

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

QUALCOMM INCORPORATED*
Petitioner

v.

NETWORK SYSTEM TECHNOLOGIES, LLC
Patent Owner

Patent No. 7,373,449

Inter Partes Review No. IPR2024-00338

PATENT OWNER'S SUR-REPLY

* Qualcomm Incorporated filed a petition and a motion for joinder in IPR2024-01081 and was joined as a petitioner in this proceeding.

TABLE OF CONTENTS

I.	CLAIM CONSTRUCTION	2
II.	PETITIONER HAS NOT ESTABLISHED THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE	2
A.	The Reply’s New Theories Fail	2
1.	New “First Module” Theories.....	2
2.	New “Network Interface” Theory	5
B.	A POSITA Would Not Combine Drake with Goossens200X	13
1.	Petitioner Did Not Sufficiently Explain How the References Would be Combined.....	13
2.	A POSITA Would Not Have Been Motivated to Combine	15
3.	“Resource Manager”	17
4.	No Motivation for Claims 6 and 10	18
C.	Petitioner Has Not Demonstrated a Reasonable Expectation of Success	19
D.	Petitioner’s Proposed Combinations Do Not Meet all Claim Limitations.....	20
1.	“Communication Manager” and Limitations 6[a]/10[a]	20
2.	Limitations 6[b]/10[b].....	22
3.	Limitations 6[c]/10[d].....	23
4.	Limitations 6[d]/10[e].....	24
5.	“Independently [Configurable/Adjustable]”.....	25
III.	THE PETITION FAILED TO ESTABLISH THAT GOOSSENS2002 AND GOOSSENS2003 QUALIFY AS PRIOR ART	26
A.	Goossens2002.....	27
B.	Goossens2003.....	28

TABLE OF AUTHORITIES

Page(s)

Cases

<i>Acceleration Bay, LLC v. Activision Blizzard Inc.</i> , 908 F.3d 765 (Fed. Cir. 2018)	28
<i>ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.</i> , 694 F.3d 1312 (Fed. Cir. 2012)	18
<i>Eli Lilly & Co. v. Teva Pharm. Int'l GmbH</i> , 8 F.4th 1331 (Fed. Cir. 2021)	20
<i>Hulu, LLC v. Sound View Innovations, LLC</i> , IPR2018-01039, Paper 29 (PTAB Dec. 20, 2019)	27, 28
<i>Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.</i> , 821 F.3d 1359 (Fed. Cir. 2016)	2
<i>Medivis, Inc. v. Novarad Corp.</i> , IPR2023-00042, Paper 35 (PTAB Mar. 6, 2024)	26
<i>Netflix, Inc. v. DivX, LLC</i> , 84 F.4th 1371 (Fed. Cir. 2023)	2
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<i>Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.</i> , 97 F.4th 882 (Fed. Cir. 2024)	7, 15, 19

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PTAB Consolidated Trial Practice Guide.....	3, 5
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LISTING OF EXHIBITS

Exhibit No.	Description
2001	WITHDRAWN
2002	<i>Curriculum vitae</i> of Dr. Erik Chmelar
2003	Neil Weste & David Harris, CMOS VLSI DESIGN: A CIRCUIT AND SYSTEMS PERSPECTIVE (4th ed. 2010)
2004	Jan Rabaey, Anantha Chandrakasan & Borivoje Nikolic, DIGITAL INTEGRATED CIRCUITS: A DESIGN PERSPECTIVE (2nd ed. 2003)
2005	William J. Dally & Brian Towles, <i>Route Packets, Not Wires: On-Chip Interconnection Networks</i> , PROC. 38TH DESIGN AUTOMATION CONF. (2001)
2006	John F. Wakerly, DIGITAL DESIGN: PRINCIPLES AND PRACTICES (4th ed. 2005)
2007	Fayez Gebali, Haytham Elmiligi & Mohamed Watheq El-Kharashi, NETWORKS-ON-CHIPS: THEORY AND PRACTICE (2009)
2008	Kurt Shuler, <i>Busses, Crossbars and NoCs: The 3 Eras of SoC Interconnect History</i> , ARTERISIP (Oct. 22, 2010), https://www.arteris.com/blog/busses-crossbars-and-nocs-the-3-eras-of-soc-interconnect-history/
2009	Kurt Shuler, <i>The SoC Interconnect Fabric: A Brief History</i> , ARTERISIP (Aug. 6, 2013), https://www.arteris.com/blog/the-soc-interconnect-fabric-a-brief-history/
2010	William Stallings, DATA & COMPUTER COMMUNICATIONS (6th ed. 1999)
2011	RESERVED
2012	United States District Courts — National Judicial Caseload Profile
2013-2020	RESERVED
2021	Order Resetting Jury Trial, <i>Network System Technologies, LLC v. Texas Instruments Incorporated</i> , Civil Action No. 2:22-cv-00482-

Exhibit No.	Description
	RWS (E.D. Tex.), Dkt. 182 (Mar. 18, 2024)
2022	Claim Construction Order, <i>Network System Technologies, LLC v. Texas Instruments Incorporated</i> , Civil Action No. 2:22-cv-00482-RWS (E.D. Tex.), Dkt. 150 (Jan. 3, 2024)
2023-2027	RESERVED
2028	Docket Control Order, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd. et al.</i> , Civil Action No. 2:22-cv-00481-JRG (E.D. Tex.), Dkt. 59 (Jun. 16, 2023)
2029	Samsung's First Amended Answer and Counterclaims, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd. et al.</i> , Civil Action No. 2:22-cv-00481-JRG (E.D. Tex.), Dkt. 96 (Jan. 24, 2024) (Public Version)
2030	Samsung's P.R. 4-1 Identification of Proposed Terms and Claim Elements for Construction, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd.</i> , Civil Action No. 2:22-cv-00482-RWS (E.D. Tex.) (Nov. 28, 2023)
2031	Samsung's Amended P.R. 4-1 Identification of Proposed Terms and Claim Elements for Construction, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd.</i> , Civil Action No. 2:22-cv-00482-RWS (E.D. Tex.) (Dec. 18, 2023)
2032	Samsung's Preliminary Claim Construction and Extrinsic Evidence Pursuant to Local Patent Rule 4-2, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd.</i> , Civil Action No. 2:22-cv-00482-RWS (E.D. Tex.) (Dec. 19, 2023)
2033	P.R. 4-3 Claim Construction and Prehearing Statement, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd.</i> , Civil Action No. 2:22-cv-00482-RWS (E.D. Tex.), Dkt. 91 (Jan. 9, 2024)
2034	Plaintiff Network System Technologies, LLC's Opening Claim Construction Brief, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd.</i> , Civil Action No. 2:22-cv-00482-RWS (E.D. Tex.), Dkt. 100 (Feb. 20, 2024)

