

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

IPR2023-01250
Patent 9,277,433

**DECLARATION OF DR. ZYGMUNT J. HAAS
IN SUPPORT OF PATENT OWNER'S RESPONSE**

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PATENT OWNER'S EXHIBIT LIST

Ex.	Description
2001	U.S. Patent Application Publication No. 2008/0080457 to Cole (“Cole-2”)
2002	Redline of the text of Cole (Ex. 1005) and Cole-2 (Ex. 2001)
2003	International Publication No. WO 2006/012610 to Rao et al. (“Rao-2”)
2004	Redline of the text of Rao (Ex. 1007) and Rao-2 (Ex. 2003)
2005	U.S. Patent No. 8,825,109 to Montemurro et al. (“Montemurro Patent”)
2006	Redline of the text of Montemurro (Ex. 1009) and the Montemurro Patent (Ex. 2005)
2007	RTP A Transport Protocol for Real-Time Applications (July 2003), <i>available at</i> https://www.rfc-editor.org/rfc/rfc3550.pdf
2008	User Datagram Protocol (Aug. 28, 1980), <i>available at</i> http://www.ietf.org/rfc/rfc768.txt
2009	Declaration of Dr. Zygmunt J. Haas
2010	<i>Curriculum Vitae</i> of Dr. Zygmunt J. Haas
2011	Transcript of Deposition of Dr. Patrick McDaniel on June 4, 2024

I, Zygmunt J. Haas, hereby declare as follows:

I. INTRODUCTION

A. Engagement

1. I am over the age of eighteen (18) years and otherwise competent to make this declaration. I have been retained as an expert witness on behalf of Patent Owner, Headwater Research LLC, for the above-captioned *inter partes* review (“IPR”) involving U.S. Patent No. 9,277,433 (“’443 Patent”).

2. I make this declaration based on my personal knowledge, educational background and training, consideration of the materials I discuss herein, and my expert opinions.

3. I am being compensated at the rate of \$550 per hour for my time in this matter, in addition to reimbursement for expenses. My compensation does not depend on the outcome of this proceeding, and I have no financial interest in its outcome.

B. Background and Qualifications

4. My qualifications for forming the opinions given in this declaration are summarized here and are addressed more fully in my *curriculum vitae*, which I understand is submitted as Exhibit 2010.

5. I am a Professor and Distinguished Chair in Computer Science at the Computer Science department of the University of Texas at Dallas. I also hold the

title of Professor Emeritus at the School of Electrical and Computer Engineering at Cornell University. Over the years, I provided technical consulting services in intellectual property matters, which have included writing expert reports and providing deposition and trial testimony in the areas of my expertise, including wireless communication technologies.

6. I received my Doctor of Philosophy (Ph.D.) degree in the field of Electrical Engineering from Stanford University in 1988. As part of my Ph.D. program, I authored the thesis titled "Packet Switching in Fiber-Optic Networks." I received my Master of Science (M.Sc.) degree in Electrical Engineering, *summa cum laude*, from Tel-Aviv University in 1985 and my Bachelor of Science (B.Sc.) degree in Electrical Engineering *summa cum laude*, from Technion.

7. After receiving my Ph.D. degree from Stanford University, I worked in industry as a member of the technical staff at AT&T Bell Laboratories from 1988 to 1995, initially in the Network Research Department in Holmdel, New Jersey. There, I performed research in the fields of wireless communications, mobility management, fast protocols, optical networks, and optical switching. During my tenure at AT&T, I also worked for the AT&T Wireless Center of Excellence, in Whippany, NJ. There, I studied various aspects of wireless and mobile networks.

8. After my work at AT&T Bell Laboratories, I joined the faculty of Electrical & Computer Engineering at Cornell University in 1995, and over time was promoted to Tenured Full Professor. While at Cornell, I headed my research group – the Wireless Networks Lab – which has had extensive contributions in the area of wireless communication systems and networks. In 2013, I retired from Cornell University with the title of Emeritus Professor, and subsequently I joined the Computer Science Department at the University of Texas at Dallas with the title of Professor and Distinguished Chair in Computer Science. Both, at Cornell University as well as at the University of Texas at Dallas, I have taught numerous courses related to computer network (at the undergraduate and graduate levels) and wireless communications. As part of my academic career, I have also served on numerous and various committees for the benefit of the scientific community.

9. In 2007, I was elevated to an IEEE Fellow, and in 2022, I was elevated to an ACM Fellow, both well-known distinctions. For example, the total number of IEEE Fellows which are selected in any given year does not exceed 0.1% of the total number of voting members of IEEE. Alike, with respect to the ACM Fellow grade, ACM states that “ACM's most prestigious member grade recognizes the top 1% of ACM members for their outstanding accomplishments in computing and information technology and/or outstanding service to ACM and the larger computing community.” *See* <https://awards.acm.org/fellows>.

10. In 2016, I received the IEEE ComSoc AHSN Recognition Award for “outstanding contribution to securing ad hoc and sensor networks” from the IEEE Communication Society. In 2012, I received the IEEE ComSoc WTC¹ Recognition Award, which recognizes individuals for outstanding technical contributions in the field for their service to the scientific and engineering communities. As another example, I received the “Best Paper Award” for the paper “Optimal Resource Allocation for UWB Wireless Ad Hoc Networks” from the IEEE International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC) conference in 2005. Finally, in 2003, I received the “Highly Commended Paper Award” for co-authoring “Performance Evaluation of the Modified IEEE 802.11 MAC for Multi-Channel Multi-Hop Ad Hoc Network,” directed at advanced information networking and applications. Furthermore, many of my papers have been extensively cited by other authors, as indicated by various citation indices. For example, my paper on “Securing Ad Hoc Networks,” co-authored with a Ph.D. student at the time, has been cited over 4000 times by other publications according to the *Google Scholar* index. I have been invited to many international conferences to deliver keynote speeches.

¹ Wireless Communications Technical Committee

11. I am a named author on various book chapters, for example, “A Decision-Theoretical Approach to Resource Allocation in Wireless Multimedia Networks,” in *Resource Allocation in Next Generation Wireless Networks*, Volume 5, W. Li and Y. Pan, Editors, Nova Science Publishers, 2006, chapter 1, pp.1-23; “Providing Ad-Hoc Connectivity with the Reconfigurable Wireless Networks,” in *Ad-Hoc Networks*, edited by Charlie Perkins, Addison Wesley, 1998; and “Mobile-TCP: An Asymmetric Transport Protocol Design for Mobile Systems,” in *Mobile Multimedia Communications*, edited by D. J. Goodman and D. Raychadhuri, Plenum Publishing, 1997.

12. I am an inventor or co-inventor on over twenty issued patents, which are primarily in the fields of high-speed networking, wireless networks, and optical switching.

13. I have served on the editorial board for a number of professional journals including Wireless Communications and Mobile Computing, Wireless Networks Journal, and the Journal of High Speed Networks. I have also served as guest editor for the IEEE Journal on Selected Areas in Communications on several occasions.

C. Materials Considered

14. I have been asked to provide a technical review, analysis, insights, and opinions in the IPR involving the 443 Patent. My technical review, analysis,

insights, and opinions are based on my education, research, and experience, as well as my study of relevant materials in this matter.

15. I have reviewed the '433 Patent (Ex. 1001), including its claims and specification. I have also reviewed the '433 Patent's prosecution history (Ex. 1002). My understanding of the '433 Patent's claims is based on the plain and ordinary meaning of the claims as would be understood by a person of ordinary skill in the art. Unless otherwise noted and based on the material currently available to me, my opinions set forth herein do not rest on a disagreement with the Petitioner's expert, Dr. McDaniel, as to the meaning of any claim term or limitation.

16. I have reviewed the Petition for IPR and the Board's Decision to Institute in this proceeding. I have reviewed the declaration of Dr. Patrick McDaniel ("McDaniel Decl," Ex. 1003). I have also reviewed the Rao (Ex. 1005) and Cole (Ex. 1006) references submitted by Petitioner in this proceeding, as well as the other references that the Petitioner and Dr. McDaniel rely upon. I have also reviewed the exhibits cited in Dr. McDaniel's declaration, as well as the exhibits that I cite throughout my declaration. I have also reviewed Dr. McDaniel's deposition testimony in this proceeding ("McDaniel Dep.," Ex. 2011). I have also reviewed Patent Owner's Preliminary Response (POPR) and exhibits cited therein.

17. This declaration represents the opinions that I have formed to date and based on the material available to me at this time. I may consider additional documents as they become available or other documents that are necessary to form my opinions. I reserve the right to revise, supplement, or amend my opinions based on new information and on my continuing analysis in this matter.

II. LEGAL PRINCIPLES

A. Claim Construction

18. I have been informed by counsel that the first step in performing a validity analysis of patent claims is to interpret the meaning and scope of the claims by construing the terms and phrases found in those claims. I have been informed by counsel that the appropriate construction of a claim term is its ordinary and accustomed meaning as would have been understood by one of ordinary skill in the art at the time of the invention in the context of the entire patent and the prosecution history.

19. I have been informed by counsel that the standard for claim construction in an *inter partes* review is the same standard as is applied in district court proceedings.

20. I have been informed by counsel that a determination of the meaning and scope of the claims is a matter of law. I have been informed by counsel that to

determine the meaning of the claims, one should consider the intrinsic evidence, which includes the patent's claims, written description, and prosecution history.

B. Burden of Proof

21. I have been informed by counsel that in an *inter partes* review, the petitioner has the burden of proving unpatentability by a preponderance of the evidence.

C. Anticipation²

22. I have been instructed by counsel and understand that a reference is anticipated if a single prior art reference discloses each and every claim element, either explicitly or inherently, as arranged in the same way as in the claim. I have been informed by counsel that where even one claim element is not disclosed in a reference, a contention of anticipation fails.

23. I further have been informed by counsel that when a reference fails to explicitly disclose a claim element, that reference inherently discloses that element only if the reference must *necessarily* include the undisclosed claim element.

D. Obviousness

24. I have been instructed by counsel and understand that a combination of prior art references may render a claim obvious if, at the time of the invention, a

² I understand that anticipation is not at issue in this IPR, but nevertheless I provide my legal understanding of anticipation for completeness.

person of ordinary skill in the art would have selected and combined those prior-art elements in the normal course of research and development to yield the claimed invention.

25. I have been informed by counsel that in an obviousness analysis, one should consider the *Graham* factors, including: the scope and content of the prior art; the differences between the claimed inventions and the prior art; and the level of ordinary skill in the art. I have further been informed by counsel that the obviousness analysis is to be performed on a claim-by-claim basis. I have been informed by counsel that a person of ordinary skill in the art is a person of ordinary creativity, not an automaton.

