

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

PATENT OWNER'S PRELIMINARY 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

I. INTRODUCTION

The Board should deny institution of *inter partes* review (“IPR”) of U.S. Patent No. 9,277,433 (“the ’443 Patent”). The Petition fails to show a reasonable likelihood of unpatentability for two independent reasons.

First, the Petition contends that a POSITA would find it obvious to apply Rao’s network traffic priority policies differently based on “which of the plurality of wireless network types is to provide data communications,” as required by all challenged claims. But Rao does not remotely suggest applying policies based on determining the *wireless network type*. And the Petition gives no adequate motivation to combine theory on this point. That is because none exist: Rao’s prioritization scheme is agnostic to the wireless network type being used and would work the same way *regardless* of the network type.

Second, all challenged claims require that network activity for a first Internet access request be *aggregated* with network activity for other requests, *before* the system will allow network activity in association with the first access request. But Rao does not disclose or render obvious any aggregation requirement before network activity is allowed. Petitioner comes up with an example in which *some* packets in Rao’s stream might be considered “aggregated,” but *all* packets in the stream are always transmitted (i.e., “allowed”). This is fundamentally different from the claims, which requires aggregation *before* allowance in all instances.

Moreover, the Board should also exercise its discretion and deny institution under 35 U.S.C. § 325(d). The USPTO has already considered the same or substantially the same prior art as that presented in the Petition, and the Petition has failed to show that the Examiner materially erred during prosecution.

Ground 1A, the only ground challenging the sole independent claim of the '433 Patent, relies on only the Rao and Cole references. As the Petition admits, family members with nearly identical disclosures as Rao and Cole were before the Examiner during original prosecution. The Petition's reliance on four secondary references for certain aspects of the dependent claims does not justify institution of review. Grounds 1B-1E all rely on the Rao-Cole combination to meet the elements of the sole independent claim, and thus are cumulative for the same reasons. And in any event, the disclosure of one of the secondary references (Montemurro) was also before the Examiner during prosecution.

Accordingly, under either the merits or § 325 (d), the Board should deny institution of the Petition.

II. BACKGROUND

A. Overview of the '433 Patent

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.

More specifically, the only independent claim (claim 1) recites:

[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,

[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*.

Ex. 1001 at claim 1.¹

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).” *Id.* at 102:54-59.

Additionally, the patent teaches that aggregation of network activity from a first Internet access request with network activity from other requests from other

¹ All emphasis added unless otherwise noted.

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* 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.**”).

B. Summary of the Prosecution of the '433 Patent

Although the Petition states that “[t]he Office never considered [the references on which it relies—]Rao, Cole, Freund, Singh, or Montemurro” (Pet. at 5), the Examiner considered family members to the Rao (Ex. 2003) and 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. 2005) 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).

The family member or issued patent each has only negligible differences when

compared with the corresponding reference relied upon by the Petition, with such differences having no consequence to the invalidity theories presented by the Petition. 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).

III. LEVEL OF ORDINARY SKILL IN THE ART

The Petition proposes that a POSITA in the 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.” Ex. 1003 ¶18; *see* Pet. at 13 n.2 (citing Ex. 1003 ¶¶17-18). For purposes of this preliminary response, Patent Owner does not challenge the proposed definition.

IV. CLAIM CONSTRUCTION

The Petition states that “Petitioner submits that no formal claim constructions are necessary.” Pet. at 2. For purposes of this preliminary response only, Patent Owner agrees that no formal claim construction is necessary.

V. THE BOARD SHOULD DENY INSTITUTION ON THE MERITS

The Petition fails to show that Rao in view of Cole (Rao-Cole) renders obvious claim limitations [1.6] and [1.7] of the '433 Patent. For either independent reason, the Petition cannot prove that that claim 1 is unpatentable. Because all other challenged claims depend from claim 1, institution should be denied.

A. Rao-Cole Fails to Render Obvious Claim Limitation [1.6].

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

Claim 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.*” Ex. 1001 at 102:54-59. This allows the system to implement control policies tailored to the network type, 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).” *Id.*

The Petition presents two theories for how claim limitation [1.6] is met. First, it asserts that Rao alone “teaches or renders obvious” this limitation. Pet. at 28-29. Second, and in the alternative, the Petition contends that Rao-Cole renders the limitation obvious. *Id.* at 29-30. Both theories fail.