Exhibit No.	Description
2035	Defendant Samsung Electronics Co., Ltd.’s Responsive Claim Construction Brief, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd.</i> , Civil Action No. 2:22-cv-00482-RWS (E.D. Tex.), Dkt. 112 (March 12, 2024)
2036	Plaintiff Network System Technologies, LLC’s Reply Construction Brief, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd.</i> , Civil Action No. 2:22-cv-00482-RWS (E.D. Tex.), Dkt. 116 (March 19, 2024)
2037	RESERVED
2039	Second Amended Scheduling Order, <i>Network System Technologies, LLC v. Qualcomm Incorporated et al.</i> , Civil Action No. 1:22-cv-1331-DAE (W.D. Tex.) Dkt. 80 (Oct. 23, 2023)
2040	Defendants’ Joint Opening Claim Construction Brief, <i>Network System Technologies, LLC v. Qualcomm Incorporated et al.</i> , Civil Action No. 1:22-cv-1331-DAE (W.D. Tex.), Dkt. 77 (Oct. 12, 2023)
2041	Plaintiff Network System Technologies, LLC’s Responsive Claim Construction Brief, <i>Network System Technologies, LLC v. Qualcomm Incorporated et al.</i> , Civil Action No. 1:22-cv-1331-DAE (W.D. Tex.), Dkt. 81 (Nov. 16, 2023)
2042	Defendants’ Joint Reply Claim Construction Brief, <i>Network System Technologies, LLC v. Qualcomm Incorporated et al.</i> , Civil Action No. 1:22-cv-1331-DAE (W.D. Tex.), Dkt. 83 (Nov. 30, 2023)
2043	Plaintiff Network System Technologies, LLC’s Sur-Reply Claim Construction Brief, <i>Network System Technologies, LLC v. Qualcomm Incorporated et al.</i> , Civil Action No. 1:22-cv-1331-DAE (W.D. Tex.), Dkt. 86 (Dec. 14, 2023)
2044	Defendants’ Supplemental Claim Construction Brief, <i>Network System Technologies, LLC v. Qualcomm Incorporated et al.</i> , Civil Action No. 1:22-cv-1331-DAE (W.D. Tex.), Dkt. 105 (Mar. 1, 2024)

Exhibit No.	Description
2045	Plaintiff Network System Technologies, LLC’s Supplemental Claim Construction Brief, <i>Network System Technologies, LLC v. Qualcomm Incorporated et al.</i> , Civil Action No. 1:22-cv-1331-DAE (W.D. Tex.), Dkt. 106 (Mar. 1, 2024)
2046	Defendants’ Supplemental Invalidity Contention Cover Pleading, <i>Network System Technologies, LLC v. Qualcomm Incorporated et al.</i> , Civil Action No. 1:22-cv-1331-DAE (W.D. Tex.) (Jan. 23, 2024)
2047-2049	RESERVED
2050	Defendants’ Invalidity and Ineligibility Contentions And Disclosures Pursuant to Patent Rule 3-3 Cover Pleading, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd., et al.</i> , Civil Action No. 2:22-cv-00481-JRG (E.D. Tex.) (July 11, 2023)
2051-2061	RESERVED
2062	Statutory Disclaimer dated March 25, 2024
2063-2064	RESERVED
2065	Terms & Disclosures for Use of IEEE Websites (https://www.ieee.org/about/help/site-terms-conditions.html) (last accessed Sept. 20, 2024)
2066	RESERVED
2067	Transcript of Aug. 27, 2024 Deposition of Dr. Nikil Dutt in IPR2024-00343
2068	2014 Design, Automation and Test in Europe Conference (“DATE”) Website Main Page
2069	H. Nejatollahi et al., “Software and Hardware Implementation of Lattice-based Cryptography Schemes,” Center for Embedded and Cyber-Physical Systems (2017)
2070	Declaration of Dr. Nader Bagherzadeh

Exhibit No.	Description
2071	<i>Curriculum vitae</i> of Dr. Nader Bagherzadeh
2072	A survey of Research and Practices of Network on Chip
2073	Routing Algorithms for On Chip Networks
2074	McGraw Hill Dictionary
2075	IEEE Dictionary
2076	Supported Token-Ring Functions – IBM Documentation
2077	Token Ring Solutions
2078	Transcript of Nov. 4, 2024 Deposition of Dr. Todd Mowry
2079	Transcript of Nov. 15, 2024 Deposition of Sean O’Bryan
2080	Transcript of Sept. 20, 2024 Deposition of Gordon MacPherson
2081	IEEE - Terms & Disclosures for Use of IEEE Websites
2082	IEEE XPlore Metrics (Radulescu)
2083	IEEE Xplore Metrics (Goossens2002)
2084	<i>Markman</i> Hearing Transcript, <i>Network System Technologies, LLC v. Samsung Electronics Co., Ltd.</i> , Civil Action No. 2:22-cv-00481-JRG (E.D. Tex.) (Apr. 9, 2024)
2085	Declaration of Peter Krusiewicz
2086	Declaration of Peter Krusiewicz in Support of <i>Pro Hac Vice</i> Motion
2087	Transcript of Feb. 25, 2025 Deposition of Dr. Nikil Dutt
2088	Transcript of Feb. 11, 2025 Deposition of Dr. Todd Mowry

Qualcomm adopted the Petition¹ of Samsung for joinder purposes. The Petition is flawed because it fails to explain how and why Drake's QoS requestor manager 12 ("QoS-12") would be implemented in Goossens2002 or Goossens2003 (collectively, "Goossens200X"); there is no motivation to combine Drake and Goossens200X; and the combination does not meet all limitations of the challenged claims, among other reasons.

Qualcomm's Reply (Paper 43) seeks to effectively rewrite the Petition using new theories to address its deficiencies and inconsistencies. As PO's Motion to Strike (Paper 53) explains, this includes new "first module" and "network interface" theories of obviousness. The Reply improperly relies on new expert declaration analysis spanning more than 86 pages, far longer than the 78-page analysis in Petitioner's original expert declaration. EX1043, i-ii, 5-90; EX1003, i-iv, 38-115; EX2088, 10:5-17.

The Reply highlights that the combinations are based on hindsight. The Petition cherry-picked two components of Drake and argued generic motivation based on Drake's entire QoS process; the Reply tries to retroactively explain how

¹ IPR2024-01081, Paper 1. Other paper and exhibit citations are to IPR2024-00338 unless indicated.

and why those cherry-picked components would work with Goossens200X's existing components and requests. These new theories also fail.

I. CLAIM CONSTRUCTION

The Reply does not dispute PO's claim constructions. POR, 12-17; Reply, 2; EX1043, ¶¶6-11; EX2088, 12:22-13:5.

II. PETITIONER HAS NOT ESTABLISHED THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. The Reply's New Theories Fail

The Reply's new obviousness theories and evidence should be excluded. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2016); Paper 53. Regardless, these theories fail.

