

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD.,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

Case IPR2023-01157
Patent 11,405,224 B2

PATENT OWNER'S RESPONSE TO THE PETITION

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Cases

<i>Adidas AG v. Nike, Inc.</i> , 963 F.3d 1355 (Fed. Cir. 2020).....	5, 15
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PATENT OWNER’S EXHIBIT LIST

No.	Description
Ex. 2001	U.S. Patent Application Publication No. 2008/0080457 to Cole (“Cole-2”)
Ex. 2002	Redline of the text of Cole (Ex. 1005) and Cole-2 (Ex. 2001)
Ex. 2003	International Publication No. WO 2006/012610 to Rao et al. (“Rao-2”)
Ex. 2004	Redline of the text of Rao (Ex. 1007) and Rao-2 (Ex. 2003)
Ex. 2005	U.S. Patent Application Publication No. 2007/0157203 to Lim (“Lim”)
Ex. 2006	Declaration of Dr. Zygmunt J. Haas in Support of Patent Owner’s Response
Ex. 2007	<i>Curriculum vitae</i> of Dr. Zygmunt J. Haas
Ex. 2008	April 22, 2024 deposition transcript of Patrick Gerard Traynor, Ph.D.

I. INTRODUCTION

The Petition's theory of obviousness relies on a theory that it would have been obvious to apply a packet capture mechanism to schedule application activity. However, as Dr. Haas explains, what the Petition proposes as "obvious" was a novel solution that utilizes a packet capture mechanism not for its *established function*, but instead changes the principle of operation of the packet control mechanism to use it in a way that fundamentally changes the principle of operation of that mechanism. *See* Ex. 2006 ¶¶39-44. The fact that this proposal was *not* obvious is highlighted by the fact that there is no evidence that *any* system or reference that proposed or implemented using a packet capture mechanism in this manner, either before *or* in the intervening 15 years after the priority date of the '224 Patent. Ex. 2006 (Haas Decl.) ¶45; *cf. Leo Pharm. Prod., Ltd. v. Rea*, 726 F.3d 1346, 1356 (Fed. Cir. 2013) ("Indeed this considerable time lapse suggests instead that the Board only traverses the obstacles to this inventive enterprise with a resort to hindsight.").

In other words, in its quest to invalidate the '224 Patent, the Petition quite literally invents a new technique that there is no record of ever having been proposed until the filing of the Petition itself. The fact that Petitioner needs to *invent* an entirely new technique to arrive at the challenged claims is strongly suggestive of hindsight bias. Petitioner's reliance on its litigation-inspired invention (which modifies the established functions of prior art components) for obviousness is

directly contrary to controlling Federal Circuit precedent. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (“[A] court must ask *whether the improvement is more than the predictable use of prior art elements according to their established functions.*”).¹

Nor does the Petition establish a reasonable expectation of success. Although the Petition relies heavily on supposedly “known techniques” for achieving its novel modification, there were *no* known techniques for using a packet capture mechanism to schedule application activity as the Petition proposes.

II. LEVEL OF ORDINARY SKILL IN THE ART

The Petition proposes that a POSITA in the field of the '224 Patent “would have had (1) at least a bachelor’s degree in computer science, electrical engineering, or related field, and (2) three to five years of experience with networking, power consumption of networked computing devices, and/or wireless digital communications systems. Additional graduate education could substitute for professional experience, and *vice versa.*” Pet. at 3 (internal citation omitted).

Patent Owner believes that Petitioner’s stated level of skill is too vague. For example, it is unclear why Petitioner proposes “three to five years of experience,” when three years of experience plainly qualifies a person as a POSITA under

¹ Unless otherwise indicated, all emphases herein are added.

Petitioner’s definition. And Petitioner’s proposal that “[a]dditional graduate education could substitute for professional experience, and *vice versa*” also lacks clarity. *See Nespresso USA, Inc. v. K-Fee Sys. GmbH*, IPR2022-01574, Paper No. 9 (PTAB Apr. 10, 2024). (“As for [the contention] that ‘[a]dditional education might substitute for some of the experience, and substantial experience might substitute for some of the educational background,’ we find that this characterization is too vague.”).