1. 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.”

a. The Petition’s arguments implicate two distinct categories of protocols.

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 calls “network interface protocols.” Pet. 28-29. These “network interface protocols,” according to the Petition, include GSM, CDMA, and 802.11 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. As such, the Petition contends that these protocols indicate wireless network type. Rao does not mention GSM or CDMA, and only mentions 802.11 in the background. Ex. 2005 ¶[0095].

A second, and distinct, category of protocols are protocols used by applications to package information into a series of bits, which this response refers to 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, e.g.*, Ex. 1005 ¶¶[0051], [0077], [0192]), and the Petition does ***not*** allege that these protocols indicate wireless network type. Furthermore, 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. *Id.* ¶¶[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).

b. The Petition's theory fails because Rao does not disclose *network interface* protocols being used to apply Internet activity access controls.

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.”

The Petition 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. More specifically, with respect to limitation [1.7], the Petition alleges that the application of these access controls involves “storing network packets to a queue and determining the queued network packets are ‘associated with a first application of the client,’” and determining a “priority for the ... queued network packet” based on characteristics of the issuing application. *Id.* at 30-31.

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

[B]ecause 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.

Id. at 29.

The “logic” of the Petition’s theory has the following structure:

- **Premise #1:** Rao teaches that policies can be applied based on network interface protocols.
- **Premise #2:** Network interface protocols indicate wireless network types.
- **Therefore,** Rao teaches determining whether to apply Internet activity access controls based on network type.

This logical leap of the Petition, however, fails from the very first premise. As an initial matter, Rao *does not* teach that “policies can be applied based on network *interface protocols*.” The “*network interface* protocols” (such as GSM or CDMA) that the Petition purports to rely upon 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 id.* at 28. However, these “*network interface* protocols,” which determine how information is

communicated through a network interface, are distinct from the application protocols such as UDP, RTP, RDP, and ICA, which as discussed above do not indicate the network type. *See supra* § V.A.1.a.

And while paragraphs [0104] and [0182] of Rao (on which the Petition relies for the assertion that Rao teaches applying policies “based on network interface protocols”—*see* Pet. at 28-29) 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* Ex. 1005 ¶¶[0104], [0182] (no mention of any network interface protocols). Instead, in the instances where Rao ***does*** provide detail about the “protocols” used to determine communication priorities, Rao only teaches prioritizing on the basis of the network-agnostic protocols used by applications, such as RTP, UDP, ICA, and RDP, 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, on which the Petition itself relies, makes clear that prioritization is based on these types of ***application*** protocols, rather than network-

interface protocols such as CDMA or 802.11.² *Id.* ¶[0182] (“[T]he policies 520 may be specified in accordance to the type of one or more protocols *used by the applications*”). In short, the Petition 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.

Because Rao does not teach or render obvious applying policies on the basis of network interface protocols (which can indicate a wireless network type), the Petition’s theory premised on that assumption collapses. In short, the Petition simply provides no evidence that Rao teaches or renders obvious applying policies on the basis of any protocols that would indicate the type of wireless network being used.

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

² Notably, “applications” typically do not use network interface protocols such as CDMA or GSM, because an application will use an application-level protocol such as RTP or UDP and then the network driver will package the data from those application-level protocols into an appropriate transmission over the appropriate network, such as WLAN, WWAN, LAN, or WAN.

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.” *Id.* ¶[0080]. In other words, Rao 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. And 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. Instead, given the nature of Rao’s system, it would be far more 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.³

³ By way of 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 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.

The Petition also cites (but does not explain) the opinions of its expert Dr. McDaniel. *See* Pet. at 28-30 (citing Ex. 1003 ¶¶105-109). But those opinions largely repeat the Petition, offer no additional evidence or explanation, and fail for the same reasons. *Compare* Pet. at 28-29, *with* Ex. 1003 ¶¶105-107. The only additional argument Dr. McDaniel makes is about paragraph [0081] of Rao. Ex. 1003 ¶108. 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.