1. New "First Module" Theories

The Petition, as the Board found, identifies Drake's source station 10 ("option 1") as the claimed "first module," rather than application 11 within source station 10. Paper 53, 1-2; IPR2024-01081, Paper 14, 22-24; EX2078, 173:4-11; *Netflix, Inc. v. DivX, LLC*, 84 F.4th 1371, 1377 (Fed. Cir. 2023) ("[P]etitioner may not rely on a vague...petition and later fault the Board for failing to understand what the petition really meant.").

In Dr. Mowry's first deposition, he improperly switched to identifying Drake's application 11 ("option 2") as the claimed "first module." EX2078, 173:4-175:2; *see also* Paper 53, 3. The Reply improperly argues yet another new "first

module” theory—i.e., disavowal of *any* reliance on Drake for the “first module” (“option 3”)—and also alternatively suggests option 2.² Paper 53, 1-3; Reply, 3-4, 15-17, 21; CTPG, 73-74; *see also* EX2088, 175:20-184:12.

Petitioner shifted to option 3 because options 1-2 both fail: Petitioner does not dispute that the claimed “communication manager” (“[CM]”) and “first module” must be separate, or that associating Goossens200X’s IP with either Drake’s source station 10 or application 11 for the “first module” is fatal for the “[CM]” and 6[a]/10[a] limitations or 6[d]/10[d] limitations, respectively. POR, 12-16, 38-41, 45, 60-64; Reply, 3-4, 15-17, 21; EX2088, 12:22-13:5. Petitioner tries to at least shift to option 2 to avoid the POR’s arguments related to option 1 for motivation and the “[CM]” and 6[a]/10[a] limitations and to support Petitioner’s other new theory (discussed below) about implementing Drake’s QoS-12 in an NI of Goossens200X’s NOC,³ not an IP.

Regardless, even if considered, Petitioner’s options 2-3 fail. Petitioner cannot disavow any connection between Drake and the “first module” because without

² Petitioner’s various positions regarding the “first module” should also be rejected as inconsistent. POR, 17-20 (citing cases).

³ Goossens2003’s NOC and Goossens2002’s NOS are similar and referenced collectively herein as Goossens200X’s “NOC.” EX1005; EX1007; POR, 9, 11-12.

some comparison or connection between the two references, there is no context for if and how the relied-upon components of Drake would be implemented and work in Goossens200X. Specifically, without identifying some element in Drake that corresponds to Goossens200X's IP, there is no basis for if or how the two references would be combined to meet limitations such as 6[a]/10[a] that recite interactions between the "[CM]," which Petitioner maps to Drake's QoS-12, and the "first module." Indeed, even in his second deposition, Mowry admitted to relying on Drake regarding the "first module," stating that the "first module" corresponds/maps to Drake's application 11 in the alleged "combinations." EX2088, 175:4-184:12.

Additionally, as the Petition acknowledges, a POSA would have understood Goossens200X's IP to correspond to Drake's source station 10, not application 11. EX2070, 83-84 n.4, 133 n.8; EX1037, 62:9-24; *e.g.*, Pet., 27, 32. Even Dr. Mowry equates Drake's stations with the claimed "modules" and Goossens2003's "modules." EX2088, 71:12-72:13 (in "[Drake's] Figure 1"—where "one of the end points is source station 10"—"those [end points] are stations *or modules in the '449 terminology*") (emphasis added); 84:24-89:20 (referring to Goossens2003's "module" (IP) as a "source station"). Indeed, for the claimed "second module," Petitioner relies on Drake's target station 29 (comparable to source station 10), not application 26. Pet., 27, 32, 35-36, 40, 43-44, 59, 67.

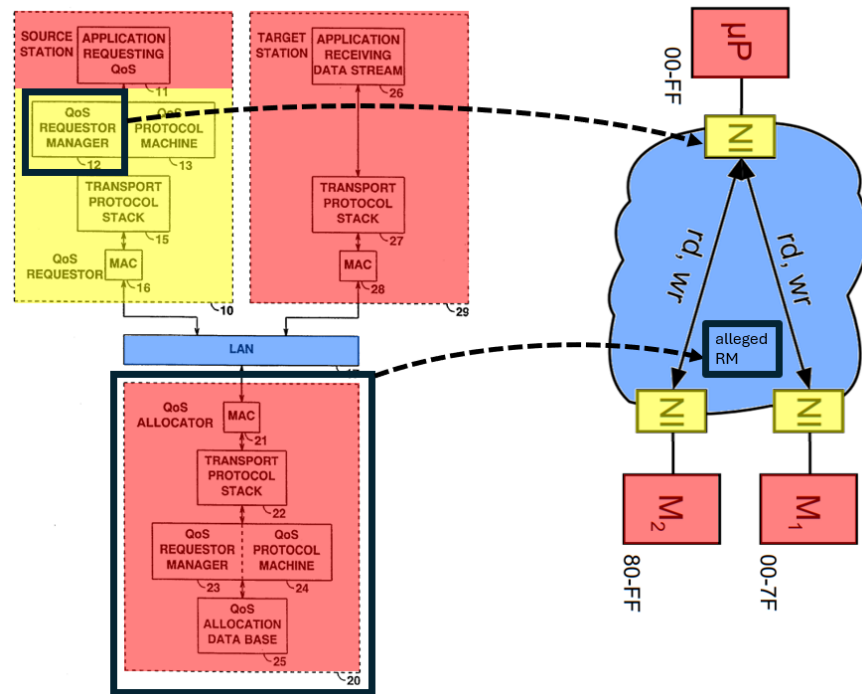
2. New “Network Interface” Theory

The POR explained that the Petition failed to establish why a POSITA would have been motivated to implement Drake's QoS-12 (alleged “[CM]”) in Goossens200X, where Drake's QoS-12 would be located in Goossens200X, and how Drake's QoS-12 and QoS allocator 20 would work with respect to Goossens200X's existing components and service request. POR, 24-26, 28, 30-38, 46-50, 52-60. The POR also explained why there was no motivation to implement Drake's QoS-12 within Goossens200X's IP or NOC. POR, 26-32, 49-54.

The Reply attempts to address these issues by improperly advancing a new “network interface” (“NI”) theory—i.e., that (i) Drake's QoS-12 is an NI component; (ii) Drake's QoS-12 would be implemented in an NI of Goossens200X's NOC, such that Goossens200X would send requests to Drake's QoS allocator 20 “through” QoS-12; and (iii) a POSITA would be motivated to do this based on an alleged “need for interfacing.” Reply, 9-15; Paper 53, 3-5; CTPG, 73-74, 80-81. This NI theory is improper because the Petition never mentions “interface” in relation to Drake, much less Drake's QoS-12. Paper 53, 3-5.⁴ Aside from this new NI theory, Petitioner does not rebut the POR's arguments.