For purposes of this response, Patent Owner agrees that a person having a bachelor’s degree in computer science, electrical engineering, or a related field, plus at least three years of experience with networking, power consumption of networked computing devices, and/or wireless digital communication systems qualifies as a POSITA. The three years of additional experience can be in either a professional setting or a research setting. *See* Ex. 2006 ¶27.

III. CLAIM CONSTRUCTION

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

IV. LEGAL STANDARDS

The Supreme Court has made clear that in evaluating whether a claimed invention is obvious, the question is not whether the prior art could have been

combined in *some* manner to achieve an “improvement.” Rather, “a court must ask *whether the improvement is more than the predictable use of prior art elements according to their established functions.*” *KSR*, 550 U.S. at 417. In other words, the *KSR* court held that beneficial modifications to the prior art are not obvious unless the combination of prior art components is consistent with the “established functions” of those components. *Id.*

The purpose of inventions is to provide some benefit over the prior art; the Patent Act presumes that *all* patentable inventions will have some articulable benefit. *See* 35 U.S.C. §101 (“Whoever invents or discovers any new *and useful* process, machine, manufacture, or composition of matter... may obtain a patent therefor, subject to the conditions and requirements of this title.”). And as *KSR* recognized, “inventions in most, if not all, instances rely upon building blocks long since uncovered, and *claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.*” 550 U.S. at 419; *see also Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 411 F.3d 1332, 1337 (Fed. Cir. 2005) (emphasizing “the value of combining various existing features or principles *in a new way to achieve a new result,*” and stating that such combination is “often the essence of invention”). Accordingly, it cannot be the case that any combination of known elements would be obvious so long as that combination arrives at *some* articulable benefit. Such a rule would open the floodgates to hindsight bias (and

invalidate nearly all patented inventions upon a sufficiently creative theory by a patent challenger), because “almost of necessity” an invention is a combination of what is already known, and litigants will nearly always be able to articulate *some* benefit to a given combination with the benefit of hindsight.

Thus, the *KSR* Court made abundantly clear that in evaluating whether a claimed invention is obvious, the question is ***not*** whether the prior art could have been combined in ***some*** manner to achieve some articulable “improvement.” Instead, the Court imposed an important limitation on the obviousness inquiry: “a court must ask *whether the improvement is **more** than the predictable use of prior art elements according to their established functions.*” 550 U.S. at 417. In other words, so long as there is some identifiable improvement to a combination of prior art elements according to their established functions, a finding of obviousness is typically appropriate. However, when a combination requires ***more*** than using prior art elements according to their established functions, that combination is not obvious even if there is some articulable “improvement” to the combination. *Id.*

The Federal Circuit has consistently applied this principle, noting that “a change in a reference's ‘principle of operation’ is unlikely to motivate a person of ordinary skill to pursue a combination with that reference.” *See, e.g., Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App'x 755, 758–59 (Fed. Cir. 2015); *Adidas AG v. Nike, Inc.*, 963 F.3d 1355, 1359 (Fed. Cir. 2020) (affirming PTAB’s decision

not finding obviousness where a proposed modification would “change the principles under which [the prior art] operates”). Ensuring that combinations of prior art elements actually use those elements *according to their established functions* is important in evaluating whether the combination could have been derived without having to invent new and innovative functionality for existing components, because creation of new and innovative functionality is the purview of *invention*, not *obviousness*.

V. THE PETITION FAILS TO ESTABLISH THE OBVIOUSNESS OF ITS PROPOSED COMBINATION.

The Petition relies on a combination of three separate references in its allegation of obviousness for independent claim 1 of the '224 Patent. Most relevant here, the Petition relies on the base reference Cole, in combination with (inter alia) Rao for its teachings regarding a packet capture mechanism and frame monitor. Although Rao uses its packet capture mechanism and frame monitor to provide quality of service (“QoS”) functionality by influencing transfer of network traffic on a packet-by-packet level of granularity, the Petition uses Rao’s packet capture mechanism and frame monitor for a different purpose: scheduling application activity within the application layer of a mobile device. Ex. 2008 (Traynor Dep. Tr.) at 19:1-15 (“I agree that, again, Rao is looking at the packet level and that Cole and D’Amore are looking at the application level.”); *id.* 30:25-31:13 (explaining Dr.

