IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

NETWORK SYSTEM TECHNOLOGIES, LLC,	)	
Plaintiff,	)	
	)	**Civil Action No. 1:22-cv-1331-DAE**
v.	)	
	)	**JURY TRIAL DEMANDED**
QUALCOMM INCORPORATED; QUALCOMM TECHNOLOGIES, INC.; ARTERIS, INC.,	)	
Defendants.	)	

NETWORK SYSTEM TECHNOLOGIES, LLC'S SUR-REPLY CLAIM CONSTRUCTION BRIEF

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I. Introduction

In an effort to avoid infringement, Defendants seek to distort and narrow the claims. Defendants' positions are contradicted by the law, by the patents, and, remarkably, internally by their own positions. Recognizing this irreconcilability, Defendants renege on prior positions, dismiss inconsistencies between others, and ignore unrefuted understandings of a person of ordinary skill ("POSITA"), thereby revealing their weak footing. As discussed herein, and in NST's Response Brief, (Dkt. 85, "Resp."), Defendants' erroneous positions should be rejected.

II. Disputed Terms

A. Common Term – "connection"

Defendants tacitly admit that their construction of "connection" is untenable. Even though ***Defendants*** proposed that "connection" be construed in five of the asserted patents; even though ***Defendants*** proposed the ***same construction*** for the term "connection" across all five of those patents; and even though ***Defendants*** characterized "connection" as a "***common***" term in both briefs, Defendants now imply that "connection" can have different meanings in different patents.[1] (Dkt. 83, "Reply," at 2 n.1 ("The parties had no such agreement [that 'connection' should have the same meaning across all five patents containing the term].").) The reason for this reversal is obvious: the absence of a definitional statement across the five patents is fatal to their argument that "connections" must be "created before use and closed after use" based on lexicography.

"To act as its own lexicographer, a patentee must ***clearly*** set forth a definition of the disputed claim term other than its plain and ordinary meaning. It is not enough to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee ***must***

[1] All emphasis herein added unless noted otherwise.

clearly express an intent to redefine the term." *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (internal quotations and citations omitted).

The ***only*** definitional statement that cuts across all five patents is: "[a] connection is considered as a set of channels, each having a set of connection properties, between a first module and at least one second module." '818 patent, 6:36-38; '449 patent, 8:48-58; '052 patent, 4:50-55; '800 patent, 5:13-18; '9893 patent, 4:54-58. This definition, which supports NST's construction, ***does not*** include any functional limitation, or require that the connection be "created before use and closed after use." The consistent inclusion of this definitional statement in all five "connection" patents manifests an intent to use this term consistently across ***all five patents***.

In an attempt to import an extraneous functional limitation that connections must be created before use and closed after use, Defendants reach deep into the specifications of only ***a subset*** of patents and point to a passage that does not appear in ***all five*** of the patents containing the term "connection." (Dkt. 77, "Br.," at 7; Resp. at 6 n.2.) The '800 Patent, in particular, does not contain any description of connections being created before use or closed after use.[2] (*Id.*) Lacking this language, the '800 Patent, which includes the same inventors as the other "connection" patents, cannot be said to have **any** lexicographic statement whatsoever regarding creating and closing connections, much less a "clearly express[ed] intent" to define "connection" to include such limitation. Insofar as the inventors manifested an unambiguous intent to use the term consistently across the "connection" patents, as noted above, the lack of lexicographic intent to include this narrowing functional limitation in the '800 Patent cuts across the other four patents. If the inventors

[2] Defendants assert that the '800 Patent includes language "consistent with this concept" by citing the patent's disclosure that a remote buffer is "reserved for a connection." (Reply at 2.) Not only is this "consistent with" assertion unsupported, even if true, "consistent with" is a far cry from "clearly express[ed] intent to redefine the term." *See Thorner*, 669 F.3d at 1365.

had intended to give "connection" a special definition, they would have included it in all five "connection" patents. Tellingly, while the inventors included the passage that supports NST's definition in all five patents, they did not do so for the passage that Defendants rely upon.

Defendants' position is also erroneous for seeking to import a ***functional*** limitation into the claims, which the Federal Circuit has unwaveringly held is forbidden. (Resp. at 8 (collecting cases).) Defendants do not dispute that this limitation is functional; instead, Defendants defend its importation with a collection of inapposite cases, wherein a ***descriptive adjective*** was construed in accordance with the purpose of the invention. (Reply at 3.) But in none of these cases was a functional limitation imported into a purely structural term, as Defendants seek to do here. *See Exmark Mfg. Co. v. Briggs & Stratton Power Prods. Grp., LLC*, 879 F.3d 1332, 1346 (Fed. Cir. 2018) (construing "substantially straight baffle" as a baffle that is "sufficiently straight to connect two arcuate portions of the baffle"); *Cordis Corp. v. Medtronic Ave, Inc.*, 511 F.3d 1157, 1180 (Fed. Cir. 2008) (construing "smooth surface" as a surface "smooth enough to be capable of intraluminal delivery"); *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1320 (Fed. Cir. 2005) (construing "substantially uniform magnetic field" as "a field that is sufficiently uniform to obtain useful MRI images"). Thus, even if these cases stood for the proposition that importation of functional limitations is appropriate when interpreting descriptive adjectives (they do not), there is no descriptive adjective modifying "connection" to construe here.

As a fallback, Defendants try to justify importing a functional limitation into structural claims based on a supposed distinction between "connection based" (or "connection-oriented") systems and "connectionless" systems. (Br. at 8-11; Reply at 2-3.) This is a red herring; neither "connection based" nor "connectionless" systems are ***claimed*** in the Asserted Patents. Moreover, it is immaterial to the patents whether a system is "connection based" or "connectionless," and the

difference between these does not affect the meaning of "connection" in the Asserted Patents. (Dkt. 85-7, Chmelar Decl. ¶ 55; Sur-Reply Declaration of Dr. Erik Chmelar ¶ 8 (hereinafter "Chmelar Sur-Reply Decl.").) For example, the parties agree that "transaction completion" is a "connection property." *See* "Br." at 5-6; *see also* Chmelar Sur-Reply Decl. ¶ 7. But the '818 Patent provides that "transaction completion can be implemented in systems which are ***not connection based***, as such a system is equivalent to a system with a single connection." (Chmelar Decl. ¶ 55 (citing '818 patent, 11:29-30).) Thus, a system that is "not connection based" or "connectionless" still employs "connection properties," one of which is "transaction completion." (Chmelar Decl. ¶ 55; Chmelar Sur-Reply Decl. ¶ 8.) In other words, any difference is immaterial.

