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Paper 10
Date: March 12, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

IPR2023-01337
Patent 9,521,578 B2

Before GARTH D. BAER, SCOTT B. HOWARD, and STEPHEN E. BELISLE, *Administrative Patent Judges*.

HOWARD, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition (Paper 2, "Pet.") requesting *inter partes* review of claims 1–22 ("challenged claims") of U.S. Patent No 9,521,578 B2 (Ex. 1001, "the '578 patent"). Headwater Research LLC ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp."). With our authorization, Petitioner filed a Reply to Patent Owner's Preliminary Response (Paper 7, "Pet. Prelim. Reply") and Patent Owner filed a Preliminary Sur-reply (Paper 8, "Prelim. Sur-reply").

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). *Inter partes* review may not be instituted unless "the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a) (2018). "When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim." 37 C.F.R. § 42.108(a) (2022).

For the reasons set forth below, upon considering the briefing and the evidence of record, we determine that the information presented in the Petition establishes a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims. Accordingly, we institute *inter partes* review on all of the challenged claims based on all of the grounds identified in the Petition.

B. Real Parties in Interest

Petitioner identifies Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. as real parties in interest. Pet. 80.

Patent Owner identifies Headwater Research LLC as the real party in interest. Paper 4, 1 (Patent Owner's Mandatory Notices).

C. Related Matters

The parties identify the following district court proceeding in which the '578 patent has been asserted:

> *Headwater Research LLC v. Samsung Electronics Co., Ltd.*, No. 2:22-cv-00422 (E.D. Tex.).

Pet. 80; Paper 4, 2.

In addition, Petitioner identifies two other district court proceedings involving the parties. Pet. 80.

D. The '578 Patent

The '578 patent relates to accessing user-configurable aspects of a differential traffic control policy specific to a wireless wide-area network (WWAN) in an end-user device that includes both WWAN and wireless local-area network (WLAN) modems. *See* Ex. 1001, code (57). The '578 patent observes that "network capacity gains are less than what is required to meet growing digital networking demand," and so "a network capacity crunch is developing due to increasing network congestion on various wireless networks, such as mobile networks." *Id.* at 3:32–36. Accordingly, "managing the wireless access connection capacity and network access connection resources is important to maintain network performance as network resources/capacity demand increases." *Id.* at 3:48–51. To this end, the '578 patent proposes certain device assisted services (DAS), which include "apply[ing] a service usage control policy for the network service

usage activities to protect network capacity (e.g., reduce network capacity demand)." *Id.* at 11:28–29, 11:59–62.

The '578 patent describes, with respect to Figure 3, reproduced below, an exemplary architecture for providing DAS. Ex. 1001, 1:51–56.

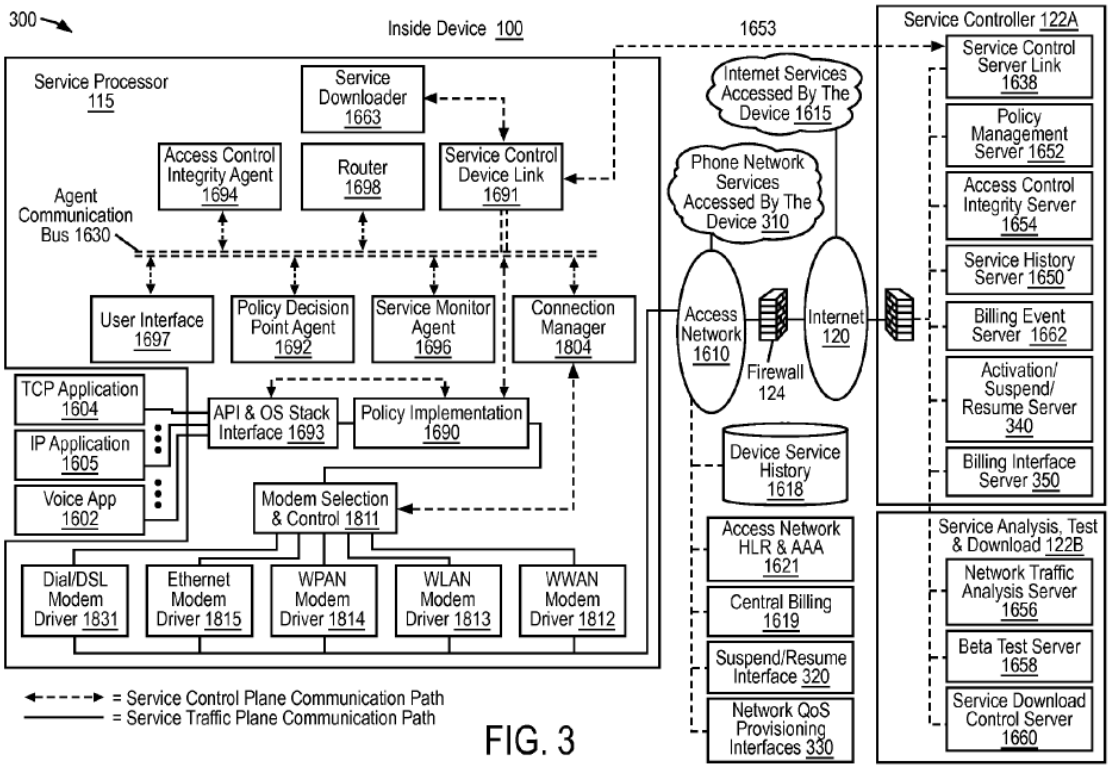


FIG. 3

Figure 3 shows that architecture 300 includes a device-based service processor 115 and a service controller 122 connected through access network 1610 and the Internet 120. *Id.* at 40:33–35, 40:44–49, Fig. 3. Service processor 115 includes modem selection and control 1811, which selects access network connections and communicates with various modem drivers for converting data traffic for different modems. *Id.* at 45:65–46:5, Fig. 3. "[D]ifferent profiles are selected based on the selected network connection (e.g., different service profiles/policies for WWAN, WLAN, WPAN, Ethernet and/or DSL network connections)." *Id.* at 46:6–9. Service controller 122 includes policy management server 1652 "for managing

service usage policies, such as QoS policies and/or a network capacity controlled services policies." *Id.* at 43:41–45. Policy management server 1652 may set policies on policy implementation agent 1690, located in service processor 115, which includes "issu[ing] policy settings, monitor[ing] service usage and, if necessary, modify[ing] policy settings." *Id.* at 43:51–54, Fig. 3.