Traynor’s process in arriving at “this idea of combining a frame monitor into a connection manager within a mobile device to schedule application-layer activity”).

Petitioner’s expert admitted that “use of packet information to schedule application activity at the application layer” is a “very high level” proposal. Ex. 2008 21:11-23. However, despite this proposal being made at a very high level, Dr. Traynor was unable to identify *any* references or systems that actually disclosed or utilized such a proposal.

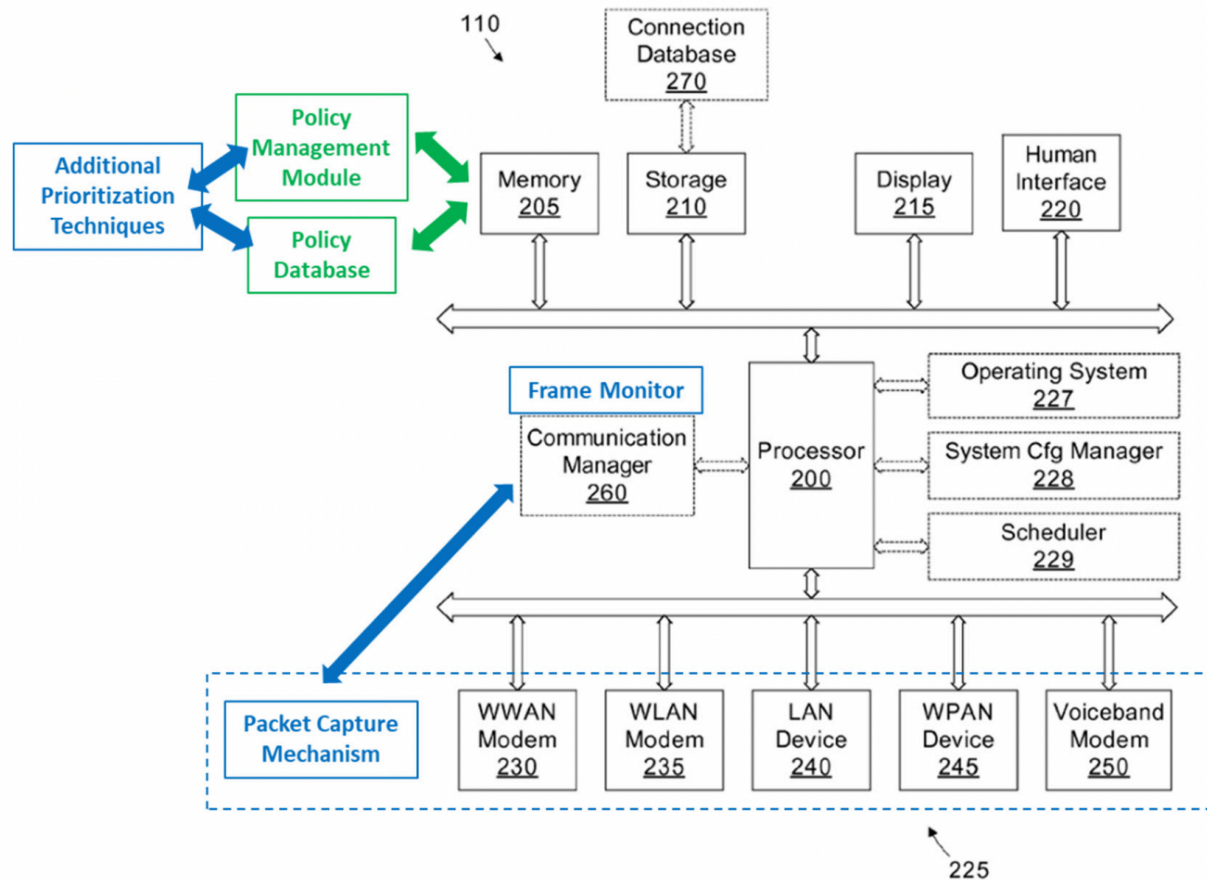
The reason that Dr. Traynor was unable to identify any art that proposes doing what he contends would have been obvious to a POSITA is because POSITAs do not routinely alter the established functionality of prior art components; rather, a combination is obvious to a POSITA when the combination involves the “predictable use of prior art elements *according to their established functions.*” *KSR*, 550 U.S. at 417. As explained in further detail below, the Petition does not explain why a person of *ordinary* skill in the art would have arrived at its proposed combination of references, or why such a person would have reasonably expected success in arriving at that combination.