26. I have been instructed by counsel and understand that obviousness requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. I have been informed by counsel that obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have been motivated to combine those references in a manner that would include all limitations of the challenged claim, and, in making that combination, a person of ordinary skill in the art would have had a reasonable expectation of success (i.e., would have reasonably expected to arrive at the proposed modification without undue experimentation).

27. I also have been informed by counsel that an obviousness analysis must be conducted with awareness of the distortion caused by hindsight bias and with caution of arguments reliant upon *ex post* reasoning. For instance, I understand that when considering obviousness, I should put myself in the position of a person of ordinary skill in the field at the time of the invention, rather than considering new information that is known today, but was not known at the priority date of the challenged patent.

28. I have been informed and understand from counsel that the Supreme Court has recognized that inventions are nearly always “combinations of what, in some sense, is already known.” As a safeguard against hindsight bias, I thus understand that an obviousness determination should take into account whether any proposed modification to the prior art is more than the predictable use of prior art elements according to their established functions. I have been informed by counsel that if the proposed modification *is* more than the predictable use of prior art elements according to their established functions, that is an indication that the proposed modification is inventive, not obvious.

III. THE '433 PATENT

A. Overview of '433 Patent (Ex. 1001)

29. At a high level, the '433 Patent is generally directed to a system having multiple wireless modems, which uses a differential traffic control policy to

determine whether to apply various “internet activity access controls” with respect to a first Internet access request “based at least on which of [a] plurality of wireless network types is to provide data communication.” As part of the application of those access controls, the system will aggregate network activity for the first Internet access request with activity for other data communication requests, before allowing network activity in association with the first Internet access request.

30. The '433 Patent teaches that determining which access controls should be applied based on wireless network type allows the claimed system to encourage different application behavior on different network types, e.g., “to encourage certain behavior such as sending low QoS traffic when it is cheaper (e.g., when on . . . Wi-Fi, as opposed to . . . cellular).” '433 Patent at 102:54-59.

31. Additionally, the patent teaches that aggregation of network activity from a first Internet access request with network activity from other requests from other applications before allowing the first network activity advantageously reduces the frequency of resource-intensive changes in modem state such as “awakening the modem” or “changing the power state of the modem” need to occur. *See id.* at 93:62-94:1 (“[A] network service usage activity is prevented from awakening the modem [or] changing the power state of the modem . . . until multiple network service usage activities require such changes in modem state, or

until network service usage activity is aggregated to increase network capacity and/or network resource utilization efficiency.”).³

B. '433 Patent Claims

32. The '433 Patent has twenty claims. Claim 1 is the only independent claim, and Claims 2-20 are dependent claims that depend (directly or indirectly) from Claim 1. Independent Claim 1 recites:

Identifier	Claim Language
[1.1]	A wireless end-user device, comprising:
[1.2.a]	a wireless wide area network (WWAN) modem to communicate data for Internet service activities between the device and at least one WWAN, when configured for and connected to the at least one WWAN,
[1.2.b]	the at least one WWAN having a corresponding network type of a plurality of wireless network types supported by the device for data communication;
[1.3]	a non-transitory memory to store a network service activity control policy set, the policy set including at least a first differential traffic control policy element associating one or more Internet activity access controls with at least a first end-user application; and
[1.4]	one or more processors configured to
[1.5]	access the network service activity control policy set,

³ All emphases in quoted materials in this declaration are added, unless otherwise noted.

Identifier	Claim Language
[1.6]	determine whether to apply the one or more Internet activity access controls with respect to a first Internet access request by or on behalf of the first end-user application, based at least on which of the plurality of wireless network types is to provide data communication for Internet access requests, and
[1.7]	when the one or more Internet activity access controls are to be applied, apply the one or more Internet activity access controls to aggregate network activity for the first Internet access request with network activity for one or more other data communication requests, which are otherwise not associated with the first end-user application, before allowing network activity in association with the first Internet access request.

'433 Patent (Ex. 1001) at cl. 1.

C. Summary of Prosecution History

33. The '433 Patent was originally filed as application 14/688,704 on April 16, 2015. '433 Patent at Cover. The Patent Office did not issue any prior art rejections during prosecution. The Patent Office only issued one Office Action, a double patenting rejection over other applications 14/677,778 and 14/675,113. Ex. 1002 at 660-79; McDaniel Decl. ¶ 47. Applicant filed a terminal disclaimer, and all claims were allowed. Ex. 1002 at 838, 860-62; McDaniel Decl. ¶ 47.

34. Dr. McDaniel asserts that: "During prosecution, the Patent Office did not consider any of Rao, Cole, Freund, Singh and Montemurro." McDaniel Decl. ¶ 47. I understand this to be incorrect, for the reasons explained in the POPR and

acknowledged in the Board's Institution Decision. I understand that the Examiner considered family members to the Rao (Ex. 2003) and the Cole (Ex. 2001) references relied on in the Petition for the challenge to the sole independent claim, and the issued version of the Montemurro reference (Ex. 1005) relied on in the Petition for challenges to certain dependent claims. *See* Pet. at 75 (admitting the Cole and Rao family members were before the Examiner); *see also* Ex. 1001 at 7, 8, 10 (listing the Cole and Rao family members and as-issued Montemurro in the References Cited section); Ex. 1002 at 258, 267, 270 (listing the Cole and Rao family members and as-issued Montemurro on IDSs that the Examiner signed).

35. I understand that the family member or issued patent each has only negligible differences when compared with the corresponding reference relied upon by the Petition; i.e., such differences having no consequence to the invalidity theories presented by the Petition. My understanding is based on the explanation and the evidence provided in the POPR. *See, e.g.*, Ex. 2002 (comparison of Cole to the Cole family member before the Examiner); Ex. 2004 (comparison of Rao to the Rao family member before the Examiner); Ex. 2006 (comparison of Montemurro to the as-issued Montemurro).

IV. PRIORITY DATE

36. The '433 Patent claims priority to an earliest provisional application filed on January 28, 2009. '433 Patent at Cover. Petitioner does not dispute that as

the priority date for purposes of this IPR or assert a different priority date. *See* Pet. at 1-2. Therefore, I will assume January 28, 2009, as the priority date for the '433 Patent for purposes of this declaration.

37. I note that '433 Patent also claims priority to a provisional application filed on May 25, 2010. I was informed by counsel that the parties have adopted that as the agreed priority date in district court proceedings. For purposes of this declaration and my analysis herein, I do not opine as to what specific priority date applies, but my opinions herein would not change if the appropriate priority date were determined to be at least in the range of 2009-2011.

V. LEVEL OF ORDINARY SKILL IN THE ART

38. Dr. McDaniel proposes that a person of ordinary skill in the art (POSITA) in field of the '433 Patent “would have had at least (1) at least a bachelor’s degree in computer science, electrical engineering, or a related field, and (2) three to five years of experience with networking, power consumption of networked computing devices, and/or wireless digital communications systems. More education, e.g., a doctorate in an academic area emphasizing electrical engineering, computer engineering, computer science, or a related technical field, would compensate for fewer years of work experience.” McDaniel Decl ¶ 18; *see* Pet. at 13 n.2 (citing Ex. 1003 ¶¶ 17-18). The Board preliminarily adopted this definition in its Institution Decision. ID at 9.

39. For purposes of this declaration, I do not challenge the definition of a POSITA proposed by Dr. McDaniel and preliminarily adopted by the Board. In my opinion, the definition is reasonable, however a different reasonable level of skill would not affect the outcome in this case.

VI. CLAIM CONSTRUCTION

40. I was informed by counsel that the Board does not construe any claim terms unnecessary to resolve the parties' dispute. Petitioner and Dr. McDaniel do not propose any claim constructions, and Petitioner asserts that "no formal claim constructions are necessary." Pet. at 2. I agree that no express constructions are necessary and the claims of the '433 Patent carry their plain and ordinary meaning in view of the claim language and specification.

41. Below I discuss the interpretation of two aspects of Claim 1. I believe they are helpful in resolving the parties' invalidity disputes and show that the theories presented Dr. McDaniel's declaration fail to establish invalidity. In my opinion, the below interpretation follows directly from the structure of Claim 1 and the plain and ordinary meaning of the claim language. Thus, they do not depend on a particular construction of any claim terms beyond applying their plain and ordinary meaning. I note that the Petition and Dr. McDaniel do not discuss or justify a different interpretation of Claim 1. To the extent Petitioner advances a different understanding of Claim 1, it would be: (1) a new argument outside of the

Petition and Dr. McDaniel's declaration, and (2) unsupported and contrary to the plain and ordinary meaning of the claim language.

A. Claim Limitations [1.6] and [1.7]

42. Claim limitation [1.6] describes a binary yes/no determination, and if the determination is yes, then claim limitation [1.7] is performed. This follows from the plain meaning of Claim 1, with relevant language emphasized below:

Identifier	Claim Language
[1.4]	one or more processors configured to . . .
[1.6]	<i>determine whether to apply the one or more Internet activity access controls</i> with respect to a first Internet access request by or on behalf of the first end-user application . . . and
[1.7]	<i>when the one or more Internet activity access controls are to be applied, apply the one or more Internet activity access controls to</i> aggregate network activity for the first Internet access request with network activity for one or more other data communication requests . . .

43. Claim limitation [1.6] describes the processor determining “whether [or not] to apply” the one or more Internet activity access controls (for a first Internet access request by a first end-user application). This is a binary, yes/no determination. Either the processor will decide to apply the Internet activity access controls (answer “yes”), or it will decide to *not* apply the controls (answer “no”).

44. If the processor makes an affirmative determination in claim limitation [1.6], then it performs claim limitation [1.7]. Limitation [1.7] begins: “when the one or more Internet activity access controls are to be applied” This refers to the determination made in limitation [1.6]. The remainder of limitation [1.7] describes what happens next: the one or more processors will “apply the one or more Internet activity access controls to” (I further describe limitation [1.7] in the next subsection.) The point here is to explain the *if/then* structure of claim limitations [1.6] and [1.7]; i.e., if the condition in limitation [1.6] is satisfied, then limitation [1.7] is performed. I note that Dr. McDaniel agreed with this interpretation of limitations [1.6] and [1.7], as shown by his deposition testimony. *See* McDaniel Tr. at 49:18-50:19, 53:8-21, and 55:13–56:5.

B. Claim Limitation [1.7]

45. As discussed in the previous section, and as Dr. McDaniel acknowledged, if an affirmative determination is made in claim limitation [1.6] (determining to “apply the one or more Internet activity access controls with respect to a first Internet access request by or on behalf of the first end-user application”), then claim limitation [1.7] is performed. This includes the claim language bolded below, which Dr. McDaniel testified “is practiced.” *See* McDaniel Dep. at 55:13-56.5 (if limitation [1.6] is determined in the affirmative, then the remaining language after the first clause in limitation [1.7] is practiced).