⁴ The Petition relies on Goossens2003's NI and Drake's QoS-12 as alternatives, not in combination. Pet., 62-63, 65-66; Reply, 9-10 n.4, 16.

Petitioner's new NI theory is demonstrated below:



EX1006, FIG-1; EX1007, 72 (FIG. 4.5) (annotated).

a. Inconsistent and Undermining Positions

The Reply and Dr. Mowry's second declaration attempt to support this new NI theory by (i) citing one instance in Dr. Mowry's first deposition where he allegedly said that Goossens2002's NI is "the" "natural place to put" Drake's QoS-12 (EX2078, 203:24-204:9) and (ii) disavowing certain answers by claiming he "misunderstood" those questions (*i.e.*, *id.*, 204:10-209:13). Reply, 13 n.5; EX1043, ¶¶155-57. First, this misquotes Dr. Mowry's first deposition, which suggested Goossens2002's NI as merely "a" place for QoS-12, not *the* place QoS-12 would be implemented. EX2078, 203:24-204:9; EX2088, 93:5-95:13.

Second, regardless of his alleged “misunderst[anding],” Dr. Mowry responded to similar questions throughout the remainder of his first deposition—including *during redirect*—by repeatedly testifying that QoS-12 could go “anywhere on the chip” for both Goossens references, with no mention of an NI. EX2078, 211:4-25, 233:4-234:1. He did not claim any misunderstanding for that testimony. EX2088, 119:16-20.

Third, after PO requested a motion to strike Petitioner's new NI theory, Dr. Mowry backtracked from that theory in his second deposition by testifying that QoS-12 could be implemented anywhere in Goossens200X and would not be limited to the NI, which is only “a” natural place and not *the* place QoS-12 would be implemented. EX2088, 81:1-82:10 (both Goossens200X), 89:6-20 (Goossens2003), 93:5-95:13, 114:3-116:8 (Goossens2002); *cf.* EX2088, 95:14-103:8, 115:5-13 (later contradictory testimony regarding Goossens2003).

Dr. Mowry's testimony that QoS-12 could be implemented anywhere, not just Goossens200X's NI, undermines the alleged motivation of interfacing by showing that QoS-12 is not needed in Goossens200X's NI for interfacing. The possibility that QoS-12 “could” be implemented in Goossens200X's NI is insufficient for motivation. *Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 886-87 (Fed. Cir. 2024). Also, Dr. Mowry's testimony that QoS-12 can go anywhere in Goossens200X creates the same redundancy issue discussed in the POR—i.e.,

Goossens200X's IP would just communicate directly with the "[RM]," not through QoS-12 as an intermediary. POR, 26-28, 34-37, 49-50, 56-60.

Petitioner and Dr. Mowry's various positions regarding implementation of QoS-12 in Goossens200X should also be rejected as inconsistent. POR, 17-20 (citing cases).

b. Drake's QoS-12 is Not an NI Component

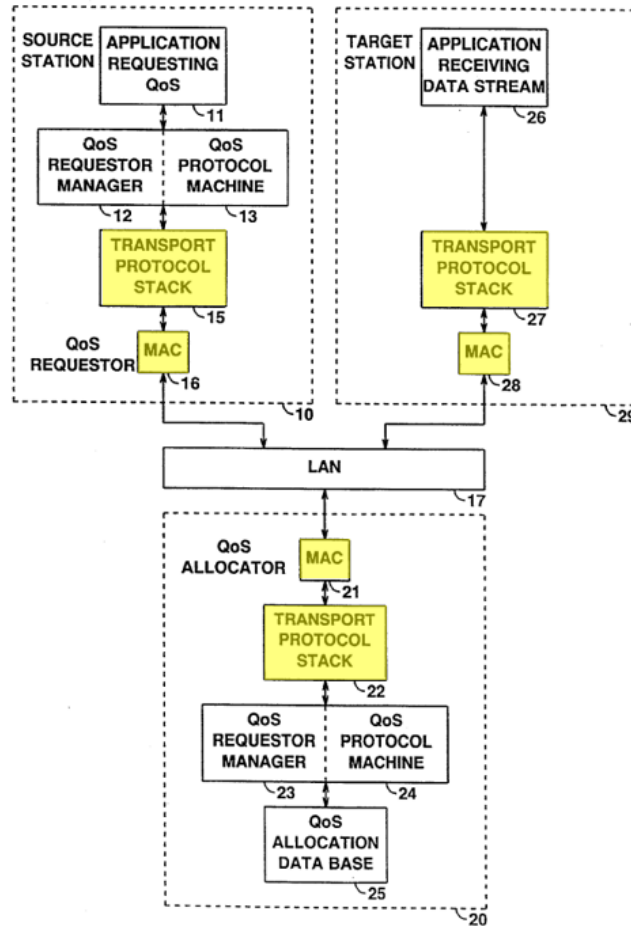
Drake does not identify or disclose an NI, much less that QoS-12 is part of an NI. Drake only mentions an NI once, in an unrelated portion of the background. EX1006, 1:58-2:13.

Drake's QoS-12 is a QoS component—not an NI component. EX1006, FIG-1, 4:32-37, 5:5-8; EX1043, ¶¶23, 52; EX2088, 42:11-43:9. The Reply points to the QoS-12's "assembl[ing]" and "format[ing]" as purported network interfacing. Reply, 9; EX1043, ¶¶28, 52, 114. But QoS-12 assembles/formats *the QoS request*, and this is not network interfacing because the QoS request only needs to be understood by QoS allocator 20, not "understood by the network," as Dr. Mowry asserts. EX1043, ¶¶52, 114; EX2088, 51:8-52:16, 60:12-61:22; EX1006, 4:32-5:8.

To the extent that any component(s) of source station 10 would be considered an NI component(s), it would only be Transport Protocol Stack 15 and MAC 16. EX1006, 4:27-5:17; EX2070, ¶¶221-23, 288-90. While Drake's QoS-12 and component 13 "assemble a *[QoS] request*" and "format *the QoS request*," it is

components 15-16 that subsequently “format *a request packet*” for transmission via LAN 17 and “launch[]” “*the packet...on LAN 17.*” EX1006, 4:37-40, 4:30-32 (describing “transmission of the multimedia data stream, via the LAN transport protocol stack[] 15”). Indeed, as Dr. Mowry acknowledges (EX1043, ¶102; EX1003, ¶80), Drake’s LAN is a “packet-based” network (EX1037, 42:17-24; EX2088, 48:24-49:6), and Drake’s packets are only handled by source station components 15-16, not QoS-12. EX1006, 4:27-66.

Moreover, components 15-16 are “standard parts of all stations attached to [the prior art] LAN” and, as NI components, their “details...are determined by the LAN itself” so that they can communication with the LAN. EX1006, 4:37-47, 4:20-21; EX2088, 40:11-41:10, 37:8-38:6.