A. The Petition must motivate its combination of Cole/D’Amore with Rao to prevail as to any challenged claim.

Limitation [1.5] of the ’224 Patent recites: “associate each given one of the [monitored] network service usage activities with a service usage control policy dynamically selected from the set of service usage control policies, based on the first

classification of the given network service usage activity and at least one device state.” Ex. 1001 at 107:57-62. In other words, based on the classification of network service usage activities (which are “monitored” in limitation [1.3]) and a device state, a processor must be configured to associate those network service usage activities with a dynamically-selected service usage control policy.

The Petition relies on a combination of three references to arrive at this limitation. A highly simplified visual demonstration, provided by the Petition, of the Petition’s extensive modifications to Cole in its combination is reproduced below (with Cole’s disclosures shown in black, and modifications alleged to be obvious in view of D’Amore and Rao shown in green and blue, respectively):



Pet. at 25 (Petition’s annotations of Cole’s Figure 2).

Notably, the Petition alleges that the combination of *all three* references is necessary to meet limitation [1.5] as follows:

[I]n CDR’s mobile device, the packet capture mechanism and frame monitor [from Rao] would classify network service usage activities, based on their application, and ‘associate each given one of the network service usage activities with a service usage control policy’ defined in the policy management module [from D’Amore]. The CDR connection manager [from Cole] would then effectuate differential network access control according to the selected service usage control policy.

Id. at 45.

As shown above, the Petition relies on aspects of each of Cole, D’Amore, and Rao to allege limitation [1.5] is disclosed. Accordingly, the Petition does not allege that any prior art reference itself discloses limitation [1.5]. Instead, the Petition must show that all three references would be combined in the specific manner the Petition alleges in order to satisfy limitation [1.5], which the Examiner previously found absent from the prior art (including from family members to Cole and Rao which contain disclosures substantively identical to the teachings of Cole and Rao the Petition relies upon).

