DSS console will have LED lamps and keys that can be programmed by the user to monitor the status of individual stations, trunks or features. Pressing such a key will access the associated function. Thus, Applicants have specifically identified in the Specification what a direct station select input is, and the Examiner is not permitted to deviate from such an interpretation.** *Id.* The language cited in *Pandharipande* by the Examiner does not disclose or suggest such a DSS input. Instead, *Pandharipande* describes a database query of database 34 using any information to determine if there are messages in a voicemail box. If there are messages available, then DTMF tones are transmitted. This is not the same as sending a request to establish a connection based on the selection of **a DSS input at a telephone**, wherein the DSS input is associated and identifies a voicemail box within the other LAN.

Dkt. No. 133-7 at 298–99. Here, applicant “specifically identified” the description in the patent that defines “direct station select input.” The portion identified by applicant (“pages 16–17”) corresponds to the following the '699 Patent:

***A DSS console may be a stand-alone device, which connects to the IP telephony device 105 to provide 64 individual LED lamps and keys.*** The lamps can be programmed by the user to monitor the status of individual stations, trunks or features. Pressing the key will access the associated function. Each telephony device in the system can connect to a DSS console. The DSS console communicates with the IP telephony device 105 via a 9600 baud serial communication link. The IP telephony device 105 does not contain a serial UART device, so the serial data protocol is controlled by software running in DSP 801. Physical connection between the telephony device and DSS console may be via a standard two pair modular line cord.

'699 Patent col.9 ll.24–36 (emphasis added); Dkt. No. 133-7 at 18–19. This constitutes an unambiguous definition of the “direct station select input,” which refers to a functional key on a DSS console. As the DSS console may be a stand-alone device connected to the IP telephone, this definition does not conflict with the claim language “at an IP telephone.” Notably, a stand-alone console connected to an IP telephone can be “at an IP telephone.” And the DSS console is not necessarily a stand-alone device, which indicates that that the DSS console and IP telephone may be the same device.

Accordingly, the Court construes this term as follows:

- “direct station select input” means “a key on a DSS console having LED lamps and keys that can be programmed by the user to monitor the status of individual stations, trunks or features.”

**D. U.S. Patent No. 8,391,298**

**D-1. “a first local area network (‘LAN’),” “a second LAN,” “a wide area network (‘WAN’),” and “a third LAN”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a first local area network (‘LAN’)” • ’298 Patent Claim 1, 8	Plain and ordinary meaning; no construction necessary.	the LANs and WAN are different
“a second LAN” • ’298 Patent Claim 1, 8		
“a wide area network (‘WAN’)” • ’298 Patent Claim 1, 8		
“a third LAN” • ’298 Patent Claim 1, 8		

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

### **The Parties' Positions**

Plaintiff submits: There is no support for injecting a "different" limitation into the construction. In fact, it is not clear what it means for the networks to be "different." Dkt. No. 126 at 24.

Defendants respond: In the context of the claims and the described embodiments, "not only are the first and second LANs different components to the overall network topology, but they are different components with an intervening component separate and apart from the LANs, a WAN." Dkt. No. 133 at 25–27.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '298 Patent Figure 1, Figure 3, col.2 ll.46–62, col.3 ll.18–30, col.3 l.50, col.10 l.59, col.14 l.18.

### **Analysis**

The issue in dispute appears to be whether the first, second, and third LANs and the WAN that are separately recited in the claims are distinct components. They are. This is the plain import of separately reciting elements in a claim and Plaintiff has not established another meaning such that would allow, for example, that the first and second LANs to be the same singular LAN. *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) ("Where a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention." (quotation and modification marks omitted)). This does not mean, however, that two LANs or a LAN and a WAN cannot be of the same type of network.

Accordingly, the Court address the dispute over these terms with the following construction:

- “a first local area network (‘LAN’),” “a second LAN,” “a wide area network (‘WAN’),” and “a third LAN” as recited in the claims means “the first LAN, second LAN, third LAN, and WAN are networks that are distinct from each other.”