In short, Defendants' construction must be rejected for lacking support by lexicography and for improperly importing functional limitations into the claims. Conversely, NST's proposed construction should be adopted, as it is firmly grounded in all of the "connection" patents.

B. '818 Patent Term – "dropping means . . . "

As noted in NST's Response Brief, the "dropping means (DM)" (aka "dropping manager (DM)")[3] is a constituent of the "integrated circuit" within the circuit's "interface means (ANIP, PNIP)" or "routers of the network," all of which is hardware. (Resp. at 10.) Defendants do not dispute that an "integrated circuit," which the parties stipulate means "interconnected circuitry on a chip," is structural hardware. (*See generally* Reply at 4-9.) Nor do Defendants dispute that "interface means (ANIP, PNIP)" (defined synonymously as "network interfaces ANIP, PNIP," "active network interface port ANIP," and "passive network interface port PNIP") and "routers of

[3] *See* footnote 7 of NST's Response, explaining that the ''818 Patent defines "dropping means (DM)" as synonymous with "dropping manager (DM)." (Resp. at 10 n.7 (citing *Edwards Lifesciences LLC v. Cook Inc.,* 582 F.3d 1322, 1329 (Fed. Cir. 2009).)

the network" are structural elements.[4] (*See id.*) And Defendants do not dispute that the "dropping manager" (defined synonymously with "dropping means") is structural. (*See* Resp. at 10 n.7.)

Finally, confirming the '818 Patent describes its invention solely in terms of circuitry hardware, Defendants point to no disclosure of the "dropping means" as software, firmware, or anything other than a structural circuitry component of the larger integrated circuit. In fact, as NST pointed out, ***and which Defendants do not address***, in a passage immediately preceding Claim 1, the specification reads: "[i]n the device claim enumerating several **means,** several of ***these means* can be embodied by one and the same item of *hardware***," where hardware in this context means physical circuitry. (Resp. at 11 (quoting '818 patent, 11:41-43).) Thus, Defendants have failed to refute NST's demonstration that the "dropping means" is hardware and, therefore, sufficiently structural to overcome the 112(6) presumption. Alternatively, if the Court determines that 112(6) applies, NST respectfully requests that the Court adopt its proposed structure as "circuit" in light of NST's undisputed demonstration articulated in its Response and summarized above.

Rather than refute this demonstration, Defendants assert that NST is trying to create new law. (Reply at 4-5.) This is incorrect. To the contrary, NST relies upon established Federal Circuit precedent, which has "previously held on several occasions that the term 'circuit' connotes structure." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.,* 711 F.3d 1348, 1364

[4] Defendants contend that they previously asserted, and then withdrew, an argument that "interface means" is indefinite. (Reply at 8 n.4.) This change in position is not without consequence or significance. Defendants have expressly waived any argument that "interface means" is indefinite, and it is bedrock law that disputed claim terms, such as "dropping means," must be construed in the context of surrounding claim language, including "interface means." Moreover, "interface means" is structural for all of the same reasons as articulated herein for "dropping means," including its synonymous definition as "network interfaces ANIP, PNIP"—a plainly structural element not subject to 112(6). *See Edwards Lifesciences,* 582 F.3d at 1329.

(Fed. Cir. 2013); *see also* Resp. at 11-12 (collecting cases).[5]

Defendants attempt to distinguish the cases NST cites by asserting that the claim term at issue in those cases was a "circuit." (Reply at 5.) Defendants' argument overlooks the context of the claim language surrounding "dropping means," which makes unambiguously clear that the "***integrated circuit*** compris[es] at least one **dropping means** (DM) for dropping data." '818 patent, claim 1. Thus, the cases that NST relies upon are on point, and confirm the structural nature of the "dropping means" contained within the "integrated circuit." (*See* Resp. at 11-12.)

Defendants also overlook the "integrated circuit" context, and NST's position, by incorrectly asserting that "NST also does not dispute that the limitations ***themselves*** do not recite any structure for performing the claimed functions." (Reply at 4 (emphasis original).) To the contrary, NST ***does*** assert that the limitations are structural. (Resp. at 9-13.) Regardless, the Federal Circuit does not require identification of a specific structure if a POSITA understands what it would be based on disclosed functionality. *Lighting World, Inc. v. Birchwood Lighting, Inc.,* 382 F.3d 1354, 1359-60 (Fed. Cir. 2004) ("In considering whether a claim term recites sufficient structure to avoid application of § 112 ¶ 6, we have not required the claim term to denote a specific structure. Instead, we have held that it is sufficient if the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure, even if the term covers a broad class of structures

[5] Defendants question the ongoing vitality of NST's cited cases. (Reply at 5.) However, as demonstrated by their continued citation, as recently as March 2023, they remain good law. *See, e.g., Estech Sys. IP, LLC v. Mitel Networks, Inc.*, No. 2:21-cv-00473-JRG-RSP, 2023 U.S. Dist. LEXIS 53447, at *40-41 (E.D. Tex. Mar. 28, 2023) (citing *Mass. Inst. Of Tech. & Elecs. for Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1355-56 (Fed. Cir. 2006); *Apex Inc. v. Raritan Comp., Inc*., 325 F.3d 1364, 1374 (Fed. Cir. 2003); *Linear Tech. Corp. v. Impala Linear Corp*., 379 F.3d 1311 (Fed. Cir. 2004); *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc*., 711 F.3d 1348, 1365 (Fed. Cir. 2013)). Defendants also cite *Optimum Processing Sols. v. Advanced Micro Devices*, Civil Action No. 1:09-CV-1098-TCB, 2012 U.S. Dist. LEXIS 203463, at *64-65 (N.D. Ga. July 10, 2012) to assert that *Apex* is "inapposite." (Reply at 5.) But in *Optimum*, the parties agreed 112(6) applies; there is no such agreement here and *Apex* is therefore apposite.

and even if the term identifies the structures by their function") (overturned on other grounds).