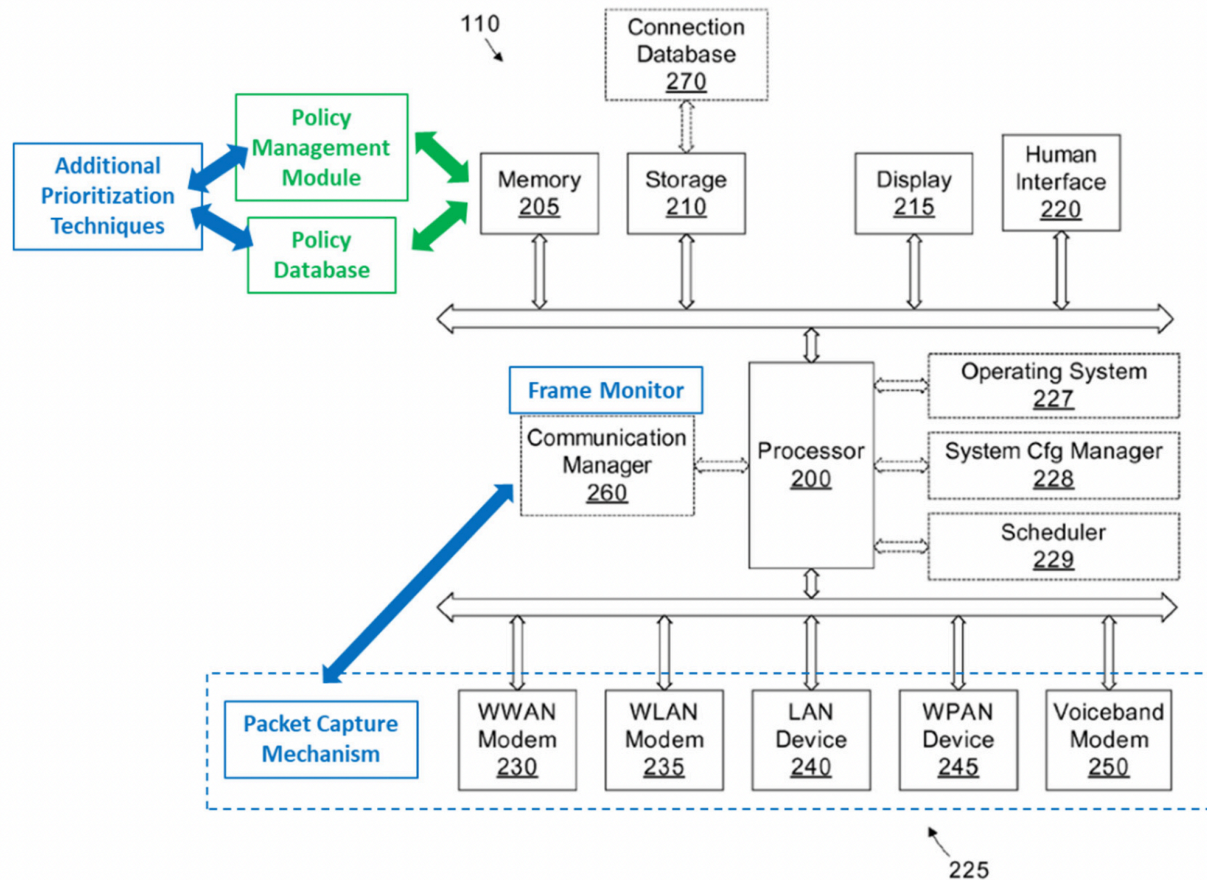
The Petition also relies on this same ***combination*** of three references to render obvious limitation [1.6], rather than alleging that any individual reference discloses or renders obvious that limitation. *See id.* at 47-48 (relying on the Cole-D’Amore-Rao, or “CDR” combination to allege invalidity of limitation [1.6]). Again, the Petition does not allege any individual prior art reference discloses limitation [1.6], which the Examiner likewise found absent from the prior art of record, which included Cole and Rao.

In sum, the Petition concedes that the prior art does not disclose at least limitations [1.5] and [1.6] of the ’224 Patent, which are the same limitations that the Examiner previously concluded were not disclosed by the prior art. *See Ex. 1002 at 31.*

B. The Petition fails to establish that its combination would have been obvious.

1. The Petition uses hindsight to propose a combination that changes the principle of operation of Rao's packet control mechanism and frame monitor.

As noted above, the Petition relies on a combination of *three* separate references with different purposes, different approaches, and different results to arrive at the limitations the Examiner found to be not disclosed or obvious in view of the prior art. The Petition's combination involves numerous complex modifications to Cole. For example, even as shown by the oversimplified block diagram provided in the Petition, reproduced below, the Petition introduces *five* additional modules to Cole's existing system, and an additional five data paths linking various modules in the system:



Id. at 25 (Petition’s annotations of Cole’s Figure 2).

This proposed combination takes a reference that is focused on inspection and modification of activity at the packet level (Rao), and shoehorns it into a combination with two other references that are focused on scheduling application activity (Cole and D’Amore). *See* Ex. 2006 ¶¶33-35, 37 (discussing Cole and D’Amore’s principle of scheduling activity at the application level, which typically schedules activity “seconds, minutes, hours, or even days in advance”)); *id.* ¶36-37 (discussing Rao’s system which controls individual packets, which are typically transmitted every millisecond or so). As explained by Patent Owner’s expert Dr.

Haas, “a POSITA would readily understand that packet scheduling... involves significantly different design considerations than scheduling an application-level activity.” *Id.* ¶37.