In an embodiment, service processor 115 can implement various DAS techniques "to facilitate differential network services access control (e.g., for network capacity controlled services) to assist in protecting network capacity." Ex. 1001, 78:32–38. For example, service processor 115 may assist in "monitoring the network service usage activity, classifying one or more service activities into one or more network capacity controlled service classes, associating the one or more network capacity controlled service classes with one or more differential service activity policies, and/or determining a network busy state." *Id.* at 78:38–47.

Further, in an embodiment, a network service usage classification engine may categorize application traffic "based on, e.g., network type, time of day, connection cost, whether home or roaming, network busy state, QoS, and whether the particular service usage activity is in foreground of user interaction or in the background of user interaction." Ex. 1001, 103:47–53. A "differential network access control engine can restrict network access of a particular service usage activity when a condition is satisfied, such as when the service usage activity is a background activity." *Id.* at 104:40–43.

E. Illustrative Claim

The '578 patent includes 22 claims, all of which are challenged. Claim 1 is the only independent claim, and is reproduced below.

1. [1pre] A wireless end-user device, comprising:

[1a] 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;

[1b] a wireless local area network (WLAN) modem to communicate data for Internet service activities between the device and at least one WLAN, when configured for and connected to the at least one WLAN;

[1c] a non-transitory memory to store a differential traffic control policy applicable to data communicated for Internet service activities using the WWAN modem and the at least one WWAN, but not applicable to data communicated for Internet service activities using the WLAN modem and the at least one WLAN;

[1d] a user interface to allow a user to set one or more of a plurality of aspects of the differential traffic control policy to select one or more applications that are only allowed to utilize the at least one WWAN for Internet service activities when those applications are classified as interacting with a user in the device user interface foreground; and

[1e] one or more processors configured to implement an application program interface (API) that allows a particular application to access one or more aspects of the differential traffic control policy applicable to that application, including whether the user-settable aspects of the policy only allow the particular application to utilize the at least one WWAN for Internet service activities when the particular application is classified as interacting with a user in the device user interface foreground.

Id. at 108:16–47.

F. Prior Art and Asserted Ground

Petitioner asserts that claims 1–22 would have been unpatentable on the following ground:

Claims Challenged	35 U.S.C. §[1]	References/Basis
1–22	103(a)	Rao,[2] Oestvall[3], Montemurro[4]

Petitioner relies on the testimony of Patrick McDaniel, Ph.D. (Ex. 1003).

II. ANALYSIS

A. Legal Standards

In *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under 35 U.S.C. § 103 that requires consideration of four factors: (1) the "level of ordinary skill in the pertinent art," (2) the "scope and content of the prior art," (3) the "differences between the prior art and the claims at issue," and (4) if in evidence, "secondary considerations" of non-obviousness such as "commercial success, long-felt but unsolved needs, failure of others, etc." *Id.* at 17–18. "While the sequence of these questions might be reordered in any particular case," *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the U.S. Court of Appeals for the Federal Circuit has repeatedly emphasized that "it is error to reach a conclusion of obviousness until all those factors are considered," *WBIP, LLC v. Kohler*, 829 F.3d 1317, 1328 (Fed. Cir. 2016). Because Patent Owner does not address objective evidence of non-obviousness, we focus solely on the first three *Graham* factors.

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[1] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the '578 patent claims the benefit of the filing date from an application filed before March 16, 2013, we apply the pre-AIA version of the statutory basis for unpatentability. *See* Ex. 1001, code (60).

[2] US 2006/0039354 A1, published February 23, 2006 (Ex. 1005).

[3] US 2007/0038763 A1, published February 15, 2007 (Ex. 1006).

[4] US 2009/0207817 A1, published August 20, 2009 (Ex. 1007).

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. "The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The "person having ordinary skill in the art" is a hypothetical construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

Factors pertinent to a determination of the level of ordinary skill in the art include "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). "Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case." *Id.*

Dr. McDaniel argues that a person of ordinary skill in the art "would have had (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," and that "[a]dditional graduate education could substitute for professional experience, and *vice versa*." Ex. 1003 ¶ 18.

At this stage of the proceeding, Patent Owner does not challenge the level of skill in the art proposed by Dr. McDaniel. Prelim. Resp. 6.

For purposes of this Decision, we adopt Dr. McDaniel's formulation of a person of ordinary skill in the art, which is consistent with the '578 patent and the prior art.[5]

C. Claim Construction

We apply the same claim construction standard used in the federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). Under the *Phillips* standard, the "words of a claim 'are generally given their ordinary and customary meaning,' which is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips*, 415 F.3d at 1312–13.

Petitioner asserts that "[n]o formal claim constructions are necessary because 'claim terms need only be construed to the extent necessary to resolve the controversy.'" Pet. 2.

Patent Owner agrees with Petitioner's assertion that "no formal claim construction is necessary" at this stage in the proceeding. Prelim. Resp. 6.

For the purposes of this Decision, we need not expressly construe any claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*,

[5] If Patent Owner disagrees with Dr. McDaniel's formulation of the level of skill in the art, it must do so in its Response. If a different level of skill would affect the outcome in this case, the parties must brief that issue as well. The parties are also encouraged to submit evidence, other than conclusory expert testimony, that supports their position.

868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Discretionary Denial – 325(d)

1. Legal Standard

Patent Owner urges us to exercise our discretion to deny institution of trial under 35 U.S.C. § 325(d). Prelim. Resp. 41–57. Under § 325(d), we have discretion to deny a petition that presents the same or substantially the same prior art or arguments as previously presented to the Office. In evaluating whether the factual predicate under § 325(d) is met, we consider a number of non-exclusive factors, as set forth in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (Institution Decision) (precedential as to Section III.C.5, first paragraph) ("*Becton Dickinson* factors"):

> (a) the similarities and material differences between the asserted art and the prior art involved during examination;
>
> (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
>
> (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
>
> (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;
>
> (e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
>
> (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson, IPR2017-01586, Paper 8 at 17–18.

In performing an analysis under § 325(d), "the Board uses the following two-part framework:

> (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. . . . If, after review of [*Becton Dickinson*] factors (a), (b), and (d), it is determined that the same or substantially the same art or arguments previously were presented to the Office, then factors (c), (e), and (f) relate to whether the petitioner has demonstrated a material error by the Office.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8, 10 (PTAB Feb. 13, 2020) (Institution Decision) (precedential) (footnote omitted). Consequently, we first turn to an analysis of *Becton Dickinson* factors (a), (b), and (d) to determine whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office. Then, if necessary, we address the remaining *Becton Dickinson* factors. Only if we determine that the same or substantially the same prior art or arguments were previously presented to the Office do we turn to *Becton Dickinson* factors (c), (e), and (f) to see whether the Office overlooked material or committed material error.