This assertion fails. The example 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 that the network connection has is available or not. 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. 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, as shown by the full context of the Rao sentence he 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)." Ex. 1005 ¶[0081].

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 (regardless of the specific network "type").

Indeed, even if Rao *did* explicitly apply access controls differently between a wired and wireless network as Dr. McDaniel implies (it does not, for the reasons discussed 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,” and applying access controls differently between a “wired” network and a “wireless” network would not itself satisfy this requirement because it would not require a determination based on *which of a plurality of wireless* network types is in use.

In conclusion, the Petition fails to provide any evidence that Rao discloses or renders obvious determining which policies to apply on the basis of wireless network type, and the corresponding expert declaration does not cure this deficiency.

2. The Petition’s “alternative” reliance on Cole is insufficient and fails to support obviousness.

For claim limitation [1.6] the Petition presents an alternative theory that “[t]o the extent that Rao alone does not render this element obvious, RCD does.” Pet. at 29. But despite purporting to rely on the combination of Rao and Cole, the Petition makes no developed argument based on the combination or how it would allegedly render claim limitation [1.6] obvious. Rather, the Petition presents only a cursory paragraph about Cole’s disclosures and asserts that Cole “teaches” this limitation.

The Petition contends that “Cole describes searching for a different network when performing a lengthy file transfer while on a 3G-type network, ‘which consumes significant battery power.’” *Id.* at 29-30 (citing Ex. 1006 ¶[0088]). Thus, the Petition asserts, “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.* at 30.

This fails. There is no evidence or explanation for how “asking the user to find a better connection” when a download consumes significant battery power (i.e., the alleged “Internet activity access control[.]”) constitutes 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.”

As an initial matter, there is no evidence that the alleged “Internet access control” of Cole—asking a user to find a better connection when a download consumes significant battery power—is determined “based at least on which of the plurality of wireless network types is to provide data communication.” Cole does not disclose that this request to the user would be based on network type. Instead, Cole

teaches that the download proceeds over the network until the download is observed to “consume[] significant battery power,” and the request is issued on that basis. *See* Ex. 1006 ¶[0088]; *see also id.* ¶[0087] (“determin[ing] if an acceptable network is available” “may entail determining if sufficient batter[y] power is present to complete the transaction”). Cole does not disclose that the connection *type*, separate from the observed battery consumption resulting from Internet usage, forms the basis for requesting whether the user wants to search for a better connection. Rather, Cole teaches that 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). *Compare id.* ¶[0088] (asking the user to find a better connection in response to a download over a WWAN modem consuming significant battery power) *with id.* ¶[0089] (asking the user if a download over WLAN modem “should be deferred (i.e., no better connection is available)” when a user “does not want the transfer [over a WLAN modem to] consume battery power”). In both of these examples, the request is initiated based on noticing the load from the connection is consuming battery power, and is not disclosed to be based on which wireless network type is used.

An independent reason why the Petition’s theory with respect to Cole fails is that “asking” a user to take certain action does not meet the plain meaning of “applying” an “access control”—at most, it is *requesting* that the user herself apply

a particular control (switching network connections). The request itself is not an action that “control[s]” Internet access, separate from any control actions the user might take in response to that request.⁴

This is even more apparent when one considers the broader context of claim 1, which requires “one or more *processors configured to* ... apply the one or more

⁴ The Petition does not allege, and Cole does not disclose, that “ask[ing] the user to find a better connection” causes any change in application behavior, separate from actions the user might optionally take. To the contrary, Cole teaches that the user is not required to take any action in response to requests. Specifically, Cole teaches that its system may “communicate[] with the user ... to determine if the user can take any steps to make a better connection available” (Ex. 1006 ¶[0079]), but that this “interaction with the user” may not be “successful in making a better communication link available (*id.* ¶[0080]). In other words, the user declined to make a better connection available. In this scenario, the system *still* does not take any access control action, and will instead “quer[y] the user to determine if certain bandwidth activities should be aborted.” *Id.* In response, the user can optionally direct certain activities to be aborted. *See id.* (“When *the user* directs the connection manager 260 to abort an application, the user may specify the time period for the re-execution or the reminder”).