In the combination proposed by the Petition, “there is no discussion of the packet capture mechanism being used in accordance with the principle that Rao discloses they would be used for, which is to prioritize traffic at the packet-level to provide for optimized quality of service.” *Id.* ¶¶38-39. Instead, the Petition’s combination involves incorporation of “Rao’s packet capture mechanism and frame monitor” to “influence scheduling of activities at the application level.” *Id.* ¶38.

Dr. Haas explains that this modification to the purpose of Rao’s packet capture mechanism and frame monitor “significantly deviate[s] from the principles under which [those] components operate.” *Id.* ¶¶36, 38. Notably, this deviation from **Rao’s** teachings is also a significant deviation from how packet monitoring was used more generally in the art; Dr. Haas is “not aware of any systems that, at the priority date of the ’224 Patent, made use of analysis of packet monitoring... to influence application-level scheduling of activities.” *Id.* ¶40. Dr. Haas was also not aware of any systems or references that **ever** incorporated or proposed such a design, “including systems or references **after** the priority date of the ’224 Patent.” *Id.* ¶40.

At his deposition, Petitioner’s expert Dr. Traynor was also unable to identify prior art systems or references proposing what the Petition proposes with the benefit

of 15 years of hindsight. *See generally* Ex. 2008 at 18:16-29:19 (repeatedly refusing to answer “yes” to whether “using a frame monitor within a connection manager in order to schedule application-layer activity on a mobile device was a technique that was known in the art as of the priority date of the ’224 patent”).

The complete lack of evidence that *anyone* used elements such as Rao’s packet capture mechanism and frame monitor for the purpose that the Petition proposes is strong evidence that the Petition’s proposal relies on improper hindsight. Indeed, Dr. Traynor made clear that in coming up with “the idea of combining a frame monitor into a connection manager within a mobile device to schedule application-layer activity,” he used his own expertise (as a person of greater than ordinary skill in the art) and selected the sources “to have the most straightforward combination” to arrive at “what the ’224 [patent] attempts to claim as an invention.” Ex. 2008 at 30:25-31:25; *see also id.* at 34:1-35:5 (making clear that he had not formed an opinion that his combination of Cole, D’Amore, and Rao was actually the most straightforward combination of those references, and “didn’t consider [the] case” of whether Rao’s frame monitor could have been used for its originally intended purpose rather than to “influence application-layer scheduling”).

In sum, the Petition proposes that it would have been obvious to make the proposed modification involving Rao’s packet capture mechanism and frame monitor, even though the modification changes the principle of operation behind

those system components. *See Adidas*, 963 F.3d at 1359 (affirming PTAB’s decision not finding obviousness where a proposed modification would “change the principles under which [the prior art] operates”). The fact that the proposed combination fundamentally changes the way in which Rao’s components work is supported by the fact that there is no evidence of *any* system or reference proposing or using similar components for the purpose of scheduling application-level activity until the Petition itself proposed as much. *Cf. Leo Pharm. Prod., Ltd. v. Rea*, 726 F.3d 1346, 1356 (Fed. Cir. 2013) (“Indeed this considerable time lapse suggests instead that the Board only traverses the obstacles to this inventive enterprise with a resort to hindsight.”).

2. The Petition’s alleged motivations to combine fail, even setting aside the Petition’s change to the principles of operation of Rao’s components..

Even setting aside the Petition’s change to the principles of operation of Rao’s components, the specific motivations the Petition relies upon do not actually motivate the proposed combination. *See* Pet. 21 (providing two motivations “to update the Cole-D’Amore mobile devices based on the teachings of Rao”).