**D-2. “wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN”  • ’298 Patent Claim 1	Plain and ordinary meaning; no construction necessary.	the alpha-numeric depiction of all telephone extensions for all telephones located on the second LAN is stored in memory located on the second LAN

**The Parties’ Positions**

Plaintiff submits: The meaning of this term is plain without construction and is not as Defendants propose. For example, a list of telecommunication extensions is not coextensive with an alpha-numeric depiction of telephone extensions. Nor does a list that contains a plurality of extensions necessarily contain “all” extensions. Nor is storing a list in a server coextensive with storing a list in memory. Dkt. No. 126 at 25–26.

Defendants respond: “The ’298 Patent [] discloses that the extension numbers for a particular LAN are stored in the hard disk drive 403 of the server for that LAN; this intrinsic record disclosure is consistent with both the claim language and the only described support for this element.” During prosecution of the patent, the applicant reiterated that the “list ... stored in a server in the second LAN” must be “found within the second LAN, not outside the second LAN.” Finally, “the only

written description support for the claimed ‘list of the plurality of telecommunications extensions’” is a “list of names and phone numbers.” Dkt. No. 133 at 27–29.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’298 Patent col.2 ll.46–62, col.3 ll.62–65, col.11 l.38, col.13 ll.44–46; Dkt. No. 133-8 at 139–153, 151; Dkt. No. 133-8 at 174–91, 185<sup>5</sup>; Dkt. No. 133-8 at 220–49, 231.

### **Analysis**

The dispute appears to distill to four issues: First, whether the list is necessarily stored in the second LAN. It is, but it is expressly stored in a server in the second LAN rather than just “memory” in the second LAN. Second, whether the list necessarily includes all telecommunications devices in the second LAN. It does not. Third, whether the list necessarily is an “alpha-numeric depiction.” It is not. Fourth, whether “telecommunication extensions” are necessarily “telephone extensions.” They are not.

The list must be in the second LAN, but not simply in memory in the second LAN. The meaning of “the list ... stored in a server in the second LAN” is plain without construction. Notably, “stored in a server” is not coextensive with “stored in memory.” For example, it is not clear that all memory is necessarily in a server. And it is not clear if Defendants intend “memory” to encompass anything that can store computer information or to have a more limited meaning. Ultimately, Defendants have not established that it is accurate or helpful to construe “stored in a server” as “stored in memory.”

The list expressly includes “the plurality of telecommunications extensions,” but does not require “all” the extensions in the second LAN. Claim 1 of the ’298 Patent is an open-ended “comprising” claim and recites “a plurality of telecommunications extensions coupled to the

---

<sup>5</sup> The relevant portion of the January 22, 2008 Amendment appears twice in Defendants’ Ex. H, first at page 185 and second at page 189 of Dkt. No. 133-8.

second LAN.” ’298 Patent col.15 l.58, col.15 ll.66–67. It thus allows that there may be more extensions in the second LAN than the “plurality” of extensions. The list that includes “the plurality” then does not necessarily include extensions that are not part of the plurality.

The list is not necessarily an “alpha-numeric depiction.” Nothing identified by Defendants rises to the exacting standard to justify such a limitation. Indeed, the only support for this that Defendants offer is directed to an exemplary display of a list rather than an inherent attribute of storage of a list:

The display response message 1112 will show the first entry in the station or system rolodex list selected by the user for that remote site (e.g., Detroit 302). *For example*, if the station rolodex list is shown for the remote site (e.g., Detroit 302), then the first name in that list and the associated telephone number will be *displayed on the display* 810 of IP telephone 105.

’298 Patent col.11 ll.34–40 (emphasis added).

Finally, Defendants have presented no sufficient reason to rewrite “telecommunications extension” as “telephone extension.”

Accordingly, the Court rejects Defendants’ proposed construction and determines that this term has its plain and ordinary meaning without the need for further construction.