Internet activity access controls.” Application of the one of at least one Internet activity access controls must thus be automatically performed by a processor that is configured to perform that application, and cannot be satisfied by a *user* applying Internet access controls in response to a user interface prompt.

The Petition’s theory that Cole “teaches applying Internet access controls (asking the user to find a better connection)” based on wireless network type (*see* Pet. at 29-30) is also inconsistent with the Petition’s theory regarding limitation [1.7], which limitation 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.” Specifically, the Petition’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* the Petition 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).

Petitioner's expert likewise alleges only "asking the user to find a better connection" constitutes applying "Internet access controls" (*see* Ex. 1003 ¶109), and he provides no further explanation beyond the conclusory allegations in the Petition as to why this request for user action constitutes applying an Internet access control or is based on which of a plurality of wireless network types is being used. *See Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper No. 9 at 15 (Aug. 24, 2022) (precedential) (denying institution and giving "little weight" to "cited declaration testimony [that] is conclusory and unsupported" and "adds little to the conclusory assertion for which it is offered to support"). And while the final two sentences of paragraph 109 of the expert declaration provide further citations to Cole, Petitioner's expert provides no allegation or explanation of how these relate to the alleged embodiment of "asking a user to find a better connection" that is alleged to be the claimed applying of Internet access controls, or the claim language more generally. Ex. 1003 ¶109 (final two sentences, citing Ex. 1006 ¶¶[0077]-[0078]).

To the extent those two sentences constitute a theory that something in Cole other than "asking a user to find a better connection" constitutes the claimed application of Internet access controls, that theory is not present in the Petition and is not properly at issue. *See* 37 C.F.R. § 42.6(3) ("Arguments must not be incorporated by reference from one document into another document."); *see 3M Co. v. Evergreen Adhesives, Inc.*, 860 F. App'x 724, 728 (Fed. Cir. 2021) (affirming

Board's conclusion that arguments present only in expert declaration were not properly at issue). In any event, those sentences do not provide any indication action would be 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 in the final two sentences of Dr. McDaniel's paragraph 109 is taken "in response to a monitored load exceeding a capacity threshold," which is not shown or even alleged to have anything to do with the type of wireless network. Ex. 1003 ¶109.

In sum, the Petition fails to provide any evidence that Cole cures the deficiencies of Rao in disclosing or rendering obvious determining which policies to apply on the basis of which of a plurality of wireless network types is being used, and the corresponding expert declaration does not cure this deficiency.

B. Rao-Cole Fails to Render Obvious Claim Limitation [1.7].

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.

Claim limitation [1.7] describes what happens “when” Internet activity access controls “are to be 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.” Thus, claim 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, claim 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.

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 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.”). In other words, in the claimed invention

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”).

The Petition asserts that “RCD renders [1.7] obvious.” Pet. at 30. But despite purporting to rely on the combination of Rao and Cole, the Petition relies exclusively on Rao for this limitation. *See id.* at 30-33. Tellingly, the Petition’s discussion of claim limitation [1.7] never mentions Cole or contains any citations to Cole. *Id.*

The Petition’s theory relies heavily on Rao’s system for priority-based queuing of network packets. The Petition asserts that a POSITA would have been motivated to implement Rao’s system with “non-starvation” using Weighted Fair Queueing (WFQ). *Id.* at 32. “In such non-starvation techniques,” the Petition 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.” *Id.* at 33. Thus, according to the Petition:

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.

This fails. Rao's system for priority-based queuing of packets is materially different from—and fails to satisfy—claim limitation [1.7] because the Petition fails to show that Rao meets the conditional aspect of the limitation. Specifically which, for each request, requires the claimed aggregation to occur *before* network activity is allowed for that request. In other words, claim limitation [1.7] **disallows** network activity for a request **unless** network activity for that request is aggregated with network activity for other requests from other applications.

Rao's system does not do that all. Fundamentally, 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 the Petition itself. The Petition 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.” *Id.* For illustrative purposes, assume that this is a stream of 1,000 packets.