Identifier	Claim Language
[1.4]	one or more processors configured to . . .
[1.7]	when the one or more Internet activity access controls are to be applied, apply the one or more Internet activity access controls to <i>aggregate network activity for the first Internet access request with network activity for one or more other data communication requests</i> , which are otherwise not associated with the first end-user application, <i>before allowing network activity in association with the first Internet access request</i> .

46. Thus, limitation [1.7] recites aggregating network activity for “the first Internet access request” with network activity for data communication requests from other applications, which I refer to this herein as the “claimed aggregation.” Two aspects of limitation [1.7] are apparent from the plain and ordinary meaning of the claim language. *First*, the claimed aggregation will always be performed (if an affirmative determination is made in limitation [1.6]). Limitation [1.7] recites that the processor will “apply [] access controls *to aggregate network activity . . .*” The claimed aggregation is not selective or optional, but rather it is a requirement of limitation [1.7].

47. *Second*, the claimed aggregation must occur “before allowing” network activity for the “first Internet access request.” Limitation [1.7] requires aggregating the network activity for the first request with network activity for other data communication requests as a precondition to allowing network activity for

that first request. In other words, limitation [1.7] *disallows* any network activity for the first Internet access request, *unless* it has been aggregated with network activity for other requests from other applications.

48. The '433 Patent teaches that disallowing network activity until aggregation occurs in such scenarios is important, because it reduces the frequency with which battery- and network-resource intensive changes in the modem state (such as “awakening the modem” or “changing the power state of the modem”) need to occur. *See* Ex. 1001 at 93:62-94:1 (“*[A] network service usage activity is prevented from awakening the modem [or] changing the power state of the modem . . . until multiple network service usage activities require such changes in modem state, or until network service usage activity is aggregated to increase network capacity and/or network resource utilization efficiency.*”). This is consistent with the claimed invention as recited in Claim 1, which describes that the claimed network activity is not allowed (i.e., is prevented), *until* the network service usage activity is “aggregated” with other network service usage activities. *See id.* at 105:65-106:6 (“*aggregate network activity for the first Internet access request with network activity for one or more other data communication requests . . . before allowing network activity in association with the first Internet access request*”).

49. As discussed further in my rebuttal opinions below, Petitioner and Dr. McDaniel incorrectly ignore the requirements of limitation [1.7]. For example, the

claim language expressly requires performing the claimed aggregation (“apply [] access controls *to aggregate network activity* . . .”). But Dr. McDaniel testified in deposition that even if Internet access controls are applied in limitation [1.7], aggregation is optional and may or may not occur. *See* McDaniel Dep. at 57:4-19 (“Q: do you understand that the aggregation as recited in Claim 1.7 is performed every time, always, ‘when the one or more Internet activity access controls’ are to be applied? . . . A: So if you’re asking me that whenever ‘one or more Internet activity access controls’ are to be applied *aggregation must happen as a consequence, then the answer is no. Sometimes there’s aggregation and perhaps sometimes there’s not.*”). Based on the plain meaning of the claim language and as explained above, this is unsupported and incorrect.

VII. OVERVIEW OF GROUNDS AND PRIOR ART

50. The Petition and Dr. McDaniel assert the following invalidity grounds and prior art against challenged claims 1-20 of the '433 Patent:

Ground	Claim(s)	35 U.S.C. §103
1A	1-3, 6, 10-11, 13-14, 17	Rao-Cole
1B	2-3, 5, 7-9, 16	Rao-Cole-Freund
1C	2, 4	Rao-Cole-Singh
1D	12, 20	Rao-Cole-Montemurro
1E	15, 18-19	Rao-Cole-Gandhi

Pet. at 1 (citing McDaniel Decl. as supporting testimony).

51. In my rebuttal opinions below, I focus on Dr. McDaniel's opinions for claim 1 under Ground 1A based on Rao and Cole. In my opinion, and set forth below, I have identified several reasons why Petitioner and Dr. McDaniel have failed to show that Claim 1 is unpatentable. My failure to rebut a particular opinion for Claim 1 is not (and should not be interpreted as) as agreement. Instead, I do not address them, given the multiple, dispositive deficiencies that I already discuss for Claim 1.

52. The same deficiencies apply to all grounds and all challenged claims. For Ground 1A, the challenged claims are Claims 1-3, 6, 10-11, and 13-14. Claim 1 is the only independent claim, and the other challenged claims all depend from Claim 1. Likewise, Grounds 1B, 1C, 1D, and 1E challenge certain dependent claims (Claims 2-5, 7-9, 12, 15-16, 18-20) based on the combination of an

additional secondary reference (Freund, Singh, Montemurro, or Gandhi). These dependent claims depend from Claim 1 as well.

53. The Petition and Dr. McDaniel's theories for dependent claims rely only on their theories for independent claim 1 to allege that the elements of Claim 1 are met. They do not contain any additional arguments or evidence for Claim 1. Accordingly, unless otherwise provided below, I do not and need not to address Dr. McDaniel's opinions regarding dependent claims or under Grounds 1B, 1C, 1D, and 1E. As stated above, my not rebutting those opinions is not (and should not be interpreted as) an agreement. Instead, I do not address them, given the multiple, dispositive deficiencies I discuss for Claim 1.

54. I now provide a brief overview of the Rao and the Cole references, which are the only references that Dr. McDaniel asserts for independent Claim 1 (as well as for dependent Claims 10-11, 13-14 and 17). For the reasons mentioned, I do not address the additional secondary references that Dr. McDaniel relies on for Grounds 1B-1E (Freund, Singh, Montemurro, or Gandhi).

A. Rao (Ex. 1005)

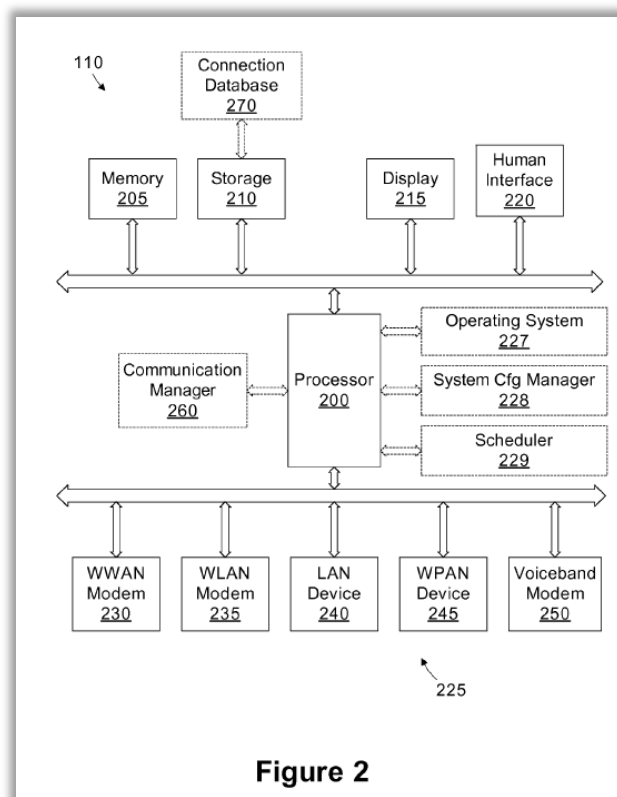
55. Rao is directed to "remote access architecture" for a system that provides "peer-to-peer communications and remote access connectivity." Rao at Abstract. It addresses inefficient use of network resources when network communications are "processed in the order generated by the activity of a user and

applications of the client.” *Id.* ¶ [0002]. Rao describes a prioritization scheme that “provide[s] application-aware, client-specific prioritization of packet traffic.” *Id.* ¶ [0003]. Rao further describes “client centric prioritization of application network communications on a client based on the type and/or priority of an application.” *Id.* ¶ [0179], Fig. 5A.

56. To perform this prioritization, Rao “appl[ies] a policy to determine a condition of the client 105, or endpoint, at the time of transmission of the packet.” *Id.* ¶ [0109]. According to Rao, policies 520 can be specified by “name of the application 338a-338n,” “type of application 338a-338n,” or “type of one or more protocols used by the applications 338a-338n.” *Id.* ¶ [0182]. Further, policies 520 are used to “determine which packets to queue and/or discard” and “apply a priority to network packets of applications 338a-338n.” *Id.* ¶ [0207].

B. Cole (Ex. 1006)

57. Cole is entitled “Connection Manager with Deferred Configuration” and relates to “configuring a mobile device including a plurality of communication interfaces.” Cole (Ex. 1006) at Title, Abstract. A diagram of mobile device 110 is shown in Fig. 2 of Cole. As shown in Fig. 2 of Cole, reproduced below, mobile device 110 includes various communication interfaces 225 and connection manager 260. *See* Cole ¶ [0035].



58. According to Cole, connection manager 260 “manages the various communication interfaces 225 to determine which connections should be active at any given time” (*id.* ¶ [0036]) and performs “communication load monitoring and deferred action functions” (*id.* ¶ [0088]). Cole states that a user may select a file to download, but the file may take longer than anticipated to transfer using the WWAN modem 230, “which consumes significant battery power.” *Id.* ¶ [0088]. When this occurs, “[t]he connection manager 260 identifies the load on the WWAN modem 230 and asks the user to find a better connection.” *Id.*

VIII. CLAIM LIMITATION [1.6]

59. In my opinion, Dr. McDaniel⁴ fails to show that Rao in view of Cole (Rao-Cole) renders obvious claim limitation [1.6] of the '433 Patent.

60. Claim limitation [1.6] recites:

Identifier	Claim Language
[1.6]	determine whether to apply the one or more Internet activity access controls with respect to a first Internet access request by or on behalf of the first end-user application, based at least on which of the plurality of wireless network types is to provide data communication for Internet access requests, and

Limitation [1.6] requires determining whether to apply Internet activity access controls to a first Internet access request by the first user application, based on which “wireless network type” (e.g., cellular or Wi-Fi) is to provide data communication for Internet access requests. As the '433 Patent explains, differential network access policies advantageously consider the type of wireless network being used, i.e., when the device is “*on a certain type of network, such as Wi-Fi as opposed to another, such as cellular, etc.*” '433 Patent at 102:54-59. This allows the system to implement control policies tailored to the network type, e.g.,

⁴ Throughout my rebuttal opinions, my references to Dr. McDaniel's opinions, arguments, and theories should also be understood to refer to the Petition's positions, arguments, and theories (and vice versa). And I may cite to either the Petition, Dr. McDaniel's declaration, or both.

“to encourage certain behavior such as sending low QoS traffic when it is cheaper (e.g., when on ... Wi-Fi, as opposed to... cellular).” *Id.*

61. Dr. McDaniel presents two theories for how claim limitation [1.6] is met. First, he asserts that Rao alone “teaches or renders obvious” this limitation. Pet. at 28-29; McDaniel Decl. ¶¶ 106-08. Second, and in the alternative, he contends that Rao-Cole renders the limitation obvious. Pet. at 29-30; McDaniel Decl.¶ 109. However, both theories fail to show obviousness.