2. Part One of the Advanced Bionics Analysis

Becton Dickinson factors (a), (b), and (d) require us to determine, respectively: (a) "the similarities and material differences between the asserted art and the prior art involved during examination;" (b) "the cumulative nature of the asserted art and the prior art evaluated during

examination," and (d) "the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art." *Becton, Dickinson*, IPR2017-01586, Paper 8 at 17.

Patent Owner argues that Rao-2[6] and Montemurro-patent,[7] were considered during the prosecution of the '578 patent. Prelim. Resp. 43–44.

Rao and Rao-2 both claim priority from the same United States provisional patent applications. *Compare* Ex. 1005, code (60), *with* Ex. 2001, code (30). A redline version comparing Rao and Rao-2 show that besides formatting differences and some additional introductory material in Rao-2, there is no substantial difference between Rao and Rao-2. *See* Ex. 2002. Accordingly, the Office previously considered prior art that is substantially the same as Rao.

Montemurro is published patent application that eventually issued as Montemurro-patent. *Compare* Ex. 1007, code (21), *with* Ex. 2003, code (21). A redline version comparing Montemurro and Montemurro-patent show that besides formatting differences and the removal of paragraph numbering, there is no substantial difference between body of Montemurro and Montemurro-patent. *See* Ex. 2004. Accordingly, the Office previously considered prior art that is substantially the same as Montemurro.

Patent Owner further argues that, although Oestvall was not before the Office during the prosecution of the '578, Oestvall is substantially the same as references that were before the office. Prelim. Resp. 48–54. Specifically, Patent Owner argues that the specific teachings of Oestvall that the

[6] PCT application WO 2006/012610 A2 (Ex. 2001).

[7] US 8,825,109 (Ex. 2003).

Petitioner relies on can be found in those other references. *Id.* We do not agree.

For example, Patent Owner compares how the Petition relies on Oestvall for the teachings found in Montemurro:

> In its analysis of claim element [1c], the Petition alleges that "WWAN was known as a radio access technology that consumes more processing and battery power than technologies like WLAN." Pet. at 29. In support of this statement, *the Petition quotes the following unremarkable disclosure in Oestvall: "smartphones that consume high power levels by virtue of connecting to always-on GPRS or 3G cellular networks," i.e., WWAN networks. Id.* (quoting Ex. 1006 ¶[0004]). Oestvall explains that, for this reason, "battery conservation in battery operated computing devices is very important, particularly in devices such as smartphones." Ex. 1006 ¶[0004]. But the Petition alleges that Montemurro discloses these same basic concepts: "As Montemurro recognizes, … '[s]election among the different radio access technologies [e.g., WWAN and WLAN] may be driven by the different properties of the technologies such as bandwidth, range, cost, and ***power consumption***, among other considerations." Pet. at 28 (quoting Ex. 1007 ¶[0003]) (first alteration in original); *see id.* at 20, 29 (quoting same); *see also* Ex. 1007 ¶[0053] (Montemurro noting that "[s]ince handheld device 600 is a ***mobile battery-powered device***, … [s]uch a battery 666 provides electrical power to most if not all electrical circuitry in handheld device 600)).

Prelim. Resp. 49 (bold italics in original, italics added). However, we see significant differences in the cited passages. Oestvall specifically recites that connecting to always-on 3G cellular networks consumes high power levels. Ex. 1006 ¶ 4. On the other hand, although Montemurro recites that power consumption is one property that should be considered, it does not specifically recite that connecting to an always-on 3G cellular network consumes high power levels.

Similarly, with regard to a different limitation, Patent Owner argues that Oestvall is substantially the same as McConnell,[8] which was considered by the Office during the prosecution of the '578 patent. Prelim. Resp. 51–53. Specifically, Patent Owner argues that that "the Petition asserts that 'Oestvall's techniques … ***prevent[] an untrusted application running*** in the background ***from "being given any services of consuming any resources"*** while allowing the foreground application to run and [to be] "provided with resources and services."'" *Id.* at 51 (quoting Pet. 34) (alterations and emphasis in original). According to Patent Owner, this is the same as McConnell keeping a voice session, but dropping a data session when there is a switch from WLAN to WWAN. *Id.* at 51–52.

Based on the arguments presented in the Preliminary Response, we fail to see the similarity between the two references. As Patent Owner concedes, "McConnell does not disclose blocking and allowing access based on an applications background or foreground status." Prelim. Resp. 52–53. That significant difference is fatal to Patent Owner's argument that the references are substantially the same. And although Patent Owner argues that "the Petition alleges that Rao classifies applications based on such criteria," (Prelim. Resp. 53), there is nothing in the record to suggest the Examiner considered such a combination of McConnell and Rao.

Accordingly, Oestvall is not the same or substantially the same as the art considered by the Office during the prosecution of the '578 patent. As can be seen in the analysis of Petitioner's ground below, Oestvall is significant to Petitioner's challenge. Because the Office did not previously consider all three of the prior art references relied on in the Petition, and

[8] US 2006/0291419 A1, published Dec. 28, 2006 (Ex. 2005).

because Oestvall is not the same or substantially the same as the art that was previously considered, we determine the Office did not previously consider the same or substantially the same prior art as is relied on here. Therefore, part one of the *Advanced Bionics* framework is not met.

3. Conclusion

Based on our consideration of *Becton Dickinson* factors (a), (b), and (d), we find that the same or substantially the same art or arguments were not previously presented to the Office. Thus, our analysis ends at this point, and we need not proceed to part two of the *Advanced Bionics* framework. *See Advanced Bionics*, IPR2019-01469, Paper 6 at 8. We therefore decline to exercise our discretion to deny institution based on 35 U.S.C. § 325(d).

E. Rao, Oestvall, and Montemurro

Petitioner argues that claims 1–22 would have been obvious over Rao, Oestvall, and Montemurro. Pet. 1, 21–77. Based on the current record, we are persuaded that Petitioner has established a reasonable likelihood of prevailing on this asserted obviousness ground with respect to at least claim 1.

1. Overview of Rao

Rao is titled "Systems and Method for Client-Side Application-Aware Prioritization of Network Communications" and "is generally directed towards a remote access architecture for providing peer-to-peer communications and remote access connectivity." Ex. 1005, codes (54), (57).

Rao's Figure 1A, reproduced below, illustrates a system for deploying an exemplary remote access architecture. Ex. 1005 ¶ 86.