EX1006, FIG-1 (annotated).

In contrast, QoS-12 is not a standard part included in all stations attached to LAN 17 (see target station 29) and does not “requir[e] specific knowledge of the low-level network details,” which, according to Mowry himself, is the role of an NI. EX1043, ¶¶26, 51; EX2088, 38:7-13. Components 15-16 “allow” or “enable” QoS-12 to communicate over LAN 17. EX2088, 38:17-22, 39:11-40:8. Indeed, target station 29 interfaces with LAN 17 using just components 27-28 (equivalent to components 15-16), without requiring a component like QoS-12. EX1006, FIG-1; EX2088, 46:21-47:1.

**c. There Is No Motivation for Drake's QoS-12 in
Goossens200X for Network Interfacing**

The Reply alleges only one motivation specific to Drake's QoS-12: "need for interfacing components," based on Petitioner's new theory that Drake's QoS-12 is an NI component, which, as discussed above, is incorrect. Reply, 9-15. The Reply's motivation argument fails.

First, Petitioner asserts that the alleged "interfacing" performed by QoS-12 is to "assemble"/"format" a *request*, not a request *packet* for transmission across the NOC. Reply, 9 (citing EX1043, ¶28). But Goossens200X disclose that the IP already sends a completed QoS service request, so there is no need for QoS-12 to assemble/format the request. POR, 26-28, 34-37, 49-50, 56-60.

Second, the alleged "need for interfacing" in Goossens200X is to translate "different [] protocols" to be "understood by the network." EX1043, ¶¶52, 114; Reply, 9. But Drake's QoS-12 does not perform that function and, indeed, Petitioner presents no evidence that it does—instead, it assembles/formats a request to be understood by QoS allocator 20, not a request packet to be understood by LAN 17. EX1006, 4:32-5:8; EX2088, 51:8-52:16, 60:12-61:22.

Third, even if "interfacing" was required and QoS-12 "provides interfacing" as alleged, according to Petitioner and its expert, such an interfacing component and

function would already be obvious in Goossens2003.⁵ EX1043, ¶¶52 (“Goossens2003’s NOC would have been expected to use a component such as Drake’s [QoS-12]” and would not “be able to perform...without” such a component), 114; Reply, 9 (“POSA would...use [Drake’s QoS-12] to implement the...function already taught by Goossens2003); *see also* EX2088, 96:17-97:10, 125:11-128:8, 132:13-134:2. Implementing QoS-12 in Goossens2003 to provide “interfacing” would be unnecessary.

Fourth, even if Drake’s QoS-12 is part of Drake’s NI, it would not be included in Goossens200X’s NI because Drake’s “off-chip [NI]” would “contain[] a dedicated processor” and “[i]ncluding a dedicated processor in a [NI] is not feasible on chip” such as in Goossens200X because “the size of [Goossens200X’s NI] [would] become comparable to or larger than the IP to be connected to the network.” EX1001, 2:17-24; *see also* EX2088, 34:8-37:2, 158:14-159:5.

Additionally, Petitioner’s alleged motivation of interfacing is undermined by Dr. Mowry’s testimony, as explained above. *Supra*, §II.A.2.a.

⁵ While the Reply’s NI theory purports to address both Grounds 1-2, some of its arguments and evidence apply only to Goossens2003 (Ground 2).

B. A POSITA Would Not Combine Drake with Goossens200X

1. Petitioner Did Not Sufficiently Explain How the References Would be Combined

The Petition failed to specify how the relied-upon components of Drake would work in Goossens200X. *E.g.*, POR, 24-25, 46-47. In reply, Petitioner argues that the Petition asserted that “a POSA...would have...implement[ed] Drake’s QoS process in the [NOC] system of Goossens200[X]” and “[t]his is...sufficient.” Reply, 6-7. But this still fails to specify how the combinations would work and, contrary to Petitioner’s argument, is not sufficient. POR, 24-26, 46-47 (citing cases).

The Petition simply cherry-picked two components of Drake and relied on a generic motivation to combine based on “[Drake’s] QoS management process” as a whole, without addressing the context of those two components in either reference. Pet., 16-20, 51-54. For example, Petitioner alleges incorporation of Drake’s QoS-12 but not QoS protocol machine 13 despite that fact that in Drake: these components operate together to assemble/format the request (which is what Petitioner relies on QoS-12 for), and QoS protocol machine 13 performs another “important” function in Drake (preregistration). EX1006, FIG-1, 4:32-37, 4:62-65; EX1037, 55:7-13; EX2088, 51:8-54:13, 59:15-60:11, 70:4-21, 75:24-78:22, 68:22-69:24. The Petition’s cherry-picking of Drake’s components, with no specific motivation, demonstrate that Petitioner improperly relies on hindsight. *ATD Corp. v. Lydall, Inc.*,

159 F.3d 534, 546 (Fed. Cir. 1998) (“obviousness [cannot] be based on the hindsight combination of components selectively culled from the prior art”).

The Reply tries to excuse the Petition's deficiency by identifying alleged “contrasts” regarding POR's cited cases (Reply, 7-8), but as those cases clearly show, explanation of how the Drake and Goossens200X's relied-upon teachings would purportedly be combined and work together is an established obviousness requirement. POR, 24-25, 47 (citing cases). The Reply also cites “bodily incorporation” cases but provides no associated analysis (Reply, 7), and, regardless, those cases are inapposite because the POR's arguments relate to the proper test of how the references' relied-upon teachings would be combined and work together, not “actual, physical substitution of elements” (*Mouttet*) or “bodily incorporat[ion]” (*Intel*). See POR, 24-38, 46-60.

Petitioner's hindsight is further demonstrated by Dr. Mowry relying on the '449 patent itself for guidance and also reading Drake's QoS-12's function— assembling/formatting a request—into claim 2, which does not recite that function for the “[CM].” EX2088, 19:22-20:8 (“From the context of the '449 patent, I'm applying the teachings of Drake to the two Goossens references”), 20:23-21:9, 137:8-139:4 (“the [CM]...in claim two would be assembling...a [QoS] request”). Also, Dr. Mowry admitted he “[hadn't] thought about” whether Goossens2003 could perform its QoS functionality “without a component to assemble to QoS request

from the different reused IP protocols,” i.e., whether Goossens2003 did not need Drake's QoS-12 for that alleged purpose (*id.*, 131:24-132:11), and refused to answer questions specific to Drake, instead continually answering such questions with responses about the alleged combinations (*id.*, 19:22-21:9, 22:5-27:7, 28:15-30:3, 31:23-32:21, 55:1-59:6; 63:24-65:21, 131:8-132:11).