**D-3. “select between observing the list of the plurality of telecommunications extensions coupled to the second LAN or observing a list of the plurality of telecommunications extensions coupled to the third LAN”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“select between observing the list of the plurality of telecommunications extensions coupled to the second LAN or observing a list of the plurality of telecommunications extensions coupled to the third LAN”  • ’298 Patent Claim 1	Plain and ordinary meaning; no construction necessary.	determine which of two [lists of the plurality of telecommunications extensions] is displayed to the user

**The Parties’ Positions**

Plaintiff submits: The meaning of this term is plain without construction and is not as Defendants suggest. For example, “select” and “determine” are not coextensive. Further, the claim does not require displaying a list, which is separately recited in a dependent claim. Dkt. No. 126 at 26–27.

Defendants respond: This term is directed to switching between displayed lists. “By first providing a first list, and then, in response to a user input, displaying a second list, the ’298 Patent provides for a way to cycle observable lists.” There is no way “to observe a list without causing the list to be displayed.” Dkt. No. 133 at 29–30.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’298 Patent col.11 ll.2–47, col.13 ll.44–46; Dkt. No. 133-8 at 220–49, 246–48.

## Analysis

The issue in dispute appears to be whether this terms necessarily entails display of a list. It does not.

When interpreted in light of surrounding claim language, this term refers to selecting a list for observation but does not require actually displaying the selected list. Specifically, Claims 1–3, and 6 of the '298 Patent recite:

1. An information handling system comprising:
  - a first local area network (“LAN”);
  - a second LAN;
  - a wide area network (“WAN”) coupling the first LAN to the second LAN;
  - a third LAN coupled to the first and second LANs via the WAN;
  - a first telecommunications device coupled to the first LAN;
  - a plurality of telecommunications extensions coupled to the second LAN;
  - the first LAN including *first circuitry for enabling a user of the first telecommunications device to observe a list of the plurality of telecommunications extensions*;
  - the first LAN including second circuitry for automatically calling one of the plurality of telecommunications extensions in response to the user selecting one of the plurality of telecommunications extensions from *the observed list*, wherein the list of the plurality of telecommunications extensions is stored in a server in the second LAN, and is accessed by the first circuitry across the WAN; and
  - a plurality of telecommunications extensions coupled to the third LAN, the first LAN including circuitry for enabling the user to *select between observing the list* of the plurality of telecommunications extensions coupled to the second LAN *or observing a list* of the plurality of telecommunications extensions coupled to the third LAN.
2. The system as recited in claim 1, wherein communication among the first LAN, second LAN, and WAN uses an IP protocol.
3. The system as recited in claim 2, wherein *the list of the plurality of telecommunications extensions is displayed* to the user of the first telecommunications device.
6. The system as recited in claim 1, wherein *the list of the plurality of telecommunications extensions is played as audio* to the user of the first telecommunications device.

'298 Patent col.15 l.58 – col.16 l.25, col.16 ll.39–42 (emphasis added). In this context, the system of Claim 1 includes structure for enabling observation of a list, and selection of the list to be observed, but does not specify actual display of the list. Claim 3, which ultimately depends from Claim 1, expresses a system that displays the list, indicating that a user may observe a list by looking at it. *See also id.* at col.9 ll.64–67 (“Naturally, using a workstation 106, such a listing of names and phone numbers can be viewed on the display screen. Additionally, using display 810 on the IP telephone 105, the same process can be accomplished.”). Claim 6, which depends from Claim 1, expresses a system that plays an audio version of the list, indicating that a user may observe a list by listening to it. *See also id.* at col.9 l.67 – col.10 l.4 (“Alternatively, the names and phone numbers could be vocally listed over the speaker 821 on the IP telephone 105 as opposed to displaying the names and phone numbers on the IP telephone display 810.”).

Accordingly, the Court construes this term as follows:

- “select between observing the list of the plurality of telecommunications extensions coupled to the second LAN or observing a list of the plurality of telecommunications extensions coupled to the third LAN” means “select which of two [lists of the plurality of telecommunications extensions] is to be audibly or visibly displayed to the user.”