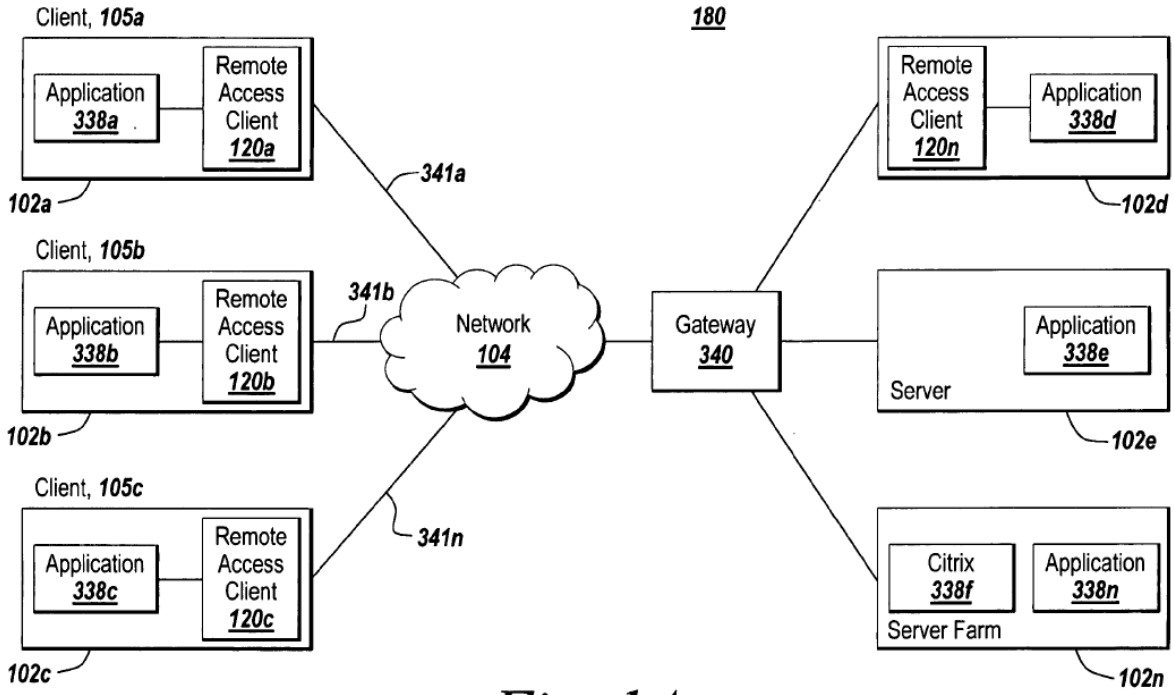


Fig. 1A

Figure 1A shows that environment 180 includes a number of computing devices 102a–102c, also referred to as clients 105a–105c, connected to network 104. *Id.* ¶ 86, Fig. 1A. Clients 105a–105c may communicate with server 102a, server farm 102e, or peer computing devices 102d via network 104 and gateway 340. *Id.*

Clients 105a–105c include respective remote access clients 120a–120c (Ex. 1005 ¶ 87, Fig. 1A), an example of which is shown in more detail in Figure 1C, reproduced below.

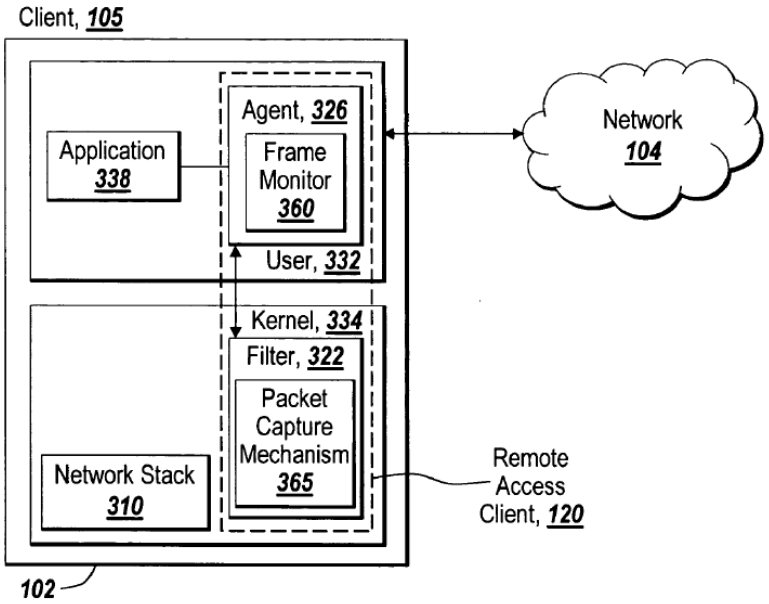


Fig. 1C

Figure 1C shows computing device 102, also referred to as client 105, as including remote access client 120 for routing network packets to network 104. *Id.* ¶ 99, Fig. 1C. Computing device 102 may also include network interface 118 (not shown in Figure 1C) for interfacing with "a Local Area Network (LAN), Wide Area Network (WAN) or the Internet through a variety of connections including . . . LAN or WAN links . . . wireless connections, or some combination of any or all of the above." *Id.* ¶ 125. "[N]etwork interface 118 may comprise a . . . modem or any other device suitable for interfacing the computing device 102 to any type of network." *Id.* "[R]emote access client 120 may be used to practice one or more of the optimization techniques" Rao describes, such as "optimizing any real-time data communications, such as VoIP, desktop sharing, or web conferences." *Id.* ¶ 117.

Figure 5A of Rao shows a more detailed illustration of computing device 102, also referred to as client 105, for use in "client-side application-aware network communication prioritization techniques." Ex. 1005 ¶ 179.