Despite recognizing the importance of the understanding of a POSITA, Defendants separately fault NST for relying on such understanding. (Reply at 7-8.) First, Defendants incorrectly claim that Dr. Chmelar "does not say the specification discloses a circuit for performing the dropping means function." (*Id.*) He does. (Chmelar Decl., ¶¶ 63-67.) Second, NST's reliance on its expert is proper. *Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 790 F.3d 1329, 1338–39 (Fed. Cir. 2015) (holding that "expert testimony supports a conclusion that the limitations convey a defined structure to one of ordinary skill in the art" even though the "'voltage source means' term does not denote a specific structure"); *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249-50 (Fed. Cir. 2008) (explaining that indefiniteness is evaluated from the perspective of a skilled artisan).

Defendants latch upon NST's explanation of the complexity of circuits to make a strawman attack. (Reply at 7 (citing *Maurice Mitchell Innovations, L.P. v. Intel Corp*., 249 F. App'x 184, 188 (Fed. Cir. 2007).) But *Maurice Mitchell* is readily distinguishable. There, the patentee pointed to a MCS6520 Peripheral Interface Adaptor, which it contended was *capable of performing* the claimed "means for causing" function. But the MCS6520 was **not claimed** and was **not linked** to the function. *See id.* And, importantly, the "means for causing" was not disclosed as a circuitry element within the MCS6520. Here, on the other hand, the claims and specification expressly describe the "dropping means" as an integral constituent of the claimed "integrated circuit," sufficiently linking the term to (undisputed) structure. (*See* Resp. at 10.)

Defendants attempt to downplay the significance of the '818 Patent's disclosure of the "dropping means" as an integral constituent of the "interface means (ANIP, PNIP)," which is itself an integral constituent of the "integrated circuit" as "merely describing [its] location." (Reply at 8

(citing *WSOU Invs. LLC v. Google LLC*, No. 2022-1066, 2023 U.S. App. LEXIS 25255, at *15 (Fed. Cir. Sep. 25, 2023)). But in *WSOU*, the claimed "communication engine" was disclosed as "connected between" other structural elements (an antenna and processor); it was not a circuitry element disclosed as an integral part of a larger integrated circuit structure, as the "dropping means" here is. Thus, *WSOU* is readily distinguishable and Defendants' attack fails.

Defendants have not met their high burden to establish indefiniteness "by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area." (Resp. at 12 (citing *Halliburton Energy*, 514 F.3d at 1249-50).) As such, and because NST has rebutted the 112(6) presumption, the Court should adopt NST's proposed construction, which is consistent with intrinsic evidence and the understanding of a POSITA. Alternatively, if 112(6) applies, the Court should adopt NST's proposed structure, "circuit."

C. '449 Patent Terms – "resource manager…" and "communication manager"

Seeking to decouple construction of the disputed '449 Patent terms, Defendants interpose their argument for unrelated '800 Patent terms between the '449 Patent's "resource manager" and "communication manager" in their Reply. (*See* Reply at 9-12.) Defendants' aversion to addressing terms from the same patent together is due to their inconsistent treatment of the terms: Defendants wrongly assert that "manager" in "communication ***manager***" renders it subject to 112(6) and indefinite, while "resource ***manager***" is amenable to construction and, therefore, sufficiently structural and definite to not be subject to 112(6). (*See* Resp. at 14.)

1. "communication manager" is structural and not indefinite

As explained in NST's Brief, with citations to the '449 Patent and Chmelar Declaration, "resource manager" and "communication manager" are consistently described throughout the asserted claim and specification as constituents of an "integrated circuit," similar to "dropping

means." (Resp. at 14-15.) Thus, the arguments set forth above and in NST's Response Brief in the context of "dropping means" are applicable to "communication manager" and are incorporated herein. (*See id.* at 9-13.) Moreover, "communication manager" benefits from a presumption that it is not subject to 112(6), which further reinforces that the term is not subject to 112(6). (*Id.* at 18.)

Even if this were not enough, Defendants' admission that "resource manager" is structural (and therefore, "communication manager" and "dropping means (DM)"/"dropping manager (DM)" are structural) puts any remaining doubt to rest. (*See* Resp. at 14-16.) As with "interface means," addressed in footnote 4 above, Defendants contend that they previously asserted, and then withdrew, an argument that "resource manager" is indefinite. (Reply at 8 n.4.) Again, Defendants' change in position expressly waives any argument that "resource manager" is indefinite. And, whereas in the case of "interface means," Defendants do not offer any affirmative construction, they ***do offer*** one for "resource manager." (Br. at 16.) This reversal confirms that "resource manager" ***is* definite** and ***not* subject to 112(6)**; Defendants' admission carries over equally to "communication manager" and "dropping means (DM)" (aka "dropping manager (DM)").

In their Reply, Defendants ignore, and do not refute, NST's citation to caselaw holding that "manager" is not a nonce word and is sufficiently structural. (*See* Resp. at 15 n.11.) Defendants also double down on their attempt to improperly import limitations into the claim, asserting that the "functions identified in Defendant's proposed construction for 'communication manager' come directly from the language of claim 10." (Reply at 9.) Yet, Defendants fail to acknowledge that these functions are performed by components other than the "communication manager." This is improper in light of the authority cited by NST. (Resp. at 19.) The only express function performed by the communication manager is: "forward[] the request [for a connection] to a resource manager." '449 Patent, claim 10; (Chmelar Decl. ¶ 125).