2. A POSITA Would Not Have Been Motivated to Combine

The POR established that there is no motivation to combine, including because of redundancy of Goossens200X's IP and Drake's QoS-12 both sending a QoS request. POR, 26-28, 34-37, 49-50, 56-60. The Reply mischaracterizes the POR's redundancy argument as merely “two references address[ing] the same problem” and fails to address the fact that Goossens200X's IP already sends a QoS request without needing Drake's QoS-12 to do so. Reply, 8-9.

The Reply argues that Drake provides missing details, and it would have been “obvious...to implement Drake's QoS functionality *with [QoS-12], rather than modify Drake*” (Reply, 8 (emphasis added))—but this fails to articulate a reason to include QoS-12 in Goossens200X, as mere existence of Drake's “possible arrangement[.]” with QoS-12 is insufficient. *Virtek*, 97 F.4th at 886-89. Additionally, under Petitioner's logic, the combination should also incorporate Drake's QoS protocol machine 13—which QoS-12 cannot work without (EX1006, 4:32-37, 4:62-65)—but Petitioner never raises this.

Ultimately, the Reply's only alleged motivation specific to Drake's QoS-12, and only response to PO's redundancy argument, is a purported "need for interfacing components" in Goossens200X and Petitioner's new theory that QoS-12 is an NI component. Reply, 9. This new interfacing motivation argument, however, fails as discussed above. *Supra*, §II.A.2.

Additionally, the POR explained that the references' contradictory teachings would dissuade implementing Drake's QoS-12 anywhere in Goossens200X. POR, 28-32, 50-54. In an attempt to avoid those issues, the Reply now adopts the new position that QoS-12 would be implemented in an NI of Goossens200X's NOC. Reply, 10-13. But implementing QoS-12 in Goossens200X's NOC ignores and contradicts Drake and Petitioner's positions, and the Petition alleged no motivation for modifying Drake's teachings when implementing in Goossens200X. EX2070, ¶¶179-87, 195, 255-62, 270. Also, this reliance on Petitioner's new NI theory fails for the reasons discussed above. *Supra*, §II.A.2.

The Reply also alleges another new motivation: Gossens200X's teaching of implementing QoS components in its NOC rather than IPs. Reply, 10-11. But as the POR explained, a POSITA would have been dissuaded from such an implementation, including because it contradicts Drake's premise of implementing QoS components outside an existing, prior-art network. POR, 28-31, 50-53. The Reply mischaracterizes POR's argument as limited to only "the location of the QoS

requestor manager” and “one citation from Drake” at 2:57-3:3. Reply, 11. PO’s argument is based on much more, which the Reply ignores. POR, 28-31, 50-53; *e.g.*, EX2070, ¶¶179-87, 255-62; EX1006, FIG-1, 1:62-2:22, 4:18-26, 4:32-47, 4:62-66, 14:17; Pet., 35; Ex. 1003, ¶118.

3. “Resource Manager”

The Petition failed to establish motivation for limitations 1[c] and 1[g], including failing to explain where Drake’s QoS allocator 20 (alleged “[RM]”) would purportedly receive requests from when implemented in Goossens200X—*e.g.*, an IP or QoS-12. POR, 32, 54; EX2070, ¶¶173-74, 248-49. Tellingly, the Reply does not and cannot identify such explanation in the Petition or associated declaration, as the Reply’s citations (Pet., 51-54, 57-58, 61-62; EX1003, ¶¶156-66, 173) do not specify from where QoS allocator 20 would receive the request and do not even address Ground 1. Reply, 14.

The POR explained that if implemented in Goossens200X, QoS allocator 20 would receive requests directly from an IP block. POR, 26-28, 34-35-37, 49-50, 56-60. The Reply now asserts an improper new theory: QoS allocator 20 would receive requests from the IP “*through*” QoS-12, based on Drake’s “data path.” Reply, 14. This argument is inapplicable to the combination because the Reply concedes that QoS-12 and QoS allocator 20 are arranged *differently* in Drake (inside LAN

17/network) versus Goossens200X (outside NOC/network). Reply, 14, 1-2, 10; EX1006, FIG-1.

This new argument (Reply, 14) is also based on Petitioner's new theories that Goossens200X's IP corresponds with Drake's application 11 and QoS-12 goes in Goossens200X's NI (*id.*, 9-14), and fails for the reasons discussed above. *Supra*, §II.A.

4. No Motivation for Claims 6 and 10

Claims 6 and 10 recite operations involving the claimed "first module," "[CM]," and "[RM]." The Petition failed to establish motivation specific to those limitations. POR, 33-38, 55-60; *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327-28 (Fed. Cir. 2012) (obviousness analysis was not specific to the limitations). The Reply neither remedies the Petition nor rebuts PO's arguments against motivation for claims 6-10 because the Reply merely references its motivation argument "above" for claims 1-2, which do not include the limitations of claims 6 and 10. Reply, 15. For example, for limitations 6[c]/10[d], the Reply does not address or rebut that the alleged "[RM]" would send its response directly to Goossens200X's IP, not a QoS-12, as Petitioner's new NI theory alleges QoS-12 is needed to assemble/format a request, not receive a response. POR, 36-37, 58-60; Reply, 15, 9; EX1043, ¶¶28, 52, 114.

The Reply's reliance on Petitioner's new NI theory also fails for the reasons discussed above. Reply, 15; *supra*, §II.A.2.

Further, the Reply argues that there is no “motivation to *change* Drake's data path” (Reply 15), but that mischaracterizes and fails the motivation requirement because there must be motivation to *combine* Drake's data path with Goossens200X, as the mere existence of Drake's “possible arrangement” is insufficient. *Virtek*, 97 F.4th at 886-89. Also, as discussed above regarding the “[RM],” Drake's “data path” is an improper new argument and, regardless, is undermined and inapplicable to the combination because the Reply argues Drake's QoS components are implemented *differently* in Goossens200X than in Drake. Reply, 1-2, 10; EX1006, FIG-1. The Reply's reliance on Drake's “data path” for claims 6 and 10—which includes 6[a]/10[a] and 6[d]/10[e] that involve the “first module”—contradicts the Reply's new position (including for 6[a]/10[a] and 6[d]/10[e]) disavowing any reliance on Drake for the “first module.” Reply, 15-17, 21.

C. Petitioner Has Not Demonstrated a Reasonable Expectation of Success

A POSITA under Petitioner's definition—requiring only a bachelor's in computer science and “two...years of experience with...networking technologies” (i.e., no NOC or SOC experience) under Petitioner's definition—would not have a reasonable expectation of success in implementing Drake's QoS-12 in Goossens200X's NOC. POR, 12, 30, 52; EX2070, ¶¶189, 201-10, 247, 264.