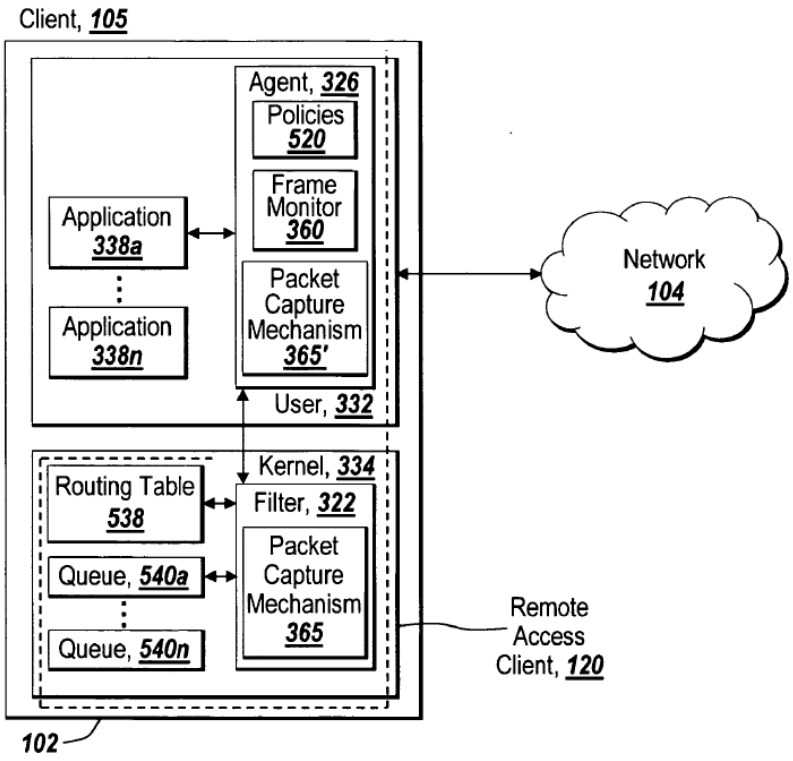


Fig. 5A

In particular, as shown in Figure 5A, "remote access client 120 may have one or more policies 520 for specifying client-side prioritization of network communications related to applications 338*a*-338*n*." *Id.* ¶ 182, Fig. 5A. In an embodiment, "policies 520 may be specified in accordance to the type of one or more protocols used by the applications 338*a*-338*n* and/or the size of the payload of the network packet." *Id.* In operation, client 105 may intercept network packets associated with an application 338a-338n and store the packets in one of queues 540a–540n, where a priority is determined for the packets based on the type and/or priority of the application with

which the packets are associated. *Id.* ¶ 184. "[A]ll network packets for a type of application 338*a*-338*n*, such as an email or voice application, or all network packets for a type of protocol used by the application 338*a*-338*n*, such as RPT or UDP, may be placed in a queue 540*a*-540*n* for prioritizing network[] packets for one or more applications." *Id.* ¶ 192.

2. Overview of Oestvall

Oestvall is titled "Method of Enabling a Multitasking Computing Device to Conserve Resources" and relates to preserving battery power in a computing device "by determining if an untrusted application is in the background or foreground and preventing an untrusted application that is in the background from running." Ex. 1006, codes (54), (57). Oestvall observes that "[b]attery conservation in battery operated computing devices is very important, particularly in devices such as smartphones that consume high power levels by virtue of connecting to always-on GPRS or 3G cellular networks." *Id.* ¶ 4. In a multi-tasking computer device, however, "without an explicit 'close' command, applications will continue to run even when not actually in active use; they will therefore continue to use some system resources, even when residing in the 'background.'" *Id.* ¶ 6.

Accordingly, Oestvall describes "denying system resources and services to background applications that do not meet predefined 'trust' or certification criteria—i.e. criteria which define the level of trustworthiness of the application." Ex. 1006 ¶ 10. As Oestvall notes, "untrusted" applications are "more likely to contain a wrong implementation of normal background behaviour(sic): hence, merely relying on an application to voluntarily cease running when notified that it is in the background is an inadequate strategy for untrusted applications." *Id.* ¶ 14. Therefore, in Oestvall's method, "when an untrusted application is running on the battery operated device and

another application should be in the foreground, the untrusted application is placed into the background and is also actively prevented from running." *Id.* ¶ 21.

3. Montemurro

Montemurro is titled "Policy-Based Data Routing for a Multi-Mode Device" and relates to configuring communication devices capable of at least two communication modes, such as WLAN and WWAN, "to optimize communications using a policy-based mechanism to configure connections and routes." Ex. 1007, codes (54), (57). Montemurro notes that for multi-mode devices, "applications can have the ability to offer different usage models depending on the mode of wireless operation selected." *Id.* ¶ 3. But, Montemurro discloses, there are costs and quality considerations associated with applications accessing different networks. *Id.* ¶ 4. Montemurro seeks to provide a mechanism that optimizes such communications for multi-mode capable devices. *Id.*

Specifically, Montemurro describes "[a] rules engine [that] evaluates its policies on a state change (e.g. network availability, time of day, etc.) to configure a routing table and, together with communication APIs, provides an appropriate connection to an application for its respective communications." Ex. 1007 ¶ 11. Figure 2, reproduced below, illustrates "a block diagram of policy-based data routing for multi-mode operations of a device" in a communication network infrastructure. *Id.* ¶ 7.