A. Rao Theory

62. In my opinion, Rao does not teach or render obvious determining whether to apply Internet activity access control to a first Internet access request by the first application based on “*wireless network type*.”

1. Dr. McDaniel’s arguments implicate two distinct categories of protocols.

63. By way of background, there are a large variety of different protocols, which, for purposes of evaluating the arguments in the Petition, fall into two distinct categories. The first category is what the Petition and Dr. McDaniel call “network interface protocols.” Pet. 28-29. These “network interface protocols,” according to the Petition, include GSM (Global System for Mobile communication), CDMA (Code-division multiple-access), and 802.11 (IEEE 802.11 standard) Pet. at 28. As the Petition acknowledges, these are protocols that

are used by wireless modems to physically transmit the data signals across a wireless network. *Id.* at 28-29. The Petition and Dr. McDaniel contend that these protocols indicate wireless network type. Rao does not mention GSM or CDMA, and only mentions 802.11 in the background. Rao (Ex. 2005) ¶ [0095].

64. A second, and distinct, category of protocols are protocols used by applications to package information into a series of bits, which I refer to here as “application protocols” for ease of reference. These application protocols include what Rao describes as UDP (User Datagram Protocol), RTP (Real Time Protocol), ICA (Independent Computing Architecture), and RDP (Remote Desktop Protocol). *See* Rao ¶¶ [0051], [0077], [0192]). The Petition and Dr. McDaniel do not allege that these protocols indicate wireless network type.

65. I agree that application protocols do not indicate the wireless network type. Further, nothing in Rao indicates that this category of application protocols indicates wireless network type. Rather, ICA and RDP are disclosed as “remote display protocol[s]” used by applications, which are not disclosed as indicating any specific type of network connection at all, much less a wireless network connection. Rao ¶¶ [0051], [0056], [0192]. RTP and UDP are also disclosed as being “used by the application,” and were well known to be independent of network type used for physical communication between devices. *See* Ex. 2007 at 1, *available at* <https://datatracker.ietf.org/doc/html/rfc3550> (RTP specification)

(“RTP and RTCP are designed to be independent of the underlying transport and network layers.”); Ex. 2008 at 1, *available at* <https://www.ietf.org/rfc/rfc768.txt> (UDP specification) (explaining that UDP “assumes that the Internet Protocol (IP) is used as the underlying protocol,” which is agnostic to wireless network type such as WLAN vs WWAN).⁵

2. Dr. McDaniel’s theory is based on Rao’s alleged disclosure of using *network interface* protocols to apply Internet activity access controls.

66. Claim limitation [1.6] requires the system to determine whether to apply the “Internet activity access controls to a first Internet access request by the first application based on which of a plurality of wireless network types is being used.” Dr. McDaniel relies on Rao’s “prioritization of network communications related to applications” as constituting the alleged “Internet activity access controls” of limitation [1.3], from which limitation [1.6]’s recitation of “the one or more Internet activity access controls” derives antecedent basis. *See* Pet. at 26; McDaniel Decl. ¶ 97. More specifically, with respect to limitation [1.7], Dr. McDaniel alleges that the application of these access controls involves “storing network packets to a queue and determining the queued network packets are

⁵ Indeed, protocol such as UDP is known to be at the Transport Layer of the ISO/OSI protocol stack, and the Transport Layer is above the MAC and the PHY layers, which are specific to a wireless or wired network access, and the Transport Layer is separated from the MAC Layer by the Network Layer.

‘associated with a first application of the client,’” and determining a “priority for the . . . queued network packet” based on characteristics of the issuing application.

Pet at 30-31; McDaniel Decl. ¶ 112.

67. But Dr. McDaniel does not allege that Rao explicitly discloses applying “prioritization of network communications,” such as queuing and prioritizing packets, based on network type. Instead, he argues that this teaching can be derived from Rao (or would be obvious) based on the following argument:

since Rao teaches that policies can be applied based on network interface protocols, and network interface protocols indicate wireless network types, Rao teaches or renders obvious determining whether to apply Internet activity access controls based on network type.

McDaniel Decl. ¶ 106; *see also* Pet. at 29.

68. Thus, Dr. McDaniel and the Petition’s argument has the following structure: (1) Rao teaches that policies can be applied based on network interface protocols; (2) network interface protocols indicate wireless network types; and (3) therefore, Rao teaches determining whether to apply Internet activity access controls based on network type. However, this argument is unsupported and incorrect.

3. Dr. McDaniel's theory fails because Rao does not teach or suggest using network interface protocols to apply Internet activity access controls.

69. Dr. McDaniel's argument fails from the first premise because Rao does not teach or suggest that "policies can be applied based on network *interface protocols*." The "network interface protocols" (such as GSM or CDMA) that Dr. McDaniel relies on here are protocols that relate to which network type is being used to communicate. For example, as the Petition acknowledges, GSM and CDMA can be used to implement WWAN connections such as 3G, and the 802.11 protocol can be used to implement WLAN connections such as 802.11. *See* Pet. at 28; McDaniel Decl. ¶ 106.

70. But these "*network interface protocols*," which determine how information is communicated through a network interface, are materially distinct from, and different in kind from, the application protocols such as UDP, RTP, RDP, and ICA, which as discussed above do not indicate the network type. While paragraphs [0104] and [0182] of Rao (that Dr. McDaniel relies on) disclose that Rao's policies can depend on the type of "protocols" used, Rao does *not* teach applying policies based on *network interface protocols*. *See* Rao ¶¶ [0104], [0182] (no mention of any network interface protocols).

71. Instead, in the instances where Rao provides detail about the "protocols" used to determine communication priorities, they only describe

prioritizing based on the network-agnostic protocols used by applications, such as RTP, UDP, ICA, and RDP, and not based on *network interface* protocols such as 802.11. *See id.* ¶ [0192] (discussing queuing and prioritizing packets on the basis of “a type of *protocol used by the application* 338a-338n, such as RTP or UDP”); *id.* (“In a further example, a queue 540a may be used for *applications* [338a]-338n communicating using a remote display protocol, such as ICA or RDP.”). Indeed, paragraph [0182] of Rao makes clear that prioritization is based on these types of *application* protocols, rather than network-interface protocols such as CDMA or 802.11. *Id.* ¶[0182] (“[T]he policies 520 may be specified in accordance to the type of one or more protocols *used by the applications* . . .”).

72. Rao’s disclosures are consistent with what a POSITA would have understood about the type of protocols used by applications. Typically, applications do not use (i.e., access) network interface protocols such as CDMA or GSM; rather an application will use an application-level protocol such as RTP or UDP and then the network interface protocols will package the data from those application-level protocols into an appropriate transmission over the appropriate network, such as WLAN, WWAN, LAN, or WAN.

73. In sum, Dr. McDaniel provides no evidence that Rao teaches or renders obvious applying policies on the basis of *network interface* protocols, as opposed to network-agnostic application protocols. In my opinion, Rao does not

teach or render obvious applying policies based on network interface protocols (which Dr. McDaniel asserts can indicate a wireless network type). Thus, Dr. McDaniel's argument premised on that assumption is unsupported and incorrect. In my opinion, Rao does not teach or suggest applying policies based on any protocols that would indicate the type of wireless network being used.

74. In fact, applying Rao's prioritization policies differently depending on which wireless network is being used is inconsistent with the overall teachings of Rao, which specify that certain types of data should take priority over other types of data. For example, Rao teaches that if a "network packet contains real-time data or is from a VoIP application," "the network packet may be communicated ahead of non-real-time data communications or ahead of network communications or from other applications." Rao ¶ [0080]. Rao thus teaches that packets from certain applications and certain protocols should be prioritized in certain ways because those packets are generally more important to transmit first.

75. Rao presents no motivation to modify the way that these packets are prioritized depending on what type of wireless network is being used for Internet communications. In my opinion, a POSITA would have not been motivated to modify Rao in this manner or been motivated to pursue such a modification based on Rao. Instead, given the nature of Rao's system, it would have been more advantageous and sensible for high-priority packets to maintain their high-priority

status *regardless* of which wireless network type (such as WWAN or WLAN) is used to communicate those packets.

76. Patent Owner presented an analogy in the POPR that I agree with and that helps illustrate this point. By analogy, the United States has “traffic prioritization” rules where traffic from emergency vehicles is prioritized ahead of traffic from ordinary vehicles, and this prioritization scheme is unchanged regardless of the type of road (such as a highway or a boulevard) is being used. And it would be disadvantageous and illogical to say that emergency vehicles should have priority on boulevards, but they should *not* have priority on highways. Similarly, if Rao’s system determines that certain packets should have priority over other packets, there is no evidence that a POSITA would have abandoned or modified that priority determination based in any part on the “wireless network type” used to communicate those packets. In my opinion, a POSITA would not have been motivated to remove or to modify this aspect of Rao’s priority system, in view of Rao’s overall system and teachings.

4. Dr. McDaniel’s alternate example of a temporary disruption in a network connection also fails.

77. Dr. McDaniel presents an alternate “example” in Rao that likewise fails to teach or suggest claim limitation [1.6]. According to Dr. McDaniel, Rao describes an “example” of a temporary disruption in a network connection of a

mobile client. *Id.* (citing Ex. 1005 ¶[0081]). In such cases, Rao “detects a disruption in the network and shields a portion of the network stack from the network disruption[.]” *Id.* And “once the network is available,” “the client’s network communications continue.” Ex. 1005 ¶[0081]. Dr. McDaniel then asserts:

A POSITA would have recognized that this example [in Rao at ¶[0081]] describes determining whether to apply Internet activity access controls with respect to a first Internet access request based on the network type “when the client switches between networks (e.g., from a wired network to a wireless network).”

Ex. 1003 ¶108.

78. However, Dr. McDaniel’s assertion is unsupported and incorrect. The example he relies on merely states that Rao detects *any* disruption in the network (regardless of cause), shields the network stack during the disruption, and resumes communication after the network connection is reestablished. The system only detects whether the network connection is available or not (a binary yes/no determination). There is no suggestion that Rao determines whether to apply any alleged access controls (such as queuing particular packets while a disruption exists) based on the *type* of network connection that was disrupted or the *type* of network connection that is reestablished.

79. Dr. McDaniel’s implication that Rao’s application of access controls rely in some part on the distinction between a “wired network” and a “wireless

network” is misleading and incorrect. This is shown by the context of the Rao sentence that Dr. McDaniel quotes in paragraph 108 of his declaration: “A temporary disruption in a network connection may occur when the mobile client roams *between different access points in the same network, or when the client switches between networks* (e.g., from a wired network to a wireless network).” Rao ¶ [0081].