The Reply alleges this argument was improperly incorporated by reference. Reply, 12. That is incorrect: the POR contains two pages of explanation with citations to supporting expert testimony. POR, 30, 52; EX2070, ¶¶189, 201-210, 247, 264. Petitioner's Reply, by contrast, includes a single conclusory sentence about "skill of a POSA" that purports to incorporate *eight* pages of expert testimony. Reply, 12-13 (citing EX1003, ¶¶80-82, 164-66; EX1043, ¶¶33-39). Regardless, neither the Reply nor its cited expert testimony establishes that such a POSITA would have expected to successfully modify a NOC while having no NOC or SOC experience. *Id.*

The Reply also improperly conflates expectation-of-success ("[beyond/within] the skill of a POSA") with motivation-to-combine (e.g., "dissuaded...from making"). Reply, 12-13; *Eli Lilly & Co. v. Teva Pharm. Int'l GmbH*, 8 F.4th 1331, 1344 (Fed. Cir. 2021). The referenced "space constraints" is a straw man related to motivation, not expectation-of-success. Reply, 13; POR, 32, 53-54.

D. Petitioner's Proposed Combinations Do Not Meet all Claim Limitations

1. "Communication Manager" and Limitations 6[a]/10[a]

The Reply does not dispute that Drake does not disclose a "[CM]" under PO's construction and that limitations 6[a]/10[a] are not met by Drake or any reliance on Drake for the "first module." The Reply instead disavows any reliance on Drake for

the “first module.” Reply, 15-17. The Reply does this because associating the “first module” with either Drake’s source station 10 or application 11 is fatal for limitations 6[a]/10[a] or 6[d]/10[e], respectively. But this disavowal argument is new, inconsistent, and fails. *Supra*, §II.A.1. For example, the Reply’s arguments for II.B.2.a-b that Drake’s QoS-12 “would be outside [Goossens200X’s] IP” (Reply, 16-17) contradicts the Petition’s “first module” position, as recognized by the Board, that Goossens200X’s IP corresponds to Drake’s source station, which *contains* QoS-12.

Petitioner’s argument is flawed because it attempts to rely on the “combination” of Goossens200X’s IP as the “first module” and Drake’s QoS-12 as the “[CM],” but by refusing to identify what component in Drake corresponds to Goossens200X’s IP for the “first module,” Petitioner fails to show that the “first module” “issue[s] a request ... to said [CM]” per 6[a]/10[a] or that the “[CM] ... manag[es] the communication between ... modules” per claim 2. Reply, 15-17. That is, the Reply does not to explain any comparison or relationship between Goossens200X and Drake for 6[a]/10[a], but those references cannot separately teach 6[a]/10[a] because Goossens200X does not contain the alleged “[CM]” (QoS-12) and, per the Reply, there is no “first module” in Drake. Reply, 17.

2. Limitations 6[b]/10[b]

The Reply alleges PO's argument is "unsupported," but it is Petitioner who again does not and cannot identify disclosure in Drake that QoS-12 "forward[s]" the request to QoS allocator 20. Reply, 17-19. The Reply quotes Drake's only disclosure regarding QoS-12—i.e., that QoS-12 "assemble[s]" / "format[s]" a request—but assembling/formatting is not "forward[ing]" as claimed. *Id.* (citing EX1006, 4:32-37, 4:62-65, 4:50-54); POR, 42.

The Reply resorts to Drake's "path" (FIG-1) and what "a POSA [allegedly] knows." Reply, 17-18. This is improper new argument and evidence, as the Petition, for 6[b]/10[b], does not rely on Drake's Figure 1 or "path" or a POSITA's understanding. Pet., 41-42, 47, 66, 69. Regardless, this "path" shows that QoS-12 sends the request to component 15, not QoS allocator 20, and that, as the POR explained, the request is sent to QoS allocator 20 by source station 10 or by component 15 and/or 16 therein. EX1006, FIG-1; POR, 41-42, 62. Drake contains zero support for the Reply's assertions that QoS-12 "forwards the request" to QoS allocator 20 "through other components." POR, 41-42, 62.

The Reply alleges that "Dr. Bagherzadeh agrees" (Reply, 18 (citing EX1037, 53:21-56:13; EX1036)), but this mischaracterizes his testimony because he testified, consistent with his declaration, that QoS-12 sends the request to transport protocol

stack 15 and MAC 16, not QoS allocator 20. EX1037; 55:22-56:5; EX1036, 2; EX2070, ¶¶219-24, 286-91.

Moreover, the Reply's argument about Drake's "path" is undermined and inapplicable to the combination because the Reply admits Drake's QoS components are implemented *differently* in Goossens200X (inside NOC/network) than in Drake (outside LAN/network). Reply, 17-18, 1-2, 10; EX1006, FIG-1.

3. Limitations 6[c]/10[d]

The Reply's arguments about Drake's reply going to QoS-12 constitute an improper new theory because, as the POR explained, the Petition's 6[c] analysis, portions of Drake cited therein, and corresponding expert declaration portions never mention Drake's QoS-12. Reply, 19-21; POR, 44-45, 63. Petitioner again does not and cannot identify any disclosure in Drake of QoS allocator 20 sending its reply to, much less "responding ... to," QoS-12. Reply, 19-21.

The Reply resorts to Drake's "path" (FIG-1) and what "[a] POSA [would] understand[]." Reply, 19-20. Again, this is improper new argument and evidence, as the Petition, for 6[c]/10[d], does not rely on Drake's Figure 1 or "path" or a POSITA's understanding. Pet., 42-43, 47, 66, 69. Also, as discussed above for 6[b]/10[b], this reliance on Drake's "path" is undermined and inapplicable to the combination because the Reply admits Drake's QoS components are implemented *differently* in Goossens200X than in Drake.

Regardless, the Reply's argument fails because it shows at most that QoS allocator 20 sends the reply *through* QoS-12 *en route to* application 11. Reply, 19-20. The POR addressed this, explaining: "if the QoS allocation reply is sent to application 11 via the path shown by Drake's Figure 1," which includes going through QoS-12, "this would not constitute QoS allocator 20 'responding ... to' [QoS-12] as recited by the claims." POR, 44, 63 (citing EX2070, ¶¶227, 294). The Reply and corresponding declaration never address this distinction and instead conflate merely sending the reply *through* QoS-12, which the Reply argues that Drake teaches, with "responding ... to" QoS-12, as claimed. Reply 19-20; EX1043, ¶¶90, 149-50. The Reply has not established that Drake's reply is a "respon[se] ... to" QoS-12 as opposed to application 11.

4. Limitations 6[d]/10[e]

The Reply does not dispute that limitations 6[d]/10[e] are not met if Petitioner relies on Drake's application 11 for the "first module." Reply, 21; POR, 45, 63-64. That is, Petitioner recognizes that associating Goossens200X's IP with either Drake's source station 10 or application 11 for the "first module" is fatal for 6[a]/10[a] or 6[d]/10[e], respectively, so the Reply instead disclaims any reliance on Drake for the "first module." Reply, 21.