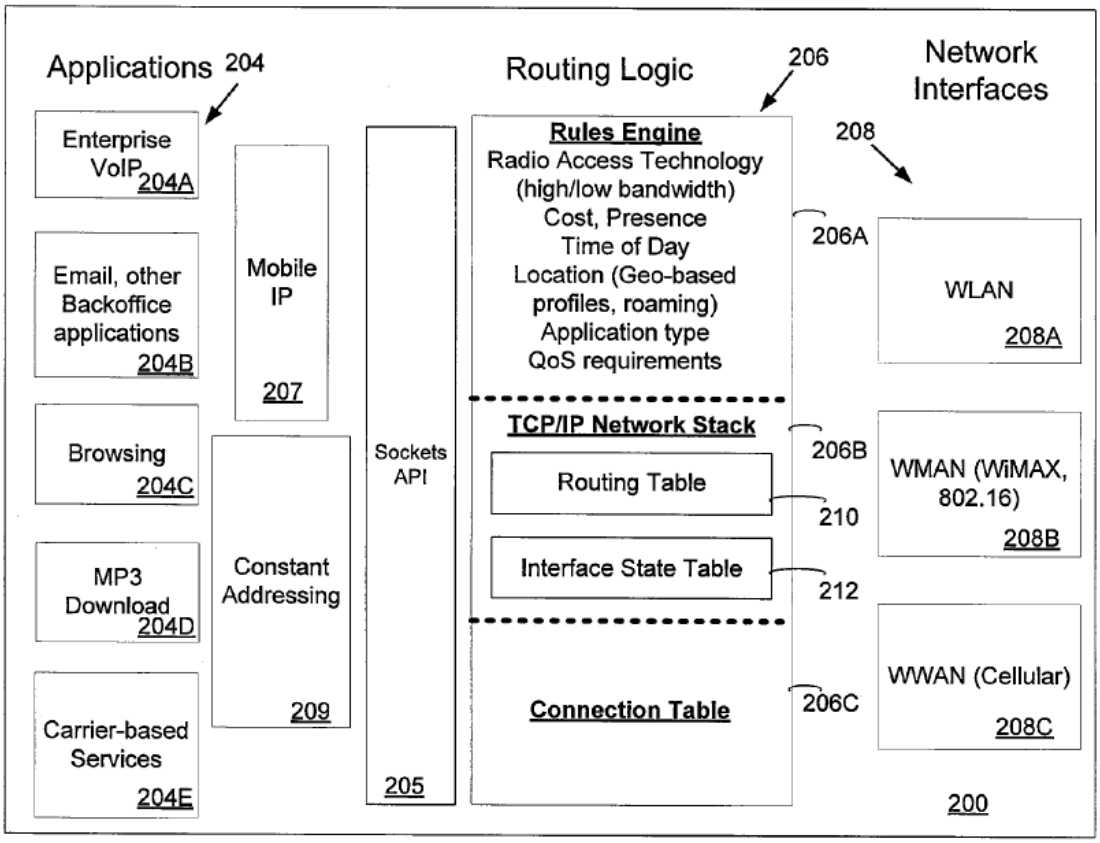


Figure 2

Figure 2 shows "a view of a run-time store (e.g. RAM) 200 of device 102 [(not shown in Figure 2)] comprising, broadly, a plurality of applications 204, routing logic 206 and network interfaces 208." *Id.* ¶ 25. Network interfaces 208 include WLAN 208A and WWAN 208C. *Id.* ¶ 28, Fig. 2. Rules engine 206A in routing logic 206 "configures the communication operations with a set of rules/policies that could include various factors such as radio access technology (e.g. for high/low bandwidth properties), . . . application type," etc. *Id.* ¶ 29.

4. Analysis of Claim 1

a) Limitation 1d

Limitation 1d recites "a user interface to allow a user to set one or more of a plurality of aspects of the differential traffic control policy to

select one or more applications that are only allowed to utilize the at least one WWAN for Internet service activities when those applications are classified as interacting with a user in the device user interface foreground." Ex. 1001, 108:31–37. Petitioner contends that the combination of Rao, Oestvall, and Montemurro teaches this limitation. Pet. 29–36; *see also* Ex. 1003 ¶¶ 90–100. For ease of analysis, we address the features of the limitation in the same order that they were raised in the Petition.

(1) The User Interface

The first portion of limitation 1d recites "a user interface to allow a user to set one or more of a plurality of aspects of the differential traffic control policy to select one or more applications." Ex. 1001, 108:31–37. Petitioner argues that Rao and Montemurro each teach this limitation. *See* Pet. 30–31. Based on the present record, we are sufficiently persuaded by Petitioner's argument.

Rao teaches that "policies 520 may be configurable by a user by any suitable means and/or mechanism. For example, the agent 326 may provide a configuration mechanism such as ***a user interface***, graphical or otherwise, design and constructed for configuring or specifying the policies." Ex. 1005 ¶ 183 (emphasis added). The policies of the Rao-Oestvall-Montemurro combination have several user-configurable aspects. *See* Ex. 1003 ¶ 92; Ex. 1005 ¶¶ 182, 189; Ex. 1007 ¶ 29. For example, as Rao and Montemurro teach, the Rao-Oestvall-Montemurro device's policy would be user configurable to select one or more applications by their application names and/or types. *See* Ex. 1003 ¶ 92; Ex. 1005 ¶ 182; Ex. 1007 ¶ 29. Accordingly, a person having ordinary skill in the art would have understood that that Rao's user interface, as incorporated into the Rao-Oestvall-Montemurro device, would allow a user to set one or more of a plurality of

aspects of its policy specific for WWAN data communication (differential traffic control policy). *See* Ex. 1003 ¶ 93.

Patent Owner does not dispute that the combination of Rao and Montemurro teaches the first portion of limitation 1d. *See* Prelim. Resp. 6–30.

(2) Applications in the User Interface Foreground

The last portion of limitation 1d recites "when those applications are classified as interacting with a user in the device user interface foreground." Ex. 1001, 108: 31–37. Petitioner argues Rao and Oestvall teach this portion of the limitation. Pet. 31–32. Based on the present record, we are sufficiently persuaded by Petitioner's argument.

Rao bases prioritization on "whether an application is running in the foreground or the background of the client." Ex. 1005 ¶ 182; *see also* Ex. 1005 ¶¶ 188 ("Additionally, the remote access client 120 may determine whether the application 338a-338n associated with the network packet is running in the foreground of the background of the client 105."), 189, 193; Ex. 1003 ¶ 93. Similarly, Oestvall teaches "a multitasking computing device determines if a non-trusted application is in the background or the foreground and prevents an untrusted application that is in the background from running in order to preserve system resources." Ex. 1006 ¶ 8; *see also id.* ¶¶ 16, 17, 22, 23; Ex. 1003 ¶ 93. Based on the current record, a person having ordinary skill in the art would understand that in order to perform an action based on whether an application is in the foreground or background, Rao and Oestvall must classify applications based on whether they are in the foreground or not. *See* Ex. 1003 ¶¶ 93–94.

Patent Owner does not dispute that Rao and Oestvall each teaches this aspect of limitation 1d. *See* Prelim. Resp. 6–30.

(3) Only Allowed

The middle portion of Limitation 1d recites "one or more applications that are only allowed to utilize the at least one WWAN for Internet service activities when those applications are classified as interacting with a user in the device user interface foreground." Ex. 1001, 108:31–37. Petitioner argues this limitation is taught by both Rao and Oestvall. Based on the current record, we question the sufficiency of Petitioner's arguments regarding Rao. However, we are sufficiently persuaded by Petitioner's arguments regarding Oestvall.

(a) Rao Arguments

Petitioner argues that a person having ordinary skill in the art would have combined Rao-Oestvall-Montemurro such that it uses Rao's prioritization scheme:

> For example, a [person having ordinary skill in the art] would have understood and found obvious that the Rao-Oestvall-Montemurro device would have been configured to implement Rao's technique of intercepting network packets of an application based on the application's prioritization, and (i) where the application is classified as running in the foreground, network packets of that application would be stored in a queue ahead of other application(s) running in the background, and (ii) where the application is classified as running in the background, network packets of that application would be stored in a queue behind other application(s) running in the foreground.

Pet. 33 (citing Ex. 1005 ¶¶38, 46, 102, 182–194). Petitioner further argues that this would result in foreground packets being allowed with other packets "being presently disallowed":

> In this scenario, interception of network packets of the application by the Rao-Oestvall-Montemurro device would have resulted in Internet service activities associated with intercepted network packets *being allowed when the application is classified*

> *as running in the foreground* ("interacting with a user in the device user interface foreground"), and resulted in Internet service activities associated with intercepted network packets being *presently disallowed until* the device is instead focused on handling "one or more network packets ahead of at least one network packet in the queue" associated with the application.