80. As is clearly seen from the full context, Rao is teaching that the temporary disruption, which is alleged to trigger certain access controls, is the result of a change in connectivity status (including changes within a single network). There is no evidence that Rao considers which type of wireless network (as opposed to simply identifying the loss of connectivity) in determining a temporary disruption has occurred, such that application of access controls would be “based on which of a plurality of wireless network types is being used.” At most, the cited paragraph of Rao suggests a determination based on the existence of *any* network connection, but regardless of the specific network “type”.

81. Indeed, even assuming counterfactually that Rao did disclose applying access controls differently between a wired and wireless network (it does not, as I explain above), that would still not meet the claim requirement. Limitation [1.6] requires determining whether to apply particular access controls “based on *which of a plurality of wireless network types* is being used.” Thus, applying access

controls differently between a “wired” network and a “wireless” network would not satisfy this requirement because it would not require a determination based on which of a plurality *wireless* network types is in use (e.g., cellular or Wi-Fi).

82. In sum, Dr. McDaniel’s alternate example does not show that Rao discloses or renders obvious determining which policies to apply based on the wireless network type. At most, the example describes what happens during a temporary network disruption. But it does not describe determining the type of network connection, let alone applying “Internet activity access controls” based on the wireless network type. Nor does Dr. McDaniel provide any evidence or explanation for how Rao allegedly determines whether to apply any alleged access controls based on the type of network connection that was disrupted or the type of network connection that is reestablished. In my opinion, Rao does not disclose or suggest this, and the example does not render limitation [1.6] obvious.

B. Alternative Cole Theory

83. For claim limitation [1.6], Dr. McDaniel presents an alternative theory that “[t]o the extent that Rao alone does not render this element obvious, Rao in combination with Cole does.” McDaniel Decl. ¶ 109. But despite purporting to rely on a combination of Rao and Cole, Dr. McDaniel does not explain the combination or how it allegedly renders limitation [1.6] obvious. Instead, Dr. McDaniel presents one paragraph about Cole’s disclosures (McDaniel Decl. ¶ 109) and asserts that

Cole “teaches” limitation [1.6]. The Board agreed that Dr. McDaniel’s alternate theory is focused exclusively on Cole. *See* Inst. Dec. at 26 (“Although the Petition and Dr. McDaniel’s testimony both state that this alternative theory is based on the combination of Rao and Cole, the focus is exclusively on Cole.”).

84. Specifically, Dr. McDaniel relies on two different embodiments of Cole mentioned in different parts of the reference: (1) asking the user to find a better connection (Cole ¶ [0088]) and (2) attempting to establish a connection with a higher bandwidth (*id.* ¶¶ [0077-0078]). Dr. McDaniel relies on each to assert that “Cole teaches that policies can be applied based on network type.” McDaniel Decl. ¶ 109. In my opinion, none of two disclosures of Cole teaches or renders obvious limitation [1.6]. I address each in turn.

1. Cole ¶ [0088]

85. Dr. McDaniel asserts, relying on ¶ [0088] of Cole, that:

[] Cole teaches searching for a different network when performing a lengthy file transfer while on a 3G-type network, ‘which consumes significant battery power.’ SAMSUNG-1006, [0088]. Since the user is connected via 3G, Cole’s ‘connection manager 260 identifies the load on the WWAN modem 230 and asks the user to find a better connection.’ *Id.* Thus, Cole teaches applying Internet access controls (asking the user to find a better connection) on behalf of the first end-user application (file download) based on being connected to the 3G

wireless network type that is to provide data communication for the request. *Id.*

McDaniel Decl. ¶ 109.

86. This is incorrect and unsupported. In my opinion, Cole’s disclosure in paragraph [0088] about “asking the user to find a better connection” (i.e., the alleged “Internet activity access control[]”) does not constitute applying Internet access controls to an Internet access request based on the wireless network type, as required by claim limitations [1.6] and [1.7]. Those limitations require “determin[ing] whether to apply the one or more Internet activity access controls . . . based at least on which of the plurality of wireless network types is to provide data communication,” and “apply[ing] the one or more Internet access controls.” Dr. McDaniel’s assertion fails for at least three reasons.

a. Not Based on Wireless Network Type

87. *First*, there is no evidence that the alleged “Internet access control” of Cole—asking a user to find a better connection—is determined “based at least on which of the plurality of wireless network types is to provide data communication” (as required by limitation [1.6]). Cole’s example in paragraph [0088] is that the connection manager “*identifies the load* of the WWAN modem” and sends a user prompt based on that load. Cole ¶ [0088]. The “load” is a determination about the capacity of the network connection, not the type of network connection. For

example, Cole describes the “monitored load” as “exceed[ing] a predetermined threshold (e.g., 85% of capacity).” *Id.* ¶ [0075]. Although Cole describes different possibilities for identifying the load, it consistently describes load in terms of channel capacity. *See id.* (describing use of “average load” but noting that “peak or instantaneous load values may also be taken into consideration”); *id.* ¶ [0076] (describing techniques for estimating channel capacity based on signal-to-noise ratio or signal strength “to determine if the capacity limit of the channel is met”).

88. Cole does not disclose that the connection *type*, separate from the observed network load, forms the basis for requesting whether the user wants to search for a better connection. Instead, Cole is looking to the *load* of a connection, e.g., whether it is beyond 85% of capacity. For example, if the connection is overloaded (above the threshold), the connection manager will trigger the user prompt regardless of whether the user is connected to WWAN or WLAN (two different wireless network types). But if the connection is below the threshold, the connection manager will *not* trigger the user prompt regardless of the network type. In both cases, the decision of whether to “ask the user to find a better connection” is based on the load of the network connection. There is no disclosure in Cole that the specific connection type (e.g., WWAN) either causes or prevents the alleged Internet access control (asking the user to find a better connection).

89. This is confirmed by Cole's figures. Paragraph [0088] pertains to embodiments depicted in Figs. 6A and 6B, which provide "a simplified flow diagram of a method for managing communication load." Cole ¶ [0022]; *see also id.* ¶ [0083] ("Turning now to FIGS. 6A and 6B, a simplified flow diagram of a method for responding to communication load is provided."). Figs. 6A and 6B make clear that the flow chart is based on detecting sustained high load (item 600 in Fig. 6A). No item in the flow chart corresponds to determining or using the network connection type. This includes the decision of whether to prompt the user to find a better connection (item 650 in Fig. 6B), which is based on a load detection (items 600 in Fig. 6A) and a determination of whether there is an untried network with better connectivity (item 620 in Fig. 6A).

90. Although the example in ¶ [0088] notes that the "lengthy transfer is conducted using the WWAN modem . . . which consumes significant battery power," it does not suggest that the type of network connection (WWAN versus WLAN) is determined or used. And any determination based on battery usage is likewise agnostic to network connection type. *See* Cole ¶ [0088] (lengthy file transfer observed to "consume[] significant battery power" and request issued on that basis), ¶ [0087] ("determin[ing] if an acceptable network is available" "may entail determining if sufficient batter[y] power is present to complete the transaction"). The connection manager will take the same action to conserve

battery power regardless of whether the user is connected to WWAN or WLAN (two different wireless network types). Further, Cole notes that any attempt to conserve battery power in the ¶ [0088] embodiment is secondary to managing connection load. *See id.* ¶ [0090] (“While, the load monitoring function of the connection manager 260 described in reference to FIGS. 6A and 6B does attempt to conserve battery power, it does so only under times of high load.”).

91. In ¶ [0089], Cole mentions “another example” of a scheduled synchronization of the user’s latest audio, video, and photo files. Importantly, Dr. McDaniel and the Petition do not rely on this separate example as meeting claim limitation [1.6]. This is because their theory for the limitation is based on file download (in ¶ [0088]) as the alleged first end-user application. Thus, any reliance on the example in ¶ [0089] would be inconsistent with the theory. Regardless, any determination in ¶ [0089] for sending a user prompt is again based on the monitored load of the network connection, and not the connection type. *See Cole* ¶ [0089] (“The connection manager 260 ***notices the load*** from the synchronization operation and asks the user if it should be deferred (i.e., no better connection is available”). The connection manager may prompt the user to *resume* synchronization when a better connection is available (e.g., when plugged in to a LAN). *Id.* But there is no evidence that the decision to prompt the user or defer

synchronization (the alleged “Internet access controls”) is based on the network device type (WWAN or WLAN or LAN).

92. The example in ¶ [0089] is also inapposite, because it is about deferring synchronization between a wireless network (WLAN) and a wired network (LAN). As I explained, Cole is not concerned about this distinction because it is looking only at the load of the network connection. But even assuming it distinguished between WLAN and LAN in the example of ¶ [0089], that would still not meet the claim requirement. Limitation [1.6] requires determining whether to apply particular access controls “based on *which of a plurality of wireless network types* is being used.” Thus, applying access controls differently between a “wired” network and a “wireless” network would still not satisfy this requirement because it would not require a determination based on which of a plurality *wireless* network types is in use (e.g., cellular or Wi-Fi).

b. Not Applying an Internet Access Control

93. *Second*, a separate reason why Dr. McDaniel’s theory for Cole fails is that “asking” a user to take certain action does not meet the plain meaning of “applying” an “access control” as set forth in limitations [1.6] and [1.7]. At most, this functionality is *requesting* that the user itself apply a particular control (switching network connections). In Cole ¶ [0088] any determination/decision is about whether to display a prompt to the user. After receiving the prompt, the user

can manually ignore the request, cancel the file download, or pause and defer the download. But the prompt itself is not an action that “control[s]” Internet access and is separate from any control actions the user may or may not take after receiving the prompt.

94. Claim limitation [1.6] describes determining whether or not to apply Internet access controls. *See* Section VI.A (claim construction) above. If the determination is yes, then controls are immediately applied in limitation [1.7], as Dr. McDaniel agreed. *See* Section VI.A-B; McDaniel Dep. at 53:8-21 (“the determination to whether apply [in limitation 1.6] would lead to a determination to apply the policy, and that’s where 1.7 begins”), 55:13-56:5 (“So when the determination of 1.6 is complete and it’s determined in the affirmative to apply policy, that’s when -- moving on to 1.7 -- when the ‘one or more Internet activity access controls’ are to be applied.”). Thus, the determination in limitation [1.6] is whether to *apply* policy, *not* a determination whether to *request* the user to decide whether or not to apply a policy. And at most, the determination in Cole is whether to request prompting the user, and the connection manager would not be controlling or deciding whether the policy is to be applied.

95. The decision to *apply* a policy is different from, and cannot be satisfied, a decision to *request* a policy. This is reinforced by exhibits cited in Dr. McDaniel’s declaration, as well as his deposition testimony. For example, Ex.