**D-4. “circuitry for automatically calling ...”**

<b>Disputed Term</b>	<b>Plaintiff’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
<p>“second circuitry for automatically calling one of the plurality of telecommunications extensions in response to the user selecting one of the plurality of telecommunications extensions from the observed list”</p> <ul style="list-style-type: none"> <li>• ’298 Patent Claim 1</li> </ul>	<p>Plain and ordinary meaning; no construction necessary.</p>	<p>This is a 112 ¶ 6 claim element.</p> <p>function:</p> <ul style="list-style-type: none"> <li>• automatically calling one of the plurality of telecommunications extensions in response to the user selecting one of the plurality of telecommunications extensions from the observed list</li> </ul> <p>structure:</p> <ul style="list-style-type: none"> <li>• DSP structure disclosed at 4:26-56, 5:33-38, 6:9-23, 8:66- 9:24 and equivalents thereof, including then existing Texas Instrument 5410 DSPs</li> </ul>
<p>“second circuitry for automatically calling the second telephone extension in response to the user selecting the second telephone extension from the viewed list”</p> <ul style="list-style-type: none"> <li>• ’298 Patent Claim 9</li> </ul>	<p>Plain and ordinary meaning; no construction necessary.</p>	<p>This is a 112 ¶ 6 claim element.</p> <p>function:</p> <ul style="list-style-type: none"> <li>• automatically calling the second telephone extension in response to the user selecting the second telephone extension from the viewed list</li> </ul> <p>structure:</p> <ul style="list-style-type: none"> <li>• DSP structure disclosed at 4:26-56, 5:33-38, 6:9-23, 8:66- 9:24 and equivalents thereof, including then existing Texas Instrument 5410 DSPs</li> </ul>

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

### **The Parties' Positions**

Plaintiff submits: These terms are not governed by 35 U.S.C. § 112, ¶ 6. The claim-recited "circuitry" in combination with the claim-recited description of its operation is sufficiently structural to maintain the presumption against § 112, ¶ 6. Further, if the term is analyzed under § 112, ¶ 6, Defendants' proposed structure improperly includes a number of structural features not necessary to the claim-recited functions. Dkt. No. 126 at 28–32.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '298 Patent col.4 ll.26–56.

Defendants respond: The circuitry of these terms are defined by what they do rather than what they are. Neither the adjectival qualifications nor the description of the operation of the claimed circuitry provide any definite structure. As such, these terms are subject to § 112, ¶ 6. Dkt. No. 133 at 30–33.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence:** '298 Patent col.4 ll.26–56, col.5 ll.33–38, col.6 ll.9–23, col.8 l.66 – col.9 l.24. **Extrinsic evidence:** Dkt. No. 133-11.<sup>6</sup>

### **Analysis**

There are two issues in dispute. First, whether the "circuitry" terms are governed by 35 U.S.C. § 112, ¶ 6. Second, if the terms are governed by the statute, whether the Defendants' have identified the appropriate structure. The Court determines that these terms are not governed by § 112, ¶ 6 and therefore does not address the second issue.

---

<sup>6</sup> Declaration of Dr. Shukri Soury in Support of Defendants' Opening Claim Construction Brief (Dec. 11, 2020).

Defendants have not overcome the presumption against applying § 112, ¶ 6. The Court begins with the presumption that § 112, ¶ 6 does not apply because the terms do not include the “means” language traditionally used to signal application of the statute. *Williamson*, 792 F.3d at 1347–49 & n.3. This “presumption can be overcome and § 112, para. 6 will apply if the challenger demonstrates that the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.” *Id.* at 1349 (quotations omitted). “[T]he mere fact that the disputed limitations incorporate functional language does not automatically convert the words into means for performing such functions.” *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018). “The question whether [a term] invokes section 112, paragraph 6, depends on whether persons skilled in the art would understand the claim language to refer to structure, assessed in light of the presumption that flows from the drafter’s choice not to employ the word ‘means.’” *Samsung Elecs. Am., Inc. v. Prisia Eng’g Corp.*, 948 F.3d 1342, 1354 (Fed. Cir. 2020).