First, the Petition alleges that “Incorporating the functionality fo Rao’s frame monitor 360 into the connection manager of Cole-D’Amore would beneficially provide Cole-D’Amore’s system with additional capability to identify application traffic at the packet level, *allowing for inter-application classification of activities*

based on protocol.” Pet. 21. However, a POSITA would recognize that “the combined Cole-D’Amore system would *already* allow for inter-application prioritization of activities” (Ex. 2006 ¶42) because “D’Amore already has ‘application level ‘priority policies’” that the Petition relies upon. *See* Pet. 12-13. Thus, the only potential benefit articulated by the Petition for this “motivation” is the *use of protocol* to influence application activity. However, as explained by Dr. Haas, a POSITA would not have viewed the use of a packet protocol to influence application scheduling as advantageous, and instead would merely introduce “needless complexity.” Ex. 2006 ¶42 (“Dr. Traynor provides no explanation whatsoever as to how the real-time observed packet protocol used by a particular activity would be beneficial in this analysis; in my view, relying on a packet capture mechanism and frame monitor to implement inter-application activity prioritization would not have been recognized as advantageous, and would have been seen as introducing a tremendous amount of needless complexity into the combined system.”).

Second, the Petition alleges that “Rao describes prioritization techniques (e.g., ‘whether an application is running in the foreground or the background’) that would enhance the priority policies of the Cole-D’Amore device.” Pet. 21. As an initial matter, Rao’s “prioritization techniques” are not techniques that are actually applicable to “the priority policies of the Cole-D’Amore device” as the Petition

contends (Pet. 21), “because Rao’s prioritization techniques are about prioritization of individual packets, whereas the Cole-D’Amore priority policies are policies applicable to application-level activities.” Ex. 2006 ¶43. In order to apply any “prioritization techniques” from Rao into the Cole-D’Amore system, a POSITA would need to either “derive entirely new prioritization techniques” (which the Petition doesn’t describe or show reasonable expectation of success), or simply use “Rao’s packet capture mechanism and frame monitor for their originally intended purpose[]” of controlling traffic at the packet level (and contrary to Petitioner’s proposal). *Id.* ¶48.

To the extent that the Petition does not actually propose using Rao’s prioritization techniques, but rather simply to obtain knowledge of “whether an application is running in the foreground or background” (*see* Pet. 21), that motivation also fails. Specifically, as the Petition acknowledges, “Cole *already* considers whether an application is running in the background or foreground (i.e., not background), such that the addition of Rao’s packet capture mechanism and frame monitor would not provide any advantage over the Cole-D’Amore system.” Ex. 2006 ¶43; *see* Pet. 37 (“[I]n differentiating “background” activities from non-background activities, [Cole’s] connection manager ‘classif[ies]’ all (‘each’) of the activities in the communication load as those applications not classified as ‘background’ would be assigned some other designation (e.g., ‘not background’).”).

Thus, obtaining knowledge about the background status of activities would not have motivated the Petition's proposed combination of Cole-D'Amore with Rao. *See id.*

Finally, the Petition is incorrect that “combining Cole-D'Amore and Rao would have involved (1) combining prior art elements according to known methods to yield predictable results; and (2) using known technique[s] to improve similar devices in the same way.” Pet. 21-22. As Dr. Haas explains, “there *were* no ‘known methods’ to make the modification that Dr. Traynor is proposing, because it had never been done before.” Ex. 2006 ¶44. Additionally, “[t]here is no evidence that any POSITA knew of a technique to use a packet capture mechanism and frame monitor, such as that described in Rao, to influence scheduling of application-level activity.” *Id.* This is confirmed by Dr. Traynor, who was unable to testify that using a frame monitor with a connection manager to schedule application-layer was “a technique that was known in the art.” 18:16-29:19 (repeatedly refusing to answer “yes” to whether “using a frame monitor within a connection manager in order to schedule application-layer activity on a mobile device was a technique that was known in the art as of the priority date of the ’224 patent”). Furthermore, as explained by Dr. Haas, the proposed combination of Rao into Cole-D'Amore does *not* use Rao's components “in the same way” as Rao uses them. *See* Ex. 2006 ¶¶36-41, 44.

Accordingly, each of the Petition's purported motivations to combine would not have actually motivated the Petition's proposed combination, and the grounds of the Petition fail for this independent reason.

3. The Petition fails to show a reasonable expectation of success.

The Petition's proposed modification of Rao's packet capture mechanism and frame monitor to schedule application activity fails for an additional, independent reason: the Petition fails to establish reasonable expectation of success.