Id. (emphasis in original omitted, emphasis added) (citing Ex. 1005 ¶¶ 38, 46, 102, 182–194; Ex. 1003 ¶ 96).

Based on the current record, we question the sufficiency of Petitioner's proof. The Petition describes how Rao places the packets from a background application "in a queue behind other application(s) running in the foreground." Pet. 33. Although the background applications have a lower priority and are placed in the back of the queue, the packets from the background application can eventually access the WWAN modem and be sent. *See* Ex. 1005 ¶ 184; Pet. 33 ("presently disallowed until"). That appears to be inconsistent with the plain meaning of the claim, which only allows applications interacting with a user in the foreground to access the WWAN modem.

(b) Oestvall Arguments

Based on the current record, we are sufficiently persuaded by Petitioner's arguments regarding Oestvall. Specifically, Oestvall teaches preventing untrusted applications running the in the background from being given any services or consuming resources while allowing foreground applications to receive the resources and services it requires. *See* Ex. 1006, code (57), ¶¶ 8, 10, 15, 23, 25; Ex. 1003 ¶97. "Because Internet network service activity is a type of service or resource service, the prevention of access to resources and services for the application by the Rao-Oestvall-Montemurro device would have resulted in the Internet network service

activity associated with application 338 being allowed only when the application is running in the foreground." Ex. 1003 ¶ 97.

Additionally, a person having ordinary skill in the art would have applied that teaching to the WWAN modem. *See* Ex. 1003 ¶ 98. Because Oestvall does not limit which resources or services are prohibited, a person having ordinary skill in the art would have recognized that this applies to network connectivity resources, such as the WWAN modem. *See id.*; Ex. 1006 ¶ 23. Accordingly, based on the current record, a person having ordinary skill in the art "would have found obvious that application of the policy in the above scenario to be pertinent to one or more applications that are only allowed to utilize the at least one WWAN for Internet service activities." Ex. 1003 ¶ 98 (emphasis omitted); *see also* Ex. 1003 ¶¶ 99–100.

Patent Owner argues that Oestvall does not teach "a user interface to allow a user . . . to select one or more applications" as recited in limitation 1d. *See* Prelim. Resp. 23–27. Specifically, Patent Owner argues that "the Petition fails to even allege that Oestvall discloses any user interface that would permit ***a user to select applications*** that can only access the WWAN when those applications are interacting with a user in the foreground." *Id.* at 23.

We do not agree with Patent Owner's argument. "The question in an obviousness inquiry is whether it would have been obvious to a person of ordinary skill in the art to combine the relevant disclosures of the two references, not whether each individual reference discloses all of the necessary elements." *Game & Tech Co. v. Wargaming Grp. Ltd.*, 942 F.3d 1343, 1352 (Fed. Cir. 2019) (citing *Cohesive Techs., Inc. v. Waters Corp.*, 543 F.3d 1351, 1364 (Fed. Cir. 2008)). Because Petitioner is not using Oestvall to teach the portion of the limitation relating to the user interface

(*see* Pet. 30–31), it is inapposite that Oestvall does not teach one. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (citations omitted) ("The test for obviousness is not whether . . . the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art."). And, as noted above in section II.E.(a)(1), at the present time, Patent Owner does not dispute that Rao teaches the recited user interface.

Patent Owner further argues that Oestvall does not teach a "differential traffic control policy." Prelim. Resp. 27–30. Specifically, Patent Owner argues that because Oestvall prevents untrusted applications from running if they are not in the foreground, it "would not relate to any alleged 'aspects of a differential traffic control policy,' or a 'differential traffic control policy' itself, as required." *Id.* at 27–28.

We do not agree with Patent Owner's argument. As discussed above, it is not necessary for one prior art reference to teach all of the claim limitations. And that is what Petitioner does here. Petitioner relies on Rao and Montemurro, but not Oestvall, for a "differential traffic control policy." *See* Pet. 24–29. Petitioner then argues that a person having ordinary skill in the art would modify that differential traffic control policy based on teaching of Oestvall. *See* Pet. 35–40; Ex. 1003 ¶ 100. Patent Owner's arguments which do not address Petitioner's actual theory are inapposite.

(4) Conclusion Regarding Limitation 1d

Accordingly, Petitioner has sufficiently shown that the prior art teaches limitation 1d.

b) The Limitation of an API that Allows an Application to Access Aspects of the Applicable Differential Traffic Control Policy

Limitation 1e recites "one or more processors configured to implement an application program interface (API) that allows a particular application to access one or more aspects of the differential traffic control policy applicable to that application, including whether the user-settable aspects of the policy only allow the particular application to utilize the at least one WWAN for Internet service activities when the particular application is classified as interacting with a user in the device user interface foreground." Ex. 1001, 108:38–47. Petitioner argues that of Rao, Oestvall, and Montemurro teaches that limitation. *See* Pet. 36–42; *see also* Ex. 1003 ¶¶ 101–110. Based on the current record, we are sufficiently persuaded by Petitioner's argument.

Rao teaches using various API's and a person having ordinary skill in the art would have understood that APIs are implemented using processors. Ex. 1003 ¶ 102. Additionally, Rao recites that "[t]he policies 520 may be accessible by the agent 326, configured into the agent 326, or loaded by the agent 326." Ex. 1005 ¶ 183. Rao further recites that "agent 326 indicates the priority to the filter 322 for management of network packet queues 540a-540n to apply the indicated priorities" and that "[t]he agent 326 may communicate the priority of network packets to the filter 322 by any suitable means and/or mechanism such as via an application programming interface (API), such an IOCTL interface, or any other type and/or form of interface known to those ordinarily skilled in the art." *Id.* ¶ 190. Because Rao describes how remote access client 120, which included agent 326 "may be included within an application," (*id.* ¶ 115), based on the current record, a person having ordinary skill in the art "would have understood and found

obvious that an application, which includes the remote access client 120 (including the agent 326 and/or the filter 322), would access the policies 520 accessible by the agent 326 through the API that enables communication between the agent 326 and the filter 322." Ex. 1003 ¶ 104 (citing Ex. 1005, Fig. 5A). Stated differently, a person having ordinary skill in the art would understand that Rao teaches an API that will allows an application to access one or more of the policies for the application. *Id.* This includes the policies discussed above limiting access to WWAN. *See* Ex. 1003 ¶¶ 110.