In Rao, the Petition alleges “a first Internet access request” corresponds to a packet. Now consider how Rao's system processes the 1,000 packets in the Petition's

example. Assuming that no other network activity for other access requests is being processed by Rao's system, the alleged aggregation of network activity associated with access requests by different applications does not occur, even under the Petition's own theory. This is because in that scenario, network activity for those packets is *not* aggregated with network activity for other packets from other applications at all. Nevertheless, in that scenario, network activity for each of the 1,000 packets would still be allowed without any aggregation or delay ever being required—after all, the Petition does not allege, and Rao does not teach, that any packet should *not* be transmitted under those circumstances. This demonstrates that in Rao, the system is not “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” as required by claim 1—rather, 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.

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 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.

VI. THE BOARD SHOULD DENY INSTITUTION UNDER § 325(d)

The Board should exercise its discretion under 35 U.S.C. § 325(d) to deny institution. The Board “may take into account whether, and reject the Petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). As the Board explained in *Advanced Bionics LLC v. Med-El Elektromedizinische Gerate GmbH* (“*Advanced Bionics*”):

[U]nder § 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 the first part of the framework is satisfied, whether the Petition has demonstrated that the Office erred in a manner material to the patentability of the challenged claims. If a condition in the first part of the framework is satisfied and the Petition fails to make a showing of material error, the Director generally will exercise discretion not to institute inter partes review.

IPR2019-01469, Paper No. 6 at 8-9 (PTAB Feb. 13, 2020) (precedential). “If reasonable minds can disagree regarding the purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to patentability. At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.” *Id.* at 9.

“In evaluating whether to exercise our discretion when the same or substantially the same prior art or arguments previously were presented to the Office under section 325(d), we have weighed some common *non-exclusive* 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 relied 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 & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper No. 8 at 17-18 (§ III.C.5) (PTAB Dec. 15, 2017) (“*Becton, Dickinson*”) (informative, precedential as to § III.C.5). “If, after review of factors (a), (b), and (d), it is determined that the same or substantially the same art of 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* at 10.

A. *Advanced Bionics* Step 1 (*Becton, Dickinson* Factors (a), (b), and (d)): The same or substantially the same prior art was previously presented to the USPTO.

The Petition contains five alleged grounds of invalidity: (1) an obviousness ground based on Rao and Cole (Ground 1A, for claims 1-3, 6, 10, 11, 13, 14, and 17); (2) an obviousness ground based on Rao and Cole in further combination with Freund (Ground 1B, for dependent claims 2, 3, 5, 7-9, and 16); (3) an obviousness

ground based on Rao and Cole in further combination with Singh (Ground 1C, for dependent claims 2 and 4); (4) an obviousness ground based on Rao and Cole in further combination with Montemurro (Ground 1D, for dependent claims 12 and 20); and (5) an obviousness ground based on Rao and Cole in further combination with Gandhi (Ground 1E, for dependent claims 15, 18, and 19). *See* Pet. at 1. As claim 1 is the sole independent claim of the '433 Patent (*see* Ex. 1001 at 105:45-106:6), only Ground 1A challenges any independent claims. And each of the other four Grounds 1B-1E simply rely on the same art as Ground 1A (Rao and Cole), with additional secondary references only relied upon for certain elements of dependent claims. *See* Pet. at 46-74.

1. Rao and Cole are cumulative of and substantially the same as nearly identical family members considered by the Examiner during prosecution.

As noted above, Rao and Cole are the only references on which the Petition relies for the '433 Patent's sole independent claim. The Petition admits that a "relative of Rao ... (PCT application WO 2006/012610A2 ('Rao-2') ...) w[as] cited on the face of the '433 Patent." Pet. at 75; *see also* Ex. 1001 at 10 (listing Rao-2 in the "References Cited" section). A comparison of Rao (Ex. 1007) and Rao-2 (Ex. 2003) reveals that aside from formatting differences and some additional introductory material in Rao-2, there is no difference between these two family members—Rao-2 contains all of the same disclosures as Rao plus a small amount of

additional content. *See* Ex. 2004. Rao and Rao-2 also share the same set of patent figures. *Compare* Ex. 1007 at Figs. 1-6 *with* Ex. 2003 at Figs. 1-6.