This disavowal argument, however, is new, inconsistent, and fails. *Supra*, §II.A.1. For example, the Reply's disavowal contradicts the Petition's clear reliance

on Drake for 6[d]/10[e]. *See* Pet., 43-44 (discussing only Drake's teachings), 67 (relying on Drake and the Ground-1 analysis thereof), 47, 70. Tellingly, the Reply cites the Petition's analysis for 1[a] and 6[a], not 6[d]/10[e]. Reply, 21 (citing Pet., 21-22, 40-41, 55, 65-66).

Also, this disavowal contradicts the Reply's argument that in "the combination," the request would go from Goossens200X's IP "through" Drake's QoS-12 based on Drake's "data path" thus associating Goossens200X's IP with Drake's application 11. Reply, 21, 11.

5. "Independently [Configurable/Adjustable]"

The Reply does not rebut PO's evidence that Goossens2002 does not disclose the "independently configurable/adjustable" limitation based on the mere fact that Goossens2002 states that a channel can have certain properties. Reply, 22; POR, 22-23; EX2078, 112:24-115:1 (confirming that "independently configurable/adjustable" requires more than just two channels with different connection properties).

Petitioner's argument that Drake discloses the independently configurable/adjustable limitation hinges on its argument that Drake's connections have multiple channels, which in turn hinges on Drake's description of a "forward" and "backwards" direction. Pet., 29. However, as the POR explained, sending data in "forward" and "backward" directions does not necessarily require that the

connection comprise multiple channels. POR, 22-23. In Reply, Petitioner does not rebut this. Reply, 22-23. Indeed, Petitioner's own evidence shows that a single duplex channel sends data forwards and backwards. EX1024, 11 (defining (i) "duplex" as "simultaneous, two-way, independent transmission in both directions" and (ii) a "duplex channel" as a "channel capable of simultaneous duplex communication"); EX2088, 148:12-16. It therefore does not follow from Drake's description of forward/backwards communication that its connections have multiple channels. *PersonalWeb Techs., LLC v. Apple, Inc.*, 917 F.3d 1376 (Fed. Cir. 2019) (mere possibility that reference utilized a feature was insufficient).

The Reply argues in the alternative that Drake's descriptions of (i) "multiple QoS transmission paths" and (ii) "multiple 'data streams'" also disclose "multiple channels. Reply, 23. But the Petition clearly relied on Drake's QoS transmissions and data streams as connections—not channels. *E.g.*, Pet., 27.

III. THE PETITION FAILED TO ESTABLISH THAT GOOSSENS2002 AND GOOSSENS2003 QUALIFY AS PRIOR ART

The Petition's contentions regarding alleged public accessibility of Goossens2002 and Goossens2003 were improperly incorporated by reference via blanket citations to multiple exhibits. POR, 64-65; *Medivis, Inc. v. Novarad Corp.*, IPR2023-00042, Paper 35 at 28-30 (PTAB Mar. 6, 2024) (declining to consider incorporated-by-reference declarations regarding publication). In contrast to the Petition's few conclusory allegations, the Reply devotes nearly 5 pages to this issue.

Compare Pet., 2, 8-9 *with* Reply, 24-28. Because the Petition did not articulate any theories regarding public accessibility, the Board should not allow Petitioner to “completely reopen the record” through its Reply. *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 15 (PTAB Dec. 20, 2019) (precedential).

A. Goossens2002

The Reply does not deny that the Petition presented **zero** evidence that Goossens2002 was distributed at the DATE02 conference (“DATE02”). POR, 65; Reply, 25-28. Instead, the Reply relies on a new declaration from Dr. Dutt regarding DATE02. Reply, 26 (citing EX1044). Petitioner’s attempt to completely “reopen the record” with this new declaration is impermissible. *Hulu*, Paper 29 at 15. Regardless, Dr. Dutt cannot establish availability of Goossens2002 at DATE02 because he has no personal knowledge of Goossens2002 prior to this proceeding; does not possess his copy of the DATE02 papers; and bases his testimony on 3rd-party sources for which he has no personal knowledge. EX2070, 89:17-90:6, 91:3-7, 91:18-92:12, 92:18-93:1, 96:23-97:1, 106:3-109:6, 98:23-99:5, 100:25-101:8, 102:18-22. Also, Dr. Dutt has received unrestricted research gifts from Petitioner and co-authored articles with Petitioner’s employees. EX2070, 125:22-126:6, 130:12-23 (discussing EX1045, 32; EX2069, 2).

With respect to IEEE Xplore, the Reply ignores that IEEE does not and cannot warrant the accuracy of the information. POR, 65-66. The Reply also ignores that Mr. MacPherson was unfamiliar with certain IEEE practices, including whether IEEE performed spot checks to verify information (EX2080, 16:1-20) and whether IEEE tracked full-text views (*compare id.*, 17:11-21 (testifying that IEEE tracked views in March 2004) *with* Reply, 28 (arguing that “IEEE may not have begun tracking full text views until 2011”)). Dr. Dutt’s testimony about availability of Goossens2002 via IEEE Xplore is based on Exhibits 1025-1026 provided to him by counsel, not his personal knowledge. EX2088, 114:13-116:15, 121:6-14, 124:6-10. The Reply’s argument “PO has not rebutted the presumption” that IEEE is an “established publisher” (Reply, 27) is an improper new theory because the Petition did not make this argument. *Hulu*, Paper 29 at 15.

B. Goossens2003

The Reply relies on “[t]wo different librarian declarations,” but only one was submitted with the Petition. Reply, 24. Importantly, the Reply does not explain how a POSITA exercising reasonable diligence could locate Goossens2003 via the libraries, e.g., using keyword searching based on subject matter or the like. *See* Reply, 24-25. At best, the declarations show mere “technical accessibility” at a library, which is insufficient. *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 772 (Fed. Cir. 2018) (affirming no public accessibility because reference

“was not indexed in a meaningful way” even though indexed by author and year); *Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir. 2019) (website “lacked a way to search by subject matter”); *Salesforce.com, Inc. v. WSOU Investments, LLC*, IPR2022-00428, Paper 10 at 11-12 (PTAB July 13, 2022) (“Evidence of cataloging and indexing can...play a significant role in determining whether a library reference qualifies as a printed publication”).

Respectfully submitted,

Dated: March 4, 2025

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CERTIFICATION OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the foregoing Patent Owner's Sur-Reply is produced using a 14-point Times New Roman font and contains approximately 5,543 words, which is less than the 5,600 total words permitted by the U.S. Patent Trial and Appeal Board rules. Counsel relies on the word count of the computer program used to prepare the response on March 4, 2025.

Dated: March 4, 2025

By: /s/ Angelo J. Christopher
Counsel for Patent Owner

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **Patent Owner's Sur-Reply** was served on March 4, 2025, via email:

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