Defendants have not met their high burden of establishing indefiniteness and have not overcome the presumption that 112(6) does not apply. Thus, the Court should adopt NST's construction, which is consistent with intrinsic evidence and the understanding of a POSITA.

2. No prosecution history estoppel applies to "resource manager"

Defendants incorrectly assert that prosecution history estoppel applies to "resource manager" and base their entire claim construction position on that premise. Defendants do not address or refute NST's construction of "resource manager" as a "circuit that manages network resources" and that the rest of the claim language should be afforded its plain and ordinary meaning. (*See* Reply at 11-12.) Thus, if the Court determines that prosecution history estoppel does not apply, the Court should adopt NST's construction, which is consistent with both the intrinsic evidence and a POSITA's understanding of the term. (Resp. at 16.)

As explained in NST's Response, prosecution history estoppel does not exist. (Resp. at 16-18.) Defendants attempt to defend their argument by citing *BASF Agro B.V. v. Makhteshim Agan of N. Am., Inc.*, 519 Fed. App'x. 1008, 1017 (Fed. Cir. Mar. 20, 2013)). (Reply at 11-12.) But *BASF* is inapposite. While the patentee in *BASF* clearly and unmistakably disclaimed "all treatments that form a barrier to prevent insects from breaching a building's perimeter" by arguing that the prior art lacked "any teachings or suggestions that would motivate an artisan of ordinary skill to deviate from the established practice of creating a continuous barrier around a building," *BASF*, 519 Fed. Appx. at 1017, Defendants point to no similar disclaimer here. As NST explained previously, the amendment that Defendants cite had nothing to do with whether the resource manager was an arbiter; the amendment concerned features of the resource manager and distinguished the prior art reference based in its disclosed arbiter not having those features. (Resp. at 17.)

Accordingly, because there is no clear and unmistakable disclaimer, and because Defendants offer no alternative construction, the Court should adopt NST's construction.

D. '052 Patent Term – "interconnect means (N)"

As NST explained in its Response Brief, "interconnect means (N)" should not be governed by 112(6) because (1) the claims recite an integrated circuit comprising an "interconnect means (N)," thereby connoting structure to the "interconnection means (N)" ***and*** (2) the claims and specification interchangeably refer to the "interconnect means (N)" as a "network N," which the parties have stipulated means "multi-hop interconnection between modules separated by one or more network nodes" and is thereby inherently structural. (*See* Resp. at 19-21.)

As NST demonstrated previously, the specification of the '052 Patent defines "interconnect means (N)" synonymously with "network N." (Resp. at 20 (citing *Edwards Lifesciences,* 582 F.3d at 1329 ("interchangeable use of the two terms is akin to a definition equating the two").) Thus, the Court should adopt the Parties' agreed upon "network" construction for "interconnect means."

As NST also demonstrated, "interconnect means" is consistently described throughout the asserted claim and specification as a constituent of an "integrated circuit," similar to "dropping means" described above. (Resp. at 19-22) Thus, the arguments above and in NST's Response in the context of "dropping means" are applicable to "interconnect means" and are incorporated herein. Because 112(6) does not apply when "the limitations convey a defined structure to one of ordinary skill in the art," the claimed "interconnect means" is a structural term not governed by 112(6). *Lighting Ballast*, 790 F.3d at 1339.

If the Court determines that 112(6) applies, Defendants' proposed structure must be rejected for being undermined by the intrinsic evidence. (*See* Resp. at 20-22.) Notwithstanding Defendants' misleading citations (Reply at 13), the '052 Patent is directed to indirect interconnects (*i.e.*, "network"), not direct interconnects such as buses, switches, point-to-point wires. '052 patent, 1:50-54 ("***in contrast to*** existing on-chip interconnects (e.g., buses, switches, or point-to-point wires), where the communicating modules are ***directly*** **connected**, **in a NoC the modules**

communicate *remotely* via network nodes"); *id.,* 2:31-34 ("[i]ntroducing networks as on-chip interconnects **radically changes the communication *compared to* direct interconnects**, such as buses or switches"). Direct interconnects, in isolation, are expressly disparaged by the intrinsic evidence. '052 patent, 1:25-27; 1:50-54; 2:31-38. Conversely, indirect interconnects may include a series of direct interconnects such as "wires, buses, time-division multiplexing, switches, or routers ***within* a network**." *Id.,* 4:48-50. In other words, while direct interconnects may be included, a POSITA would understand that those direct interconnects within the "interconnect means" must be arranged to form a multi-hop path or channel (*i.e.*, a network) for transmitting data. (Chmelar Decl. ¶¶ 143–44.) Thus, NST's proposed construction is not attempting "to exclude certain structures clearly linked in the specification to the recited function," (Reply at 13), but recognizes that an indirect interconnect, as claimed and disclosed in the '052 Patent, must be more than an isolated direct interconnect that fails to implement the multi-hop scheme. (Chmelar Decl. ¶¶ 143-144.) In contrast, Defendants' proposed construction would allow a lone direct interconnect, such as a bus, to serve as the "interconnect means." Such a construction goes against the recited purpose of the '052 Patent and must be rejected. (Resp. at 20-21.)

E. '9893 Patent Term – "arranging … the first and second information . . . "

NST's construction affords the term its true meaning in accordance with the intrinsic evidence and the understanding of a POSITA. The Parties agree that the Court may correct an obvious "clerical or typographical mistake" that is "clearly evidence[d] from the specification, drawings, and prosecution history." (*See* Reply at 14.) The intrinsic evidence confirms that "the first and second information" is "comprised in" the "issued message." *See* '9893 patent, Abstract ("wherein **a message** issued by a master module **comprises first information** …, and **second information**"); *see also id.*, 3:17-23; *id.*,3:47-50; *id.*, 4:20-23. Even claim 4 of the '9893 Patent recites that the "message … comprises: first information … and second information." *Id.* at Claim

4. Conversely, the specification never recites: "the first and second information comprised in said issued message." Provided this unambiguous intrinsic evidence, a POSITA would readily recognize the mistake in the claims and would understand that "the first and second information" is "comprised in" the "issued message." (Chmelar Decl. ¶ 151.)