Similarly, the Petition also admits that a “relative[] of ... Cole (... U.S. Pub. No. 2008/0080457 ('Cole-2')) w[as] cited on the face of the '433 Patent.” Pet. at 75; *see also* Ex. 1001 at 8 (listing Cole-2 in the “References Cited” section). And again, a comparison of Cole (Ex. 1005) and Cole-2 (Ex. 2001) reveals very few and only minor differences in the text of the two documents—only the Abstract and three out of 155 paragraphs have any differences at all. *See* Ex. 2002. Cole and Cole-2 also have the same eleven figures. *Compare* Ex. 1005 at Figs. 1-11 *with* Ex. 2001 at Figs. 1-11.

The Petition does not even mention, let alone explain, why any alleged differences between Rao and Rao-2, or between Cole and Cole-2, are relevant here. Rather, the Petition alleges that “there is no evidence that the Office substantively considered these references.” Pet. at 75. But the prosecution history makes clear that the Examiner considered Rao-2 and Cole-2 because the Examiner placed a copy of the IDSs containing these references in the file history, with an electronic signature next to the statement “All references considered except where lined through,” with no line through either Rao-2 or Cole-2. *See* Ex. 1002 at 258, 270.

To the extent Petitioner intends to argue that citation of art on an IDS is insufficient to support denial under Section 325(d), the Petition cites no authority for

this argument (*see* Pet. at 75), and indeed, this argument is contrary to the precedential *Advanced Bionics* decision and its progeny: “***Previously presented art includes art*** made of record by the examiner, and art provided to the Office by the applicant, such as ***on an Information Disclosure Statement (IDS)***, in the prosecution history of the challenged patent.” *Advanced Bionics* at 8; *see also, e.g., Biocon Pharma Ltd. v. Novartis Pharms. Corp.*, IPR2020-01263, Paper No. 12 at 9 (PTAB Feb. 16, 2021) (“[W]e accept that the Examiner considered [the prior art reference] because it is listed on the IDS and the Examiner signed the IDS with the statement ‘all references considered except where lined through.’”); *Vital Connect, Inc. v. Bardy Diagnostics, Inc.*, IPR2023-00381, Paper No. 7 at 14 (PTAB July 11, 2023) (Because “Oster was listed in an information disclosure statement (IDS),” “appears on the face of the [challenged patent],” and “[t]he examiner also certified that he considered all references listed in the IDS ‘except where lined through,’ and Oster is not lined through,” “[t]here can be no dispute that Oster was before the Office.”), *Director review denied*, Paper No. 9 (PTAB Oct. 3, 2023); *see also id.* at 15-16 (holding the same for a family member of a reference asserted in the petition, and finding the reference asserted in the petition cumulative of the family member); *see also, e.g., Eyenovia, Inc. v. Sydnexus*, IPR2022-00963, Paper No. 7 at 10-11 (PTAB Nov. 8, 2022) (“*Eyenovia*”) (Because “references appear in the references cited section of the [challenged] patent and were identified in Information Disclosure

Statements ('IDSs') during prosecution[,] ... these references were 'previously presented' for the purposes of assessing the application of discretion under 35 U.S.C. § 325(d)."); *BMW of N. Am., LLC v. Stragent, LLC*, IPR2021-00419, Paper No. 14 at 12-13 (PTAB July 19, 2021) (exercising discretion to deny institution under § 325(d) in part because relied-upon prior art was cited on an IDS), *reh'g denied*, Paper No. 21 at 5 (PTAB Mar. 21, 2022); *Vovomart (HK) Enters. Co. v. Office Kick, Inc.*, PGR2022-00048, Paper No. 14 at 9 (PTAB Jan. 12, 2013) (same), *reh'g denied*, Paper 16 (PTAB Mar. 9, 2023); *Microsoft Corp. v. AlmondNet, Inc.*, IPR2022-01319, Paper No. 9 at 8, 10 (PTAB Jan. 30, 2023) ("*AlmondNet*") (same), *POP request denied*, Paper No. 13 (Mar. 24, 2023), *reh'g denied*, Paper No. 14 (PTAB Apr. 23, 2023).