1023 is IETF RC 3198, and entitled “Terminology for Policy-Based Management.” *See* McDaniel Dep. at 23:5-21. It defines a “Policy Decision Point (PDP)” as: “A logical entity that makes policy decisions for itself or for other network elements that request such decisions.” Ex. 1012 at 8. And it defines a “Policy Enforcement Point (PEP)” as: “A logical entity that enforces policy decisions.” *Id.*; *see also id.* (defining “policy enforcement” as “The execution of a policy decision”). These concepts are distinguished from a “policy *request*,” which is described as “a request to retrace a specific set of policy rules, to determine the actions to enforce, or other policy requests.” *Id.*

96. In the Cole example in ¶ [0087], the connection manager does not make any policy decision. Rather, it sends a policy request to the user, and the user makes the policy decision. Even if the connection manager is involved in enforcing a policy, it does not itself make a policy decision as claim limitation 1.6 requires. *See* McDaniel Dep. at 31:2-17 (admitting that if the user can hit yes/no in a user interface prompt, then the user is making the policy decision “[u]nless the system decides to override the user’s wishes”).

97. Dr. McDaniel’s argument is also undermined by the broader context of Claim 1, which requires “one or more *processors configured to*” determine whether to apply Internet access controls (in limitation [1.6]) and “apply[ing] the one or more Internet activity access controls” (in limitation [1.7]). The claim

language implies that applying the Internet activity access controls is performed automatically by the processor after an affirmative determination of whether to apply is made. The requirement of a subsequent user input step (as Dr. McDaniel's Cole theory contemplates) is inconsistent with the plain meaning of limitation [1.6], which is a complete yes/no determination about "whether [or not] *to apply*" the Internet access controls. It does not say to determine whether controls might be applied, but whether controls *will be* applied.

c. Inconsistent with Aggregating in Limitation [1.7]

98. Dr. McDaniel's theory that Cole "teaches applying Internet access controls (asking the user to find a better connection)" based on wireless network type (*see* McDaniel Decl. ¶ 109; Pet. at 29-30) is also inconsistent with his theory regarding claim limitation [1.7]. Limitation [1.7] recites "apply[ing] the one or more Internet activity access controls [which were determined in limitation [1.6] to be applied based on which of the plurality of wireless network types is to provide data communication] to aggregate network activity for the first Internet access request with network activity for one or more other data communication requests."

99. Specifically, Dr. McDaniel's theory regarding limitation [1.7] relies entirely on Rao, and the Petition never alleges that the alleged "Internet activity access control[]" of Cole (which is allegedly determined to be applied based on which of a plurality of wireless network types is being used) is "appl[ied] to

aggregate network activity for the first Internet access request with network activity for one or more other data communication requests.” Nor *could* Dr. McDaniel have made such an allegation, because “asking a user to find a better connection” is unrelated to the mechanisms in Rao that are alleged to aggregate network activity (e.g., queuing and prioritizing of packets). Further, asking the user to find a better connection at most is a policy about connecting to a different network. It is unrelated to the claimed policy of limitation [1.7], which requires and is all about aggregating network activity associated with a first application with network activity for other applications.

2. Cole ¶¶ [0077-0078])

100. Dr. McDaniel asserts, relying on ¶ [0077-0078] of Cole, that:

Cole teaches, “in response to a monitored load exceeding a capacity threshold,” the connection manager can “attempt to establish a connection with a higher bandwidth,” such as “a visible or invisible network 120 having higher capacity.” SAMSUNG-1006, [0077]. Cole further explains that if “the connection manager 260 can identify a more appropriate connection (e.g., by enabling the LAN device 240), the connection manager 260 switches to the larger pipeline by enabling the proper communication interface 225 and changing the appropriate operating system 227 configurations to make use of the new communication interface 225” and the resulting larger pipeline increases the responsiveness of the mobile device 110 to user requests, helps applications complete their data transfer activities

sooner, or reduces the mobile device 110 power consumption.”

SAMSUNG-1006, [0078].

McDaniel Decl. ¶ 109.

101. This theory fails for the same reasons discussed for the example at Cole ¶ [0087], and I incorporate here those opinions by reference. I briefly summarize those reason as they apply to ¶¶ [0077-0078] of Cole. *First*, there is no indication in Dr. McDaniel’s declaration or ¶¶ [0077-0078] that any action is taken “based at least on which of the plurality of wireless network types is to provide data communication,” as they do not reference any wireless network types at all. Instead, the action being discussed is taken “in response to a monitored load exceeding a capacity threshold,” which, as discussed, is a capacity of the connection. *See* Cole ¶¶ [0075-0076] (describing the monitored load as “exceed[ing] a predetermined threshold (e.g., 85% of capacity)”). The “monitored load exceeding a capacity threshold” is not shown or even alleged to have anything to do with the type of wireless network.

102. *Second*, the action is “attempt[ing] to establish a connection with a higher bandwidth,” but there is no evidence that this constitutes applying an Internet access control as required by claim limitations [1.6] and [1.7]. The plain meaning of applying Internet access controls is not attempting to establish a connection with a higher bandwidth. Indeed, it reflects the opposite. Applying

Internet access control implies a limit or reduction on network activities. However, connecting to a higher bandwidth allows increasing network activities. And it removes or reduces the need to apply Internet access controls. The functionality in ¶¶ [0077-0078] of Cole is thus fundamentally different from what Claim 1 describes. Instead of applying Internet access controls to the current connection, it is looking for a higher bandwidth connection instead of (or to avoid) applying access controls.

103. *Third*, Dr. McDaniel does not identify the alleged “first end user application” for the example at ¶¶ [0077-0078] of Cole. Dr. McDaniel’s theory for Cole’s example at ¶ [0088] was based on file download as the alleged first end-user application. But for ¶¶ [0077-0078], no such first application is articulated, and thus no obviousness theory for limitation [1.6] is presented.

104. *Fourth*, the example in ¶¶ [0077-0078] is about attempting to connect to a LAN. *See* Cole ¶ [0078] (“the connection manager 260 can identify a more appropriate connection (e.g., by enabling the LAN device 240)”). As I explained, Cole is not concerned with network connection types and is looking only at the load of the connection. But even assuming Cole distinguished between WLAN and LAN in the example of ¶¶ [0077-0078], that would still not meet the claim requirement. This is because limitation [1.6] requires a determination “based on *which of a plurality of wireless network types* is being used” (e.g., cellular or Wi-

Fi). A determination that the system is not connected to a LAN, for example, is insufficient because it would not be based on a specific wireless network type.

105. *Fifth*, Dr. McDaniel's theory is also inconsistent with his theory regarding claim limitation [1.7] discussed above and in Section V.B.1 below. Limitation [1.7] requires aggregating network activity for the first Internet request with network activity for one or more other data communication requests.

106. Specifically, Dr. McDaniel's theory regarding limitation [1.7] relies entirely on Rao, and the Petition never alleges that the alleged "Internet activity access control[]" of Cole (which is allegedly determined to be applied based on which of a plurality of wireless network types is being used) is "appl[ied] to aggregate network activity for the first Internet access request with network activity for one or more other data communication requests." Nor *could* Dr. McDaniel have made such an allegation, because "attempting to establish a connection with a higher bandwidth" is unrelated to the mechanisms in Rao that are alleged to aggregate network activity (e.g., queuing and prioritizing of packets). At most, the policy in Cole is attempting to connect to a different network. However, this is unrelated to the claimed policy of limitation [1.7], which requires aggregating network activity associated with a first application with network activity for with other applications.

* * *

107. In summary for claim limitation [1.6], Dr. McDaniel fails to show that Rao alone teaches or renders obvious the limitation. Dr. McDaniel presents an alternate theory for the combination of Rao-Cole but fails to articulate any combination or modification of the two references. Instead, Dr. McDaniel's theory is that Cole "teaches" limitation [1.6]. But for multiple reasons discussed above, none of the disclosures of Cole that Dr. McDaniel relies on teaches or suggests the requirements of limitation [1.6]. Dr. McDaniel's theory fails under the plain meaning of limitation [1.6], as well as within the boarder context of Claim 1 (i.e., viewing limitations [1.6] and [1.7] together).

IX. CLAIM LIMITATION [1.7]

108. In my opinion, Dr. McDaniel fails to show that Rao in view of Cole (Rao-Cole) renders obvious claim limitation [1.7] of the '433 Patent. Dr. McDaniel asserts that "RCD renders [1.7] obvious." McDaniel Decl. ¶ 110; Pet. at 30. But despite purporting to rely on the combination of Rao and Cole, the Petition relies exclusively on Rao for this limitation. McDaniel Decl. ¶¶ 110-115. Dr. McDaniel's discussion of claim limitation [1.7] never mentions Cole or contains any citations to Cole. *See id.* The word "Cole" or any citations to Ex. 1006 (the Cole reference) do not appear in paragraphs 110-115 of Mr. McDaniel's report.

109. Accordingly, Mr. McDaniel's theory is that Rao alone teaches or renders obvious limitation [1.7]. In the following sections, I provide an overview

of limitation [1.7] and Dr. McDaniel's theory for this limitation. I also explain why Dr. McDaniel's theory is incorrect and unsupported. In my opinion, and as discussed below, Dr. McDaniel fails to show that Rao teaches or renders obvious limitation [1.7] for at least four reasons.

A. Limitation [1.7] Requires the Claimed Aggregation to (1) Always Occur (subject to the specified condition) and (2) as a Precondition to Allowing Network Activity

110. Claim limitation [1.7] recites:

Identifier	Claim Language
[1.7]	when the one or more Internet activity access controls are to be applied, apply the one or more Internet activity access controls to aggregate network activity for the first Internet access request with network activity for one or more other data communication requests, which are otherwise not associated with the first end-user application, before allowing network activity in association with the first Internet access request.

111. Claim limitation [1.7] describes what happens “when” Internet activity access controls are applied “applied” (i.e., when the determination in claim limitation [1.6] is made). It describes applying Internet activity access controls “to aggregate” network activity for the “first Internet access request” with network activity for data communication requests from other applications, “before allowing” network activity for the “first Internet access request.” In my claim

construction discussion in Section VI.B, I referred to this as the “claimed aggregation.”

112. Limitation [1.7] has at least two significant requirements. *First*, the claimed aggregation will always be performed, if an affirmative determination is made in limitation [1.6]. Limitation [1.7] recites that the processor will “apply [] access controls *to aggregate network activity* . . .” The claimed aggregation is not selective or optional but is instead the result of “one or more Internet activity access controls” being applied. If no aggregation occurs, then no access controls are applied and the determination in limitation [1.6] must have been negative (the processor determined to *not* apply Internet access controls to a first Internet access request by a first end user application).