Patent Owner argues that "[t]he Petition maps the claimed 'differential traffic control policy' to Rao's '***one or more policies 520*** for specifying client-side ***prioritization of network communications*** related to applications 338a-338n.'" Prelim. Reso. 25 (quoting Pet. 25). However, Patent Owner argues, "Rao makes clear that not all applications discussed in its disclosure, including not all of those labeled as an 'application 338,' are subject to such policies concerning prioritization of network communications." *Id.* Instead, according to Patent Owner, some applications cannot connect to a network and are therefore not subject to Rao's prioritization policies. *Id.* (citing Ex. 1005 ¶ 88).

We do not agree with Patent Owner's argument. Even if it is true that some applications do not communicate with networks and therefore will not have a differential traffic control policy, that is inapposite. At most, Patent Owner has shown that some applications do not teach the claimed limitation; but Patent Owner's argument ignores those applications that do communicate and do have differential traffic control policies. So long as the prior art sometimes practices the claimed invention, that is enough. "[A] prior art reference may anticipate or render obvious an apparatus claim—depending on the claim language—if the reference discloses an apparatus

that is reasonably capable of operating so as to meet the claim limitations, even if it does not meet the claim limitations in all modes of operation." *ParkerVision, Inc. v. Qualcomm Inc.*, 903 F.3d 1354, 1361 (Fed. Cir. 2018). For example, the Federal Circuit held that it was sufficient to show that a reference anticipated in "the process of startup," even if the reference did not show anticipate during "normal operation," reasoning that "[n]othing in the claims requires that the current threshold increase during the power supply's normal operation." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 843 F.3d 1315, 1336 (Fed. Cir. 2016); *see also Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003) ("Just as 'an accused product that sometimes, but not always, embodies a claimed method nonetheless infringes,' a prior art product that sometimes, but not always, embodies a claimed method nonetheless teaches that aspect of the invention." (quoting *Bell Commc'ns Rsch., Inc. v. Vitalink Commc'ns Corp.*, 55 F.3d 615, 622–623 (Fed. Cir. 1995))).

Patent Owner further argues that Rao paragraph 115 "simply provid[es] ways in which the remote access client 120 can be embodied as a single mechanism or component, with an application being one option." Prelim. Resp. 33. Patent Owner further argues that "[n]othing in this paragraph indicates or suggests that 'application' here refers specifically to applications that have 'one or more policies 520 for specifying client-side prioritization of network communications related to' them." *Id.* Instead, according to Patent Owner, "the context of paragraph 115 counsels to the contrary–that 'application' here is simply a generic disclosure of the form the remote access client could take." *Id.*, *see also id.* at 33–34 (arguing Rao paragraph 116 further supports its argument). Patent Owner further argues Petitioner's reading does not make logical sense. *Id.* at 34–36.

Based on the current record, we disagree with Patent Owner. Rao states as follows:

> Although the remote access client 120 is illustrated with multiple components, such as an agent 326 and a filter 322, one ordinarily skilled in the art will recognize and appreciate that the operations and functionality of the remote access client 120 described herein may be practiced in a single mechanism or single component. *For example, in some embodiments, the operations and functionality of the remote access client 120 may be included within an application 338*. In one embodiment for example, the functionality and operates of the remote access client 120 may be provided just as an agent 326, and in another embodiment, just as a network driver, such as a filter.

Ex. 1005 ¶ 115 (emphasis added). Paragraph 115 makes it clear that remote access client 120 may be included in application 338. *Id.* That remote access client 120 includes the agent 326 and filter 322. *Id.*; see also *id.* Fig. 1C. In other word, application 388 will include all of remote access client 120, including the portion that Petitioner maps to the differential traffic control policy.

We appreciate the concerns raised by Patent Owner regarding the alleged illogic associated with Petitioner's argument. However, Patent Owner simply raises attorney argument, not evidence. *See Johnston v. IVAC Corp.*, 885 F.2d 1574, 1581 (Fed. Cir. 1989) ("Attorney's argument is no substitute for evidence."); *see also In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974) (attorney argument is not evidence). In light of the facts of this case, where Petitioner's arguments are supported by testimonial evidence and prior art, such attorney argument is insufficient.

Moreover, it is of no moment that Rao teaches something that is allegedly not logical. Rao explicitly says the remote access client can be included in application 338. Even if there might be reasons why a person

having ordinary skill in the art might not want to do that, Rao is prior art for all that it teaches, even if it is illogical.[9] Without expert testimony, we are not inclined at this time to ignore such a clear teaching of the prior art.

Patent Owner also argues that Oestvall and Motemurro do not cure Rao's deficiencies. *See* Prelim. Resp. 36–39.

However, both Oestvall and Montemurro are presented in the Petition as additional support. *See* Pet. 38 (Oestvall), 40–41 (Montemurro). Because we do not rely on Oestvall or Montemurro to support Petitioner's argument, Patent Owner's arguments are moot and do not need to be addressed at this time.

c) Undisputed Limitations

Petitioner argues that Rao, Oestvall, and Montemurro (or a combination thereof) teach the remaining undisputed limitations of claim 1[10] and that a person having ordinary skill in the art would have combined the features of the prior art references. Pet. 12–16, 19–29. After reviewing Petitioner's arguments and information regarding the limitations identified above, including the McDaniel Declaration, which are not addressed by Patent Owner at this stage (*see* Prelim. Resp.), we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that the combination of Rao, Oestvall, and Montemurro teaches limitations 1pre, 1a,

[9] This is not to say that, based on the current record, we find it illogical. Instead, the point is to emphasize that even if we do find it illogical on a complete record, the prior art is still relevant for all that it teaches.

[10] The undisputed limitations are limitation 1pre, 1a, 1b, and 1c. Because Petitioner has sufficiently shown that the prior art teaches the preamble, we need not determine at this time whether the preamble is limiting. *See Nidec*, 868 F.3d at 1017.

1b, and 1c and that a person having ordinary skill in the art would have combined the teachings of the references in the manner set forth in the Petition.

d) Conclusion Regarding Claim 1

Based on the current record, there is a reasonable likelihood that Petitioner will prevail in demonstrating that claim 1 is unpatentable as obvious in view of Rao, Oestvall, and Montemurro.

5. Analysis of Claims 2–22

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the '578 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R. § 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner, especially, as in this case, when Patent Owner does not separately argue those claims. Those challenges, in our view, are best left for trial after full development of the record.

III. CONCLUSION

Following § 314, we have determined that the totality of the information presented at this stage shows there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition, and we institute on all grounds raised and all claims challenged in the Petition. Additionally, we decline to exercise our discretion under § 325(d) to deny institution.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of

claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–22 of the '578 patent on the unpatentability grounds asserted in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this Decision.

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