And to the extent that Petitioner intends to argue that, to support denial under Section 325(d), the same or substantially the same art needs to be part of a prior art rejection in an Office Action during prosecution, the Petition likewise cites no authority for this argument. *See* Pet. at 75. And the Board has held to the contrary: "[T]here is no requirement that Examiner needs to rely on a reference in a rejection during prosecution in order for the reference to be 'considered' during prosecution." *Ivantis, Inc. v. Sight Sciences, Inc.*, IPR2022-01530, Paper No. 14 at 17 (PTAB Mar. 27, 2023); *see also, e.g., Palo Alto Networks, Inc. v. Centripetal Networks, Inc.*, IPR2021-01156, Paper No. 10 at 13-14 (PTAB Jan. 24, 2022) (rejecting argument

that “the first part of the *Advanced Bionics* framework is not met because [the prior art was] not substantively discussed or applied in a rejection during prosecution” because “[u]nder the Board’s precedent in *Advanced Bionics*, however, ‘[p]reviously presented art includes ... art provided to the Office by an applicant, such as on an [IDS]’”) (quoting *Advanced Bionics* at 7-8), *POP request denied*, Paper No. 13 (PTAB Mar. 16, 2022), *reh’g denied*, Paper No. 14 (PTAB May 5, 2022).

In sum, because Rao-2 and Cole-2 were previously presented to the Office, and Rao and Cole are cumulative of Rao-2 and Cole-2, respectively, substantially the same art as Rao and Cole has already been presented to the Office.

2. The Petition’s reliance on secondary references only for certain limitations of dependent claims in Grounds 1B-1E does not counsel against denial of institution.

The Board has held that “Petitioners’ citation of references not considered by Examiner solely for ‘additional subject matter of certain dependent claims[] is insufficient to persuade us that exercising our discretion under 35 U.S.C. § 325(d) is inappropriate.’” *See, e.g., Miltenyi Biomed. GmbH v. Trs. of Univ. of Pa.*, IPR2022-00853, Paper No. 11 at 45 (PTAB Oct. 11, 2022) (“*Miltenyi*”) (quoting *Kayak Software Corp. v. Int’l Bus. Machs. Corp.*, CBM2016-00075, Paper No. 16 at 10 (PTAB Dec. 15, 2016) (informative)) (alteration in original), *reh’g denied*, Paper No. 18 (PTAB Feb. 17, 2023). Therefore, it is of no event whether or not the Petition relies on non-cumulative disclosures from Freund, Singh, Montemurro, and Gandhi

for its analysis of dependent claims for the simple reason that if the independent claim is valid then so are the dependent claims. *See AlmondNet* at 8, 11 (denying institution under Section 325(d) even though the Narin reference, which was not before the Examiner, was applied by the Petition for certain dependent claims, and noting that patent owner argued that “whether or not Narin discloses certain limitations of [a] dependent claim ... would have made no difference to the Examiner’s analysis, and it is therefore unnecessary to evaluate the questions of what Narin discloses or whether Narin was of record”). It is therefore unnecessary to evaluate the questions of what Freund, Singh, Montemurro, and Gandhi disclose in the context of these dependent claims or whether these references were of record. *See, e.g., Miltenyi* at 45; *AlmondNet* at 8, 11.

Nevertheless, despite “ha[ving] the burden of proof to establish that it is entitled to the relief requested,” the Petition does not even mention Freund, Singh, Montemurro, or Gandhi in its Step 1 analysis, let alone present any evidence or argument addressing whether these references were before the Examiner, or whether these references are not otherwise substantially the same as prior art considered by the Examiner during prosecution. *See* Pet. at 74-75; *EcoFasten Solar, LLC v. Unirac, Inc.*, IPR2021-01379, Paper No. 11 at 38-39 (PTAB Feb. 8, 2022). Indeed, Montemurro’s disclosure was in fact considered during prosecution by the Examiner. The patent that issued from the Montemurro application on which the

Petition relies is listed on an IDS in the file history, with an electronic signature next to the statement “All references considered except where lined through,” with no line through Montemurro. Ex. 1002 at 267 (listing U.S. Patent No. 8,825,109 to Montemurro et al. (“Montemurro Patent”)); *see* Ex. 1001 at 7 (listing the Montemurro Patent in the “References Cited” section); *see, e.g., Advanced Bionics* at 7-8. As would be expected, there are very few differences between the disclosures of the Montemurro Patent (Ex. 2005) and the published application from which that patent issued (Ex. 1009), with differences limited to formatting and an additional parenthetical in the issued patent explaining that “store 200” is “an example of a computer readable storage medium.” *See* Ex. 2006. Montemurro’s disclosure was therefore considered by the Examiner during prosecution.