Instead of citing to the intrinsic record, Defendants theorize about the patentee's intent in drafting the claims. (Reply at 14.) In fact, Defendants' theories actually lend support to NST's construction. A sophisticated patentee would not draft contradictory claim limitations. Nor would a sophisticated patentee make the "conscious drafting choice" to include a claim limitation that is unsupported by the specification. *Id.* Defendants' attempts to transform a clear drafting error into an intentional drafting decision should be squarely rejected.

Defendants' argument that a POSITA would not understand how to "arrange" the first and second information into a single address lacks credibility. A POSITA would understand that there are many ways to "arrange" the first and second information into a single address. (Chmelar Sur-Reply Decl. ¶ 31.) Even if these methods of arranging are not explicitly disclosed, the claim remains sufficiently definite because "[a] patent need not explicitly include information that is already well known in the art." *Presidio Components, Inc. v. Am. Tech. Ceramics Corp.*, 875 F.3d 1369, 1376 (Fed. Cir. 2017) ("a claim is not indefinite if a person of skill in the art would know how to utilize a standard measurement method … to make the necessary measurement").

Defendants also misconstrue the "single address" as the address of the target slave. (Reply at 15.) The "single address" is merely an arrangement of multiple pieces of information, *i.e.*, the first information and the second information. (Chmelar Sur-Reply Decl. ¶ 30.) Contrary to Defendants' suggestion (Reply at 15), the first information includes a connection identifier that identifies two or more slaves ***and*** "an identifier of a passive network interface means associated

with the addressed receiving module." '9893 patent, claim 4. Thus, the arranged "single address" includes (1) an identification of two or more slaves that can receive the message, (2) an identification of the passive network interface means associated with the target slave, and (3) a particular location within the target slave. '9893 patent, claim 4. Once this information is "arranged" in the single address, the address translation unit determines the particular slave being targeted based on the identified passive network interfaces means of the targeted slave. *See id.* at 6:17-26; *see also id.* at claim 4(c). Thus, Defendants' argument that it is supposedly unclear how information about "two or more different modules can be arranged with an existing address as a 'single' address" is a non sequitur—the claimed "single address" is an arrangement of multiple pieces of information which the address translation unit uses to determine the target slave's address, not the target slave's address. Chmelar Sur-Reply Decl. ¶ 35.

Assuming that the "single address" is the target slave's address, the remainder of the claim would be superfluous. *See* '9893 patent, claim 4 ("***determining***, at the address translation unit, ***which message receiving module S is being address*** … based on said single address, and ***further determining***, at said address translation unit, ***the particular location within the addressed message receiving module S*** based on said single address."). A POSITA would understand that the single address is an arrangement of multiple pieces of information, such that information about two or more slaves can be arranged as a single address. (Chmelar Sur-Reply Decl. ¶¶ 30–31.)

F. '2893 Patent Terms

1. "each data package comprising N data elements"

Defendants fail to justify introducing the unsupported limitation that the value of "N" must necessarily be a static number that is predetermined when an integrated circuit is first designed. (Reply at 16.) Defendants' argument appears to be that since Claim 10 generally relates to "[a] method of ***designing*** an integrated circuit," the value of "N" (and presumably every other aspect

of the claim that follows) must necessarily be static and predetermined as well. But this is not what the claim recites. The claim recites "a method of designing an integrated circuit." It does not recite "a method of designing ***each data package comprising N data elements***."

Meanwhile, Defendants' argument for why the value of "N" cannot be designed to be a "variable and changing" number is not supported by the specification. Namely, Defendants argue that this value must be static and predetermined because otherwise "a designer could not know how many storage elements to insert to meet the 'M*N' calculation."[6] (Reply at 16.) Not true. The '2893 Patent discloses that the "M*N data storage elements" equation is "***for introducing a delay*** of M*N cycles on the first communication channel." The '2893 Patent explains how "a network operates on the principle that a network station such as a data router receives the routing data incorporated in the data packet ***during a predefined clock cycle***." '2893 Patent, 1:54-57. Traditionally, although delaying a communication by a clock cycle could theoretically speed up the rest of the network, erroneous behavior can arise if the delay causes the routing data to arrive outside the predefined cycle. The solution proposed by the '2893 Patent is to require that any delay introduced on a channel be a factor of the clock cycle value. Thus, the value of "N" is not a static, predetermined value. Instead, it is a variable integer that must match the particular clock cycle of the particular subchannel on which a delay is introduced. Selecting a single, predetermined value for "N" when an integrated circuit is designed is simply not plausible given the millions of different individual channels that exist on an integrated circuit, which individually "exhibit different delay

[6] Defendants have attempted to muddy the waters by construing circuitry terms with data-bits arguments and data-bits terms with circuitry arguments. Although "each data package comprising N data elements" is a term that describes individual bits of data, Defendants present a "circuitry" argument that focuses on the "M*N data storage elements." Conversely, even though "data storage elements" are circuitry for the storage of bits, Defendants' argument for that term focuses on data elements, which are individual bits of data.

characteristics" based on their "different lengths" or even the "nature of the timing techniques used" at any given moment across any given link. '2893 Patent, 6:6-12.

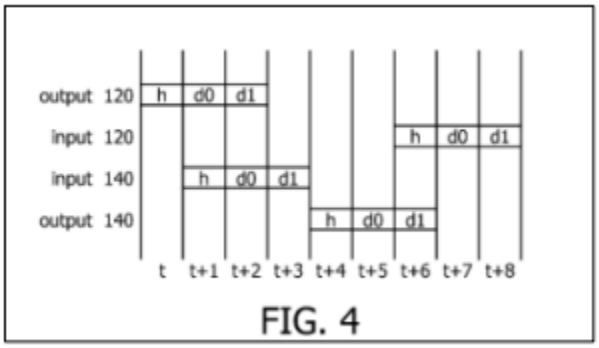
To this end, Defendants' argument that "it is non-sensical to suggest 'N' can change on a packet-by-packet basis" misses the crux of the '2893 Patent. The value of "N" does not change "on a packet-by-packet basis." Rather, the value of "N" is meant to match whatever the clock cycle happens to be for a particular link so that a delay of "N" equates to a delay of "N" clock cycles.