113. *Second*, the claimed aggregation must occur “before allowing” network activity for the “first Internet access request.” Limitation [1.7] requires aggregating the network activity for the first request with network activity for other data communication requests as a precondition to allowing network activity for that first request. In other words, limitation [1.7] *disallows* any network activity for the first Internet access request, *unless* it has been aggregated with network activity for other requests from other applications. Based on the plain meaning of limitation [1.7], network activity for the first request cannot be performed if the claimed aggregation has not taken place.

114. This understanding of limitation [1.7] is fully supported by the specification. The '433 Patent teaches that disallowing network activity until aggregation occurs is important, because it reduces the frequency with which battery- and network-resource intensive changes in modem state such as “awakening the modem” or “changing the power state of the modem” need to occur. *See* '433 Patent (Ex. 1001) at 93:62-94:1 (“*[A] network service usage activity is prevented from awakening the modem [or] changing the power state of the modem . . . until multiple network service usage activities require such changes in modem state, or until network service usage activity is aggregated to increase network capacity and/or network resource utilization efficiency.*”). Thus, in the claimed invention, network activity for the first Internet access request is not allowed (i.e., is prevented), *until* this network service usage activity is “aggregated” with other network service usage activities. *See id.* at 105:65-106:6 (“*aggregate network activity for the first Internet access request with network activity for one or more other data communication requests . . . before allowing network activity in association with the first Internet access request*”).

B. Dr. McDaniel’s Rao Theory for Limitation [1.7] Fails

115. Dr. McDaniel’s relies exclusively on Rao for limitation [1.7]. Specifically, Dr. McDaniel relies on Rao’s system for priority-based queuing of network packets. Dr. McDaniel asserts that a POSITA would have been motivated

to implement Rao's system with "non-starvation" using Weighted Fair Queueing (WFQ). McDaniel Decl. ¶ 115; Pet at 32. "In such non-starvation techniques," Dr. McDaniel asserts, "network packets from lower-priority queues are aggregated with packets from higher priority queues before allowing packets from the lower-priority queue to flow." McDaniel Decl. ¶ 115. Thus, according to Dr. McDaniel:

Rao teaches applying Internet activity access controls to aggregate network activity for the first Internet access request (from Rao's second application) with network activity for one or more other data communication requests (from Rao's first application), before allowing network activity in association with the first Internet access request (Rao's second application).

Id.

116. Dr. McDaniel's theory based on Rao is incorrect and unsupported. In my opinion, Dr. McDaniel fails to show that Rao teaches or renders obvious limitation [1.7] for at least four reasons.

1. Dr. McDaniel's Rao-based theory for limitation [1.7] is inconsistent with his Cole-based theory limitation [1.6].

117. As an initial matter, Dr. McDaniel's Rao-based theory for claim limitation [1.7] is disconnected from, and inconsistent with, his Cole-based theory for limitation [1.6]. As discussed in my claim construction Section VI.A, limitations [1.6] and [1.7] are closely related. Limitation [1.6] recites determining

whether to apply “one or more Internet activity access controls,” and limitation recites applying “*the* one or more Internet activity access controls”:

Identifier	Claim Language
[1.6]	<i>determine whether to apply the one or more Internet activity access controls</i> with respect to a first Internet access request by or on behalf of the first end-user application . . . and
[1.7]	<i>when the one or more Internet activity access controls are to be applied, apply the one or more Internet activity access controls to</i> aggregate network activity for the first Internet access request with network activity for one or more other data communication requests . . .

118. Thus, the same “Internet activity access controls” must be determined in limitation [1.6] and applied in limitation [1.7]. After all, the claimed Internet activity access controls in limitation [1.7] takes antecedent basis from the same term in limitation [1.6]. Dr. McDaniel’s Cole-based theory for limitation [1.6] rests on Cole’s disclosure of “asking the user to find a better connection” or “attempting to establish a connection with a higher bandwidth” as the alleged Internet activity access controls. However, when it comes to limitation [1.7], Dr. McDaniel points exclusively to Rao’s priority-based queueing as the alleged Internet activity access controls. This is inconsistent with limitation [1.6], and thus the theory cannot work. Dr. McDaniel is relying on different alleged controls to meet the same term in limitations [1.6] and [1.7], contrary to the requirements of the claim.

119. Further, and relatedly, there is a direct causal relationship between limitations [1.6] and [1.7] that Dr. McDaniel fails to account for. Limitation [1.6] is determining whether to apply something (access controls) and limitation [1.7] is applying the same thing (*the* access controls). Since Dr. McDaniel is pointing to different things, there is no direct causal relationship between determining whether to apply Cole's alleged controls for limitation [1.6] and applying Rao's alleged controls for limitation [1.7]. The determination of whether to apply Rao's priority-based queueing is not (and cannot be) Cole's "asking the user to find a better connection" or "attempting to establish a connection with a higher bandwidth." And whatever that determination is, it is not alleged to satisfy limitation [1.6] under Dr. McDaniel's Cole-based theory. This further demonstrates that Dr. McDaniel's theory for limitation [1.7] does not work and fails to show obviousness.

2. Dr. McDaniel improperly treats the claimed aggregation of limitation [1.7] as selective or optional.

120. Dr. McDaniel's theory also fails because it improperly treats the claimed aggregation as selective or optional when limitation [1.7] is performed. As discussed below, the functionality of Rao that Dr. McDaniel relies on is not "aggregation" and violates other requirements of limitation [1.7]. But even putting that deficiency aside, Dr. McDaniel's theory still fails. This is because Dr.

McDaniel treats the claimed aggregation as optional or sometimes performed—even when the first part of limitation [1.7] (“when the one or more Internet activity access controls are to be applied . . .”) is satisfied.

121. Dr. McDaniel confirmed that he was interpreting and applying limitation [1.7] in this way when he testified in deposition that even if Internet access controls are applied in limitation [1.7], aggregation is optional and may or may not occur. *See* McDaniel Dep. at 57:4-19 (“Q: do you understand that the aggregation as recited in Claim 1.7 is performed every time, always, ‘when the one or more Internet activity access controls’ are to be applied? . . . A: So if you’re asking me that whenever ‘one or more Internet activity access controls’ are to be applied ***aggregation must happen as a consequence, then the answer is no. Sometimes there’s aggregation and perhaps sometimes there’s not.***”).

122. Dr. McDaniel’s theory for how limitation [1.7] is met depends on this “sometimes” claim interpretation. Dr. McDaniel’s theory is that requests are always allowed but the alleged aggregation may or may not occur depending on operational characteristics. McDaniel Decl. ¶ 115 (alleging that aggregation occurs in certain “non-starvation techniques” and only for packets from lower-priority queues that are sent after packets from higher-priority queues). However, the claim interpretation is unsupported and incorrect. Limitation [1.7] requires aggregation to

be performed on each request to which Internet access controls are applied. This is apparent from the plain meaning of the limitation:

Identifier	Claim Language
[1.4]	one or more processors configured to . . .
[1.7]	when the one or more Internet activity access controls are to be applied, <i>apply the one or more Internet activity access controls to aggregate network activity for the first Internet access request with network activity for one or more other data communication requests</i> , which are otherwise not associated with the first end-user application, <i>before allowing network activity in association with the first Internet access request.</i>

123. Limitation [1.7] thus recites a conditional, *if* “one or more Internet activity access controls are to be applied” (as determined in limitation [1.6]), *then* the processor must “apply [] access controls *to aggregate network activity* for the first Internet access request with network activity for one or more other [] requests.” The logical structure of this limitation is: “*If A, Then B.*” If A occurs, then B must necessarily occur. The claim does not say if A, then maybe or sometimes B. Accordingly, a system that allows A and not B (as in Dr. McDaniel’s theory that applies Internet activity access controls but sometimes has no aggregation) would violate this condition. As a matter of logic, the contrapositive

of “*If A, Then B*” is “*If Not B, Then Not A*.”⁶ Dr. McDaniel’s theory violates the contrapositive as well. In his deposition testimony, Dr. McDaniel acknowledges scenarios in which the system has *not B* (no aggregation is performed) and *A* (Internet access controls are applied). *See* McDaniel Dep. at 57:4-19 (acknowledging that sometimes there’s no aggregation, even when Internet activity controls are being applied).

124. The requirements of limitation [1.7] are further supported by the broader context of Claim 1, which recites processors “configured to” (i.e., programmed to) meet the conditional “*If A, Then B*.” But Dr. McDaniel’s system has *A* but may or may not have *B*. This demonstrates that the processor in Dr. McDaniel’s system is not programmed with the conditional. The processor may perform the actions of *A* and/or *B* individually. But the processor is not “configured to” perform the instruction of “*If A, Then B*,” as the plain meaning of limitation [1.7] requires.

125. In summary, when the first portion of limitation [1.7] is met (as Dr. McDaniel assumes in his theory), then the claimed aggregation must always occur. A system that only sometimes performs the claimed aggregation would not

⁶ Notably, the logical structure does not imply “*If Not A, Then Not B*.” If Not *A* (Internet access controls are not applied), then the claim is agnostic as to whether *B* occurs (whether the claimed aggregation is performed).

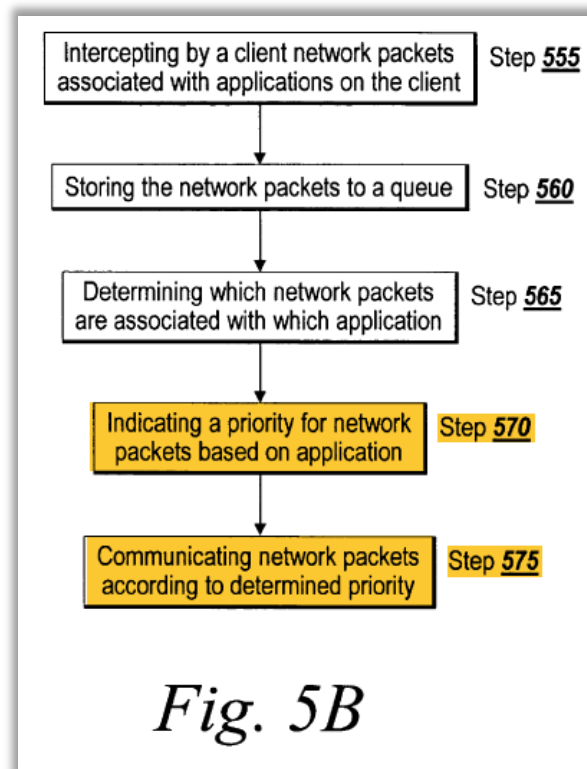
sometimes meet the claim. Rather, it would not meet the claim at all because it violates the conditional requirement.