* * *

Because the Petition relies only on references for the sole independent claim that have substantially the same relevant disclosures as references presented to the Office and considered by the Examiner, the first part of the *Advanced Bionics* framework is satisfied. *See Advanced Bionics* at 20 (“As discussed above, we determine that the ‘same or substantially the same prior art’ was previously presented to the Office. Accordingly, the first condition of the first part of the framework is satisfied, and we need not reach whether the ‘same or substantially the same arguments’ previously were presented to the Office.”).

**B. *Advanced Bionics Step 2 (Becton Dickinson Factors (c), (e), and (f)):*
Petitioner has made no showing of material examiner error.**

Although the Petition admits that family members of Rao and Cole were before the Examiner during prosecution, and does not identify any material differences between the family members and the references on which it relies, the Petition fails to make any non-conclusory allegations concerning Examiner material error. *See* Pet. at 75-76.

The Petition simply alleges in conclusory fashion that “the Examiner clearly did not appreciate Rao’s or Cole’s disclosures and how those references in combination with other prior art references not previously before the Office (Freund, Singh, Montemurro, and Gandhi) render the Challenged Claims obvious.” *Id.* at 75. As for Rao and Cole, “[a]lthough there was no rejection issued over the particular references cited in the Petition, these references were either before the Examiner ... or are cumulative of references ... before the Examiner. There is no evidence that suggests the Examiner overlooked the most pertinent teachings in the art presented during prosecution.” *Eyenovia* at 19 (denying institution in part because the petition failed to demonstrate that the Examiner materially erred); *see also Gator Bio, Inc. v. Sartorius Bioanalytical Instruments, Inc.*, IPR2023-00215, Paper No. 19 at 21 (PTAB June 20, 2023). As for the other four references mentioned here, the Petition only relies upon those references for certain aspects of dependent claims, which does

not impact the Section 325(d) analysis. *See supra* § VI.B. And as explained above, and contrary to the Petition's representation here, the disclosure of one of these references (Montemurro) was in fact considered during prosecution.

Finally, although not necessary for the Board to exercise its discretion and deny institution under Section 325(d), the Examiner did not err. As explained above, the Petition relies almost exclusively on Rao as meeting claim 1 of the '433 Patent (the only independent claim challenged in this Petition). But Rao is directed to priority-based queuing of packets and does not teach the network activity control policies claimed by the '433 Patent. For example, Rao does not teach Internet activity access controls based on wireless network type (as required by claim limitation [1.6]). Nor does Rao teach applying access controls to disallow network activity from certain applications unless it is aggregated with network activity from other applications (as required by claim limitation [1.7]). The weak merits of the Petition, which relies on the same or substantially the same art as was before the Examiner, is a further indication of lack of Examiner error, let alone material error.

* * *

Because the Petition presents only the same and substantially the same prior art as previously presented during prosecution, and because the Petition fails to meet its burden of showing of material error by the USPTO, Patent Owner respectfully requests that the Board exercise its discretion and deny institution under

35 U.S.C. § 325(d). *See Advanced Bionics* at 9 (“If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review.”).

VII. CONCLUSION

Patent Owner respectfully requests that the Board deny institution for either or both of two independent reasons. First, each of the Petition’s grounds fails on the merits. Second, the Board should deny institution because the same or substantially the same prior art was presented to the USPTO during prosecution, and the Petition has failed to show any material error by the Examiner.

Date: December 22, 2023

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CERTIFICATION REGARDING WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), I certify that there are 9,201 words in the paper excluding the portions exempted under 37 C.F.R. §42.24(a)(1).

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(1), I certify that the above document was served on December 22, 2023, by filing this document through the Patent Trial and Appeal Case Tracking System as well as delivering a copy via electronic mail upon the following attorneys of record for the Petitioner:

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