Defendants incorrectly argue that the specification only supports that "the number of N data elements in the network [must] be fixed." (Reply at 16.) Again, not true. For instance, the specification discloses how "phase-shifted routing" involves dynamic clock cycles that change with time, which rules out a static, predetermined value for "N." Instead, the specification discloses how "N" is meant to adapt to match the cycles as they change. 7:40-46 ("every communication channel 150 between two network stations exhibiting a phase-shifted routing information cycle with respect to each other ***should incorporate the appropriate number of data storage elements 160 to implement the number of cycles to which the phase shift corresponds***."). Similarly, the specification also discloses how in communications to a FIFO buffer, "adding one or more data storage elements to the M*N data storage elements as overwrite protection" is often useful "to avoid the loss of data." '2893 Patent, 9:46-51. These examples undermine Defendants' argument that the value of "N" cannot be "variable and changing." (Reply at 16.)

2. "data package"

Defendants' primary dispute with NST's construction for "data package" appears the be the word "arrangement." Yet Defendants' brief demonstrates why the '2893 Patent specifically supports a construction of "data package" as a "fixed-size ***arrangement*** of data." As Defendants acknowledge, Figures 2 and 4 show a specific order (*i.e.*, a specific "arrangement") of data, starting with "h" for header information followed by two payload data elements that are listed in numerical

order, with "d0" first and "d1" second. (Reply at 18.) As shown below, this same "arrangement" of data is used consistently and repeatedly.



As the specification notes, having a particular "arrangement of data" is important because a "network station expects routing information to arrive periodically" at a specific place at a specific time. Thus, "routing information, e.g. destination and required service type (e.g. best effort or guaranteed band width) ***has a fixed position in the data package, e.g. the first data element*** (i.e. a header)" so that it arrives when a network station expects it. '2893 patent, 2:22-33, 6:43-48.

3. "data storage elements"

Defendants' attempt to inject the limitation that "data storage elements" must "each store ***one data element*** for ***one clock cycle*** and then pass it on during the next clock cycle" is undermined by the specification. For instance, Defendants ignore the asynchronous embodiment taught in the patent, which discloses how multiple data elements in a data package can be "rippled" through M*N data storage elements without regard for cycles. *See* '2893 patent, 9:7-10 (disclosing that "data elements take a time period t2 to ripple through FIFO buffer."). This undermines Defendants' attempt to introduce the limitation of "**one data element** for **one clock cycle**."

G. '800 Patent Terms

1. "optimal amount of data"

Defendants misrepresent NST's positions. First, they incorrectly assert that NST defines

"optimal amount of data" as "optimal amount of data to optimize interconnect utilization." (Reply at 21.) NST's brief, however, clearly states that "optimal amount" should be given its plain and ordinary meaning, as understood by a POSITA to mean the amount of data optimal under the objective "communication properties" disclosed in the '800 Patent. (Resp. at 28-29.)

Second, Defendants also falsely suggest that NST has taken the position that a POSITA would "ignore" the connection properties disclosed in the '800 Patent "to focus solely on interconnect utilization." (Reply at 21.) Untrue. In fact, NST's brief states the opposite: "the '800 Patent discloses that the 'object of the invention' is to provide 'improved interconnect utilization,' where the improvement is achieved by buffering data ***until conditions for an optimal transfer (i.e., the 'connection properties') are satisfied***." (Resp. at 28 – 29.)

Third, Defendants falsely suggest that NST's position is that "a POSA would understand that the 'optimal amount of data' is the amount of data that would result in **optimal** 'interconnect utilization'" instead of the disclosed "**improving** interconnect utilization." (Reply at 20.) Yet again, not true. NST's brief clearly states that "the '800 Patent discloses that the 'object of the invention' is to provide '**improved** interconnect utilization.'" (Resp. at 28 – 29.)[7]

Despite initially arguing that the '800 Patent "provide[s] ***no*** **guidance**" whatsoever for objectively determining the "optimal amount of data" because the connection properties are "***purely subjective***" and "***left to the user's discretion***," Defendants have now moderated their

[7] Defendants also falsely suggest that "neither the patent nor Dr. Chmelar explain what 'interconnect utilization' means." (Reply at 21.) Again, untrue. In fact, Defendants acknowledge in the same paragraph that "**NST's brief characterizes interconnect utilization as 'send[ing] as much data in the fewest number of transmissions as possible**.'" (Reply at 21 (quoting Resp. at 30); *see also* Chmelar Sur-Reply Decl. ¶ 27.) Likewise, contrary to Defendants' suggestion, sending as much data in the fewest number of transmissions as possible does not conflict with maximizing interconnect utilization. (Reply at 21; Chmelar Sur-Reply Decl. ¶ 27). A POSITA would not expect that waiting to send as much data in the fewest number of transmissions could result in the interconnect being left empty (not utilized) while data is built up. *Id.*

stance to suggest that "***[m]ost* of them** would not be" objective. (*Compare* Br. at 32-33 *with* Reply at 21.) Yet in doing so, Defendants still fail to identify any subjective, user-defined connection property. Instead, Defendants suggest that the subjectivity arises from assigning different values to these properties (Reply at 21.) NST's brief clarifies that the patent does not disclose any sort of subjective assessment process; instead, it outlines predetermined, objective criteria hardwired into an integrated circuit for determining the "optimal amount of data" (Resp. at 29). These "conditions" are not subjective preferences that are weighed against one another.