The circuitry language does not invoke § 112, ¶ 6. Two Federal Circuits’ opinions are instructive on this issue. In *Personalized Media*, the Federal Circuit reversed the International Trade Commission’s holding that the term “digital detector for [performing a function]” was governed by § 112, ¶ 6 and that the claim was indefinite for lack of structure. *Personalized Media Communs., L.L.C. v. ITC*, 161 F.3d 696, 700–01, 703–707 (Fed. Cir. 1998). The Federal Circuit held that “‘detector’ had a well-known meaning to those of skill in the electrical arts connotative of structure.” *Personalized Media Communs., L.L.C.*, 161 F.3d 696 at 704–05 & n.12 (citing dictionary definitions of detector). The Federal Circuit went on to explain that,

neither the fact that a ‘detector’ is defined in terms of its function, nor the fact that the term ‘detector’ does not connote a precise physical structure in the minds of those of skill in the art detracts from the definiteness of structure. . . . Even though the term ‘detector’ does not specifically evoke a particular structure, it does convey

to one knowledgeable in the art a variety of structures known as ‘detectors.’ We therefore conclude that the term ‘detector’ is a sufficiently definite structural term to preclude the application of § 112, P 6.

*Id.* Similarly, in *Linear Technology*, the Federal Circuit reversed a district court’s holding that “circuit for [performing a function]” terms were governed by § 112, ¶ 6. *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319–21 (Fed. Cir. 2004). The court determined that:

Technical dictionaries, which are evidence of the understandings of persons of skill in the technical arts, plainly indicate that the term ‘circuit’ connotes structure. . . . For example, *The Dictionary of Computing* 75 (4th ed. 1996) defines “circuit” as “the combination of a number of electrical devices and conductors that, when interconnected to form a conducting path, fulfill some desired function.” . . . Thus, when the structure-connoting term “circuit” is coupled with a description of the circuit’s operation, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art, and § 112 P 6 presumptively will not apply.

*Linear Tech. Corp.*, 379 F.3d 1311 at 1320. Because the claims themselves included the “objectives or operations” of the circuit and because “persons of ordinary skill in the art would understand the structural arrangements of circuit components from the term ‘circuit’ coupled with the qualifying language of [the] claim[s],” the court held that § 112, ¶ 6 did not apply. *Id.* at 1320–21.

Like the claim-recited “detector” in *Personalized Media* and the claim-recited “circuit” in *Linear Technology*, the “circuitry” terms here provide sufficiently definite structure to maintain the presumption against § 112, ¶ 6. Notably, the term “circuitry” itself connotes a broad class of structures. *See Linear Tech.*, 379 F.3d at 1320. And the claims provide significant structural context through recitation of the objectives and operation of the circuitry within the claims. Under Federal Circuit precedent, such claim recitation of how functionally defined components interact to achieve a claim-recited objective provides sufficient indicia of structure to maintain the presumption against § 112, ¶ 6. *See, e.g., id.* at 1319–21; *Apple Inc.*, 757 F.3d at 1295, 1301 (“heuristic [for performing a function]” found to be sufficiently definite structure in part because

the claim described the operation and objectives of the heuristic); *Zeroclick, LLC*, 891 F.3d 1008 (“program that can [perform function]” found to be sufficiently definite structure in part because the claims provided operational context for the program); *Prisua Eng’g Corp.*, 948 F.3d at 1347–48, 1353–54 (“digital processing unit ... performing [functions]” found to be sufficiently definite structure in part because the claims provided operational context for the unit). Given this context, Defendant has failed to overcome the presumption against applying § 112, ¶ 6.

Accordingly, the Court rejects Defendants’ proposed constructions and determines that these terms have their plain and ordinary meanings without the need for further construction.

## V. CONCLUSION

The Court adopts the constructions above for the disputed and agreed terms of the Asserted Patents. Furthermore, the parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court’s reasoning. However, in the presence of the jury the parties should not expressly or implicitly refer to each other’s claim construction positions and should not expressly refer to any portion of this Order that is not an actual construction adopted by the Court. The references to the claim construction process should be limited to informing the jury of the constructions adopted by the Court.

**SIGNED this 21st day of March, 2021.**

  
ROY S. PAYNE  
UNITED STATES MAGISTRATE JUDGE