As explained by Dr. Haas, the Petition's allegations regarding "reasonable expectation of success [are] simply conjectural and theoretical, because Dr. Traynor presents no evidence that anyone has *ever* attempted to perform the type of modification that Dr. Traynor is alleging would have been obvious to a POSITA a decade and a half ago." Ex. 2006 ¶45 (emphasis in original). And evaluating the Petition's arguments for reasonable expectation of success on an individual level does not cure this problem.

First, the Petition implies that a POSITA would have had a reasonable expectation of success because "Rao... describes 'optimizing... communications' on mobile devices that 'run one or more applications 338 that access a network.'" Pet. 22-23. But this takes an overly simplistic view of "optimizing communications"; as explained by Dr. Haas:

Rao uses a very different technique of optimizing communications than do Cole and D’Amore—in my view, the fact that these references use vastly different techniques to achieve the broad result of “optimizing communications” is evidence that there are two very different ways to achieve optimization of network traffic, and that they stand apart from each other; it is not evidence that the combination of these very different techniques would have been obvious or predictable.

Ex. 2006 ¶45.

The Petition also asserts: “Like Cole and D’Amore, Rao describes that its techniques can be implemented in end-user devices (‘mobile telephones’).” Pet. 23. But as noted previously, the Petition does not actually rely on *Rao’s* techniques, “because Rao does not provide *any* techniques for controlling or scheduling application-level activity.” Ex. 2006 ¶46. As explained by Dr. Haas, “Rao’s techniques would have to be heavily modified before they could be implemented in Cole/D’Amore as Petitioner suggests, and Dr. Traynor presents no evidence that these modifications would be straightforward or predictable.”

The Petition further contends that “the use of computer program modules to monitor and identify application packet flow on mobile devices was known as of the Critical Date.” Pet. 23. But Patent Owner does not dispute that monitoring packet flow was within the level of skill in the art; the question is whether monitoring packet flow and using that millisecond-level information on a packet level of granularity to

influence application scheduling would have been predictable to a POSITA. On that point, the Petition's evidence suggests the contrary, because the Petition relies on the Kelz reference in support of its contention that the modification would have reasonably been expected to succeed. *See* Pet. 23 (citing Kelz, Ex. 1010). But "like Rao, [Kelz] relates to a quality of service system that monitors packet flow for the specific purpose of modifying network traffic *at the packet level* of granularity." Ex. 2006 ¶47. The fact that the Petition identifies other systems that operate in a similar manner to Rao is not evidence of reasonable expectation of success in **changing** the principle of Rao's operation. *See id.*

Finally, the Petition contends that "the incorporation of Rao's prioritization techniques would have been nothing more than the implementation of software in a system already designed to execute similar program modules." Pet. 23. But as previously explained, the Petition's "proposed combination does not involve using prioritization techniques described by Rao, because Rao does not provide **any** prioritization techniques for scheduling application-level activity." Ex. 2006 ¶48. A POSITA combining Rao with Cole-D'Amore would have needed to either (1) "derive entirely new prioritization techniques, which Dr. Traynor does not describe (much less establish a reasonable expectation of success in making)," or (2) "simply use[] Rao's packet capture mechanism and frame monitor for their originally intended purposes" contrary to the Petition's proposed combination. *Id.*

Accordingly, the Petition fails to establish a reasonable expectation of success for its proposal to fundamentally change the purpose of Rao's packet capture mechanism and frame monitor.

VI. CONCLUSION

Because the Petition proposes a significant change in the principle of operation underlying Rao's packet capture mechanism and frame monitor, without adequately explaining why a POSITA would have recognized that modification or viewed it as advantageous in the context of the Cole-D'Amore system the Petition proposes modifying, all challenged claims should be found not unpatentable.

Date: May 8, 2024

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CERTIFICATION REGARDING WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Patent Owner certifies that there are 4,411 words in the paper excluding the portions exempted under 37 C.F.R. §42.24(a)(1).

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CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(1))

The undersigned hereby certifies that the above document was served on May 8, 2024, 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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