Defendants also conflate the design process of interconnects with the objective characteristics of a fabricated circuit to erroneously imply that the resulting "communication properties" must be subjective (Reply at 20-21.)[8] NST's brief counters this by demonstrating that

[8] Defendants' citations to the specification do not support their claim that the communication properties must be subjectively weighed against one another. In fact, these citations disclose the benefits of NoC design in general. *See* '800 patent, 1:37 ("NoCs help resolve the electrical problems in new deep- submicrontechnologies, as they structure and manage global wires"), 1:39-40 ("At the same time they share wires, lowering their number and increasing their utilization."), 1:41 ("NoCs can also be energy efficient and reliable and are scalable compared to buses"), 1:55-56 ("As a result, interconnect arbitration changes from centralized to distributed, and issues like out-of order transactions, higher latencies, and end-to-end flow control must be handled either by the intellectual property blocks (IP) or by the network."), 2:1 ("On-chip networks have different properties (e.g., tighter link synchronization) and constraints (e.g., higher memory cost) leading to different design choices, which ultimately affect the network services."), 3:29-30 ("these protocols comprise means to force some of the currently buffered data to be transferred although the optimal burst length has not been reached in order to prevent deadlock caused by buffering data indefinitely."); 3:50-52 ("Reducing the number of packets sent over the interconnect reduces the overhead of the communication as less packet headers are required."); 4:50-54 ("The invention is based on the idea to buffer data until the buffered data is sufficiently large to be transferred optimally over an interconnect means in a packet. The larger a packet is, the smaller is the amount of packet headers and therefore the overhead is reduced and the interconnect is utilized more efficiently."); 5:27-35("The connection properties may include ordering (data transport in order), flow control (a remote buffer is reserved for a connection, and a data pro ducer will be allowed to send data only when it is guaranteed that space is available for the produced data), throughput (a lower bound on throughput is guaranteed), latency (upper bound for latency is guaranteed), the lossiness (dropping of data), transmission termination, transaction completion, data correctness, priority, or data delivery.").

properties like latency and throughput are not subjective but are inherent, objective characteristics of an integrated circuit (Chmelar Decl. ¶¶ 197-99, 205-06; Resp. at 30, 34). Tellingly, Defendants do not dispute NST's example of "latency" being an objective communication property that is "baked" into a circuit that is not subject to a user's discretion.

Finally, Defendants have not effectively addressed the distinctions raised in NST's brief regarding Defendants' cited cases. For instance, the interpretation of "optimal amount of data" in *Optimum Processing Solutions* ignores that the '800 Patent's optimization parameter is the "amount of data" itself. (Reply at 22.) Similarly, their reference to a new case from the District of New Jersey fails to recognize that the "communication properties" in the '800 Patent are the "specific criteria" for determining the "optimal amount of data" that were lacking in the case cited. *In re TR Labs Patent Litig*., No. 09-3883, 2014 U.S. Dist. LEXIS 95185 (D.N.J. Jul. 14, 2014). Meanwhile, Defendants misleadingly attempt to distinguish *Bitmicro LLC v. Kioxia America, Inc., et al*. by incorrectly suggesting that the '800 Patent discloses buffering a large number of different ***data types*** instead of the disclosed buffering of a ***specific quantity*** of data. (Reply at 22 (citing No. 6:22-cv-00331, Dkt. 54 at *30 (W.D. Tex. Feb. 16, 2023)).)

2. "optimal moment for sending the data . . ."

Defendants have overlooked key portions of the specification that NST's brief cites, which demonstrate how the "optimal moment for sending the data" is objectively determined using various communication properties (Resp. at 33 (citing '800 patent, 7:4-14).) For instance, the specification outlines that "[f]or a guaranteed ***throughput*** GT connection" (*i.e*., the 4th communication property recited in Claim 12), "data should wait for one of the slots reserved for its connection." '800 patent, 7:7-8. Similarly, for a best effort BE connection, it suggests using round robin arbitration across connections in the network interface. '800 patent, 7:10-12. This contradicts Defendants' argument that the patent does not provide a way to determine the optimal

moment based on the communication properties listed in the claim.

Likewise, Defendants inappropriately conflate the "optimal moment" specifically recited in the '800 Patent with the general concept of a "transmission moment." (Reply at 23.) Although related, NST's brief explains how these are distinct concepts, demonstrating that a "transmission moment" in an integrated circuit is when network resources become available for data transmission (Resp. at 33, (citing Chmelar Decl. ¶ 205).) In contrast, the "optimal moment" as per the '800 Patent is the next transmission moment where data can be sent in alignment with the communication properties recited in Claim 12. NST has never suggested that merely choosing the first available moment would be optimal for any given property, a claim Defendants have not substantiated with references to NST's brief. (Reply at 23.)

Lastly, Defendants fail to address NST's position that the "optimal moment" and "optimal amount" of data are interconnected concepts. NST's brief points out that the specification explicitly states that an "optimal amount of data" must be buffered *before* reaching an "optimal moment" for transmission. (Resp. at 34 (citing '800 patent, 5:60-65; Claim 12).) Ignoring these disclosures, Defendants propose the baseless idea that the determination unit "could decide" on its own that the "optimal moment" has arrived before the "optimal amount of data" has been buffered. (Reply at 23.) This suggestion is unsupported by any evidence from the patent's claims or its specification and disregards the patent's clear disclosures to the contrary.

3. "according to communication properties . . . "

Contrary to Defendants' suggestion, NST does not concede that "some of the communication properties listed after 'include' ***need to be used*** to determine the optimal moment." (Reply at 24.) NST's brief clearly states that neither Claim 12 nor the specification mandates the use of these communication properties for calculating the optimal moment. (Resp. at 36-37.) The claim and specification instead specify "determining an optimal moment for sending the data

according to communication properties." ('800 patent, 12:16-31), with "according to" interpreted as "in conformity with," a point Defendants do not dispute. (Resp. at 37, citing *Oilfield Equip. Mktg., Inc. v. New Tech Sys., Inc*., No. CIV.A. MO-02-CA-183, 2005 WL 6258387, at *6 (W.D. Tex. Sept. 2, 2005), aff'd, 227 F. App'x 925 (Fed. Cir. 2007).) Nor do Defendants dispute the fact that—as noted in NST's brief—the word "used" is never used in either Claim 12 or the specification when reciting the communication properties.