3. Rao's technique of priority-based queueing does not meet the claimed aggregation of limitation [1.7].

126. Dr. McDaniel's theory also fails because Rao's technique of priority-based queueing is not, and could not be considered, "aggregation" as required by limitation [1.7]. The limitation requires "*aggregat[ing]* network activity for the first Internet access request with network activity for one or more other data . . . *before allowing* network activity in association with the first Internet access request." Thus, the limitation *disallows* any network activity for the first Internet access request, unless and until it has been *aggregated* with network activity for other requests from other applications.

127. Rao's system for priority-based queueing of packets is materially different from—and fails to satisfy—the claimed "aggregation." Indeed, in limitation [1.7], the claimed aggregation results in disallowance of the first Internet access request for an indefinite time period (unless the first request is aggregated with network activity for other applications, and the network activity for other applications are requested). However, there is no evidence that Rao's alleged functionality of queueing and prioritizing network packets constitutes *disallowance* until aggregation has occurred.

128. To the contrary, Rao's priority techniques *allow* packets from the first application to be transmitted in all cases; Rao merely *de-prioritizes* those packets behind one or more higher priority packets (if there happen to be any). Where there are no other higher priority packets, the packets from the first application are transmitted immediately. Indeed, Rao contemplates that *all* packets assigned priority will be transmitted. This is confirmed, for example, by Rao's Fig. 5B, which shows that after network packets are assigned a priority based on application (in step 570), those packets are then communicated over the network (in step 575):



Rao (Ex. 1005) at Fig. 5B (annotated).

129. Rao's claims also make clear that even when a packet may have lower priority than other packets, the lower-priority packet will nevertheless be communicated over the network. *See id.* at claim 4 (only preventing a lower-priority packet from being communicated "***ahead of***" higher priority packets); *id.* at claim 5 (discussing "holding" a deprioritized network packet, and then "releasing" that hold "upon communication" of certain higher priority packets). This is further confirmed because Rao teaches assignment of priority involves at least ***some*** (non-zero) level of priority. *See id.* ¶[0180] (referring to "levels of priority, such as high, medium, low, or numerically such as priority 1 . . . 10") (ellipses in original).

130. Thus, at most, and only under certain circumstances, Rao's system temporarily *delays* certain network packets associated with the first application. But this does not meet the plain meaning of limitation [1.7], which requires aggregation and potentially permanent disallowance (unless and until the aggregated network activity is requested). And any argument that temporarily delaying packets for priority queuing is equivalent to aggregation and disallowance is inconsistent with the '433 Patent. For example, the specification distinguishes "block[ing]" access from less drastic remedies that apply to individual network packets, such as delaying traffic by putting that traffic into lower-priority queues. '433 Patent at 13:21-25, 55:58-62, 92:9-19. Further, the '433 Patent describes

“allow/block” as a separate operation from “queue” or “defer” and clarifies that blocking access can apply to the network connection rather than at the level of individual packets. *Id.* at 91:41-49, 92:9-19, 102:23-37 (traffic control includes “block[ing]” the application “such that the network service consuming application is prevented from consuming any [network] resources”).

131. Dr. McDaniel’s declaration likewise recognizes that “prioritizing,” “delaying,” and “blocking” are different techniques for network traffic control. *See* McDaniel Decl. ¶ 42 (describing the policy engine of the ’433 Patent as enforcing policy by “prioritizing, delaying, *or* blocking application traffic as dictated by the policy and device conditions” (citing ’433 Patent at 13:21-25)). This supports my opinion that Rao’s technique of prioritizing packets is different from aggregation and disallowance as described in limitation [1.7].

132. A non-technical analogy serves to illustrate the difference between aggregation and prioritization. Suppose that two people, Smith and Jones, are engaged in letter correspondence regarding business matters. Smith intends to send Jones a short note regarding Smith’s family vacation but decides that the note is not worth a separate letter (and corresponding postage and driving to the post office, etc.). Thus, Smith decides to append the vacation note to the next business letter that will be sent. The business letter may not be sent for several more weeks or months (if ever). And if the business correspondence stops, then the note about

Smith's family vacation will never be sent. This was part of Smith's initial decision that the family vacation note was not by itself worth sending and that it should only be included as part of a business letter that would otherwise be sent. In this example, the family vacation note is "aggregated" with business correspondence and "disallowed" unless/until the business correspondence is sent.

133. In contrast, prioritizing or sorting is different. Smith and Jones are engaged in business correspondence. Smith intends to send Jones a note about family vacation and decides that the note will be sent in a separate letter. Smith writes the personal letter, puts it in an envelope with a stamp, and the letter is ready to go. The family vacation note will be sent; Smith merely prioritizes / sorts it behind other pending business correspondence. If Smith has a business letter to Jones, the business letter will be sent first, followed by the personal letter. If the business correspondence stops, the personal letter will nonetheless be sent. In this example, the family vacation note is prioritized behind business correspondence, and not "aggregated" or disallowed.

134. The foregoing analogy illustrates the difference between the claimed aggregation in limitation [1.7] and Rao's priority-based queueing technique. The two are materially different, and the difference is further highlighted by how they apply Internet access controls to requests from the first application. Under limitation [1.7], these requests are aggregated with requests from other

applications. If no other applications are running, then no network activity is allowed, and the modem remains asleep or off. In contrast, when Rao applies Internet access controls (as alleged by Dr. McDaniel) to a first application and no other applications are running, then no aggregation occurs. Network activity for the first application will always and immediately be allowed. The modem would be awakened, and resources would be consumed. Thus, Rao's priority-based queueing would operate differently and have the opposite effect from the claimed aggregation. Rao's system would immediately or promptly allow network activity for the first application, with no efficiency savings for the modem. In contrast, the '433 Patent would block network activity for the first application, until other network activity is requested. This increases efficiency by unnecessary power cycling of the modem.

135. A practical examination of the difference between a short-term temporary delay to process other traffic and what limitation [1.7] states, further undermines Dr. McDaniel's argument. In practice, the first application could be aggregated with other applications that are turned off or in the background for an indefinite period (weeks or months). In this case, an implementation of limitation [1.7] would result in Internet service activity on behalf of the first end-user application disallowed indefinitely. This is completely different from just the very

short period required to send the traffic of a different application under Mr.

McDaniel's theory for Rao's priority-based queueing.

4. Dr. McDaniel's mapping of the claimed aggregation is unsupported and arbitrary.

136. Dr. McDaniel's theory also fails because it depends on an unsupported and arbitrary characterization of certain packets as "aggregated" with other packets. Under Dr. McDaniel's theory, Rao may or may not perform the alleged "aggregation" for a request, but Rao teaches that it will *always* allow (i.e., attempts to transmit) network activity for that request. This is apparent from Dr. McDaniel's declaration and the Petition. Dr. McDaniel asserts that Rao meets claim limitation [1.7] when it sends "a set of higher priority packets, followed by a smaller set of lower priority packets, followed by more higher priority packets, and so on." McDaniel Decl. ¶ 115.

137. For illustrative purposes, assume that there is a stream of 10 data packets that are generated for transmission by a client device in Rao. Dr. McDaniel alleges that in Rao an "Internet access request" corresponds to a packet. Now consider how Rao's system processes the 10 packets in the example. All 10 packets will be transmitted and Rao's system at most re-arranges or sorts the order of the 10 packets. Dr. McDaniel does not allege that each of the 10 packets is

aggregated. Rather, Dr. McDaniel's theory is that only the "smaller set" of lower priority packets is aggregated with the preceding higher priority packets.

138. But in this example, network activity is always allowed for each of the 10 packets (regardless of whether or not a particular packet is "aggregated" according to Dr. McDaniel). After all, Dr. McDaniel does not allege, and Rao does not teach, that any packet should be discarded and *not* transmitted under those circumstances. This shows that in Rao's system, any alleged aggregation is not a pre-condition to allowing network activity. This is inconsistent with the requirements of Claim 1, which requires a system "configured to . . . aggregate network activity for the first Internet access request with network activity for one or more other data communication requests . . . *before allowing* network activity in association with the first Internet access request." Rather, in Rao's system, allowance of network activity in association with the first Internet access request *always* occurs irrespective of whether that activity was previously aggregated with network activity for other data communication requests.

139. In this manner, Rao's system simply operates to prioritize certain packets over others, without concern for holding or delaying transmission of traffic more generally. But the '433 Patent expressly distinguishes between "priority queuing relative to other device traffic" and "hold[ing] or delay[ing] traffic while accumulating or aggregating traffic into a larger stream/burst/packet/group of

packets.” Ex. 1001 at 86:6-11. This makes sense, because only the latter solution is able to achieve the stated benefit of reducing resource-intensive changes in the modem state. *See id.* at 93:62-94:1 (“**[A] network service usage activity is prevented from awakening the modem [or] changing the power state of the modem . . . until multiple network service usage activities require such changes in modem state, or *until network service usage activity is aggregated* to increase network capacity and/or network resource utilization efficiency.**”). Accordingly, the '433 Patent specification itself distinguishes the claimed invention (which ensures that aggregation occurs before network activity for a specific access request is allowed) from solutions such as Rao’s priority queuing system.

140. Dr. McDaniel’s characterization of what is aggregated is also arbitrary. For example, consider the example of Rao’s system transmitting a stream of 10 network packets. In that stream of 10 packets, it is possible to identify **44** different groupings of (at least two) sequential packets (e.g., one continuous sequence of 10 packets, two sequences of 9 packets, three of 8, four of 7, five of 6, six of 5, seven of 4, eight of 3, and nine of 2). Dr. McDaniel appears to imply that any (or all) these 44 combinations could be considered an aggregation, simply because you could draw a box around those packets in the data stream that is transmitted. And he relies on certain arbitrary boxes he draws as meeting the claimed aggregation.

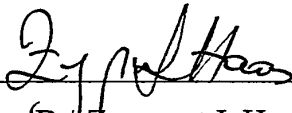
141. In my opinion, this is unsupported and arbitrary. A POSITA would have not considered Dr. McDaniel's purported boxes to be an aggregation simply because the packets are ultimately transmitted in that order. Nor would a POSITA have considered all such 44 combinations to each represent an aggregation, as Dr. McDaniel implies. Instead, the most that Rao's system shows is some prioritizing or sorting technique that affects the order in which packets are transmitted, without aggregation. Aggregation implies that units are organized into a group, e.g., with a common characteristic or function. Rao lacks any such organization, because the packets are transmitted one-by-one, and furthermore, it does not block or hold any packets as a group. In contrast, the '433 Patent does perform aggregation, by disallowing (blocking) network activity for the first request until network activity for other requests is allowed.

X. CONCLUSION

142. In signing this declaration, I understand that the declaration will be filed as evidence in contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross examination will take place within the United States. If cross examination is required of me, I will appear for cross examination within the United States during the time allotted for cross examination.

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

Executed on July 2, 2024



Dr. Zygmunt J. Haas