Similarly, Defendants inappropriately suggest that NST's construction seeks to substitute the word "and" for "or" in the claim. (Resp. at 36.) Not true. Rather, NST asserts that the "optimal moment for sending the data" should be ***in conformity with*** the communication properties (Resp. at 36-38), meaning that it must ***align with*** all relevant properties. If a particular property is not applicable to a transmission, the optimal moment is still determined in accordance with the remaining applicable communication properties. Consider the analogy of driving according to traffic laws. Just as a driver adheres to different traffic rules depending on the road they are on—like following lane markers in a city but navigating unmarked country roads without them—the "optimal moment" for data transmission adheres to relevant communication properties. In situations where a specific property, like "throughput," is not applicable because a chip designer decided not to bake it into a particular link, it does not mean that the transmission is not conforming to the communication properties. It simply means that this particular property is not relevant in that context, much like certain driving laws are not applicable on every type of road.

This is consistent with both common sense and the '800 Patent itself. Claim 12, for instance, includes phrases like "throughput where a lower bound on throughput is guaranteed," and "latency where an upper bound for latency is guaranteed," thereby explicitly acknowledging scenarios where certain properties may not apply to a given transmission. ('800 patent, 12:15-31.)

The specification also suggests that "connection properties ***may*** include" the ten properties listed in Claim 12, rather than stating they "***must*** include" all of them. ('800 patent, 5:27-35.)

4. "first determination unit" / "second determination unit"

Defendants presume that they "overcame the presumption arising from the absence of the word 'means'" merely by purporting "that 'determination' is purely functional, and 'unit' is well-recognized nonce word that is devoid of structure." (Reply at 10.) That is insufficient. "The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). NST explains that a POSITA would understand "determination unit" to mean "a circuit that makes determinations based on stored or received information." (Resp. at 38–42.)

Defendants wrongly allege that NST is "trying to gap-fill" when identifying disclosures indicating that the "determination unit" stores data. (Reply at 10–11.) But as discussed *supra*, claim terms are read in view of the claim as a whole, in light of the specification, from the perspective of a skilled artisan. *Lighting World, Inc.*, 382 F.3d 1354, 1359-60. A POSITA understands that in order to store data, a "determination unit" must be storage circuitry. (Resp. at 39–40.) This is based on the intrinsic evidence, which describes at least each of the wrapper and network interface embodying the "determination unit" and buffering (*i.e.*, storing) data. (Resp. at 39–40 (citing '800 patent, 4:18–24, 6:47–49, 6:62–65, 7:34–40, FIG. 2)); '800 patent, 8:34–36. In these preferred embodiments, the storage circuitry performs the claimed functions. Defendants' insistence on excluding preferred embodiments violates the canons of claim construction.

Defendants further argue that the network interface cannot embody the "determination unit," even arguing that Claim 12 cannot read on such an embodiment because the network interface is claimed as a separate element. (Reply at 11.) But this directly contradicts the written

description: in a preferred embodiment, the "determination units" are "arranged in the network interfaces NI," and the "determination unit" ***embodies***[9] "one and the same item of hardware." (Resp. at 39–40 (citing '800 patent, 6:47-49, 8:34-36, FIG 2.)); *Medrad*, 401 F.3d at 1320 (Fed. Cir. 2005) (a "claim construction that does not encompass a disclosed embodiment is rarely, if ever, correct"). But even if excluding preferred embodiments from a term's scope is proper, Defendants provide no analysis or authority that the recited interconnect module is the purported network interface. Defendants then reference a series of cases that do not support their arguments.[10]

Defendants have not met their high burden of proving indefiniteness, and have not overcome the § 112(6) presumption. Thus, the Court should adopt NST's unrebutted construction, which is consistent with intrinsic evidence and a POSITA's understanding. Alternatively, if § 112(6) applies, the Court should adopt NST's proposed structure, "circuit."

5. "wrapper"

Defendants have not countered the evidence in NST's brief indicating that the '800 Patent describes the wrapper as a memory circuit based on its "buffering data sent from the master M and the slave S over the network N" (Resp. at 43 (citing '800 patent, 5:60-62, 3:41-43, 3:54-56).) Nor have Defendants challenged the assertion that a POSITA would equate buffering data with storing data, a function requiring memory circuitry. (Resp. at 43.) Additionally, Defendants have not

[9] Defendants' reliance on *WSOU*, which relates to location rather than embodiment, is inapplicable. (Reply at 11 (citing 2023 U.S. App. LEXIS 25255 at *12–*13).)

[10] Defendants try to clarify that *WSOU Invs. LLC* and *Diebold Nixdorf, Inc. v. Int'l Trade Comm'n* are analogous technologies or fact patterns. Still not true. (Reply at 10 (citing *WSOU Invs. LLC*, 2023 U.S. App. LEXIS 25255 at *12–*13; *Diebold Nixdorf, Inc.*, 899 F.3d 1291, 1303 (Fed. Cir. 2018)).) *WSOU* explains that the patent is directed to "control[ling] the operation of the phone in accordance with software stored in a read only memory." *WSOU Invs. LLC*, 2023 U.S. App. LEXIS 25255 at *14. And in *Diebold Nixdorf*, the court found no indication of any class of structures in the record, unlike here. 899 F.3d at 1303.

addressed the fact that numerous courts have equated the term "buffer" with "memory." (Resp. at 43.) Consequently, NST the Court should accept NST's unrebutted construction of "wrapper."

6. "said first wrapper" / "said second wrapper"

As an initial matter, Defendants have clarified that they have presented "three ***reasonable ways to correct*** the lack of antecedent basis." (Reply at 24-25.) In other words, this term is definite under any scenario in Defendants' brief. This is not evidence of indefiniteness; if anything, it is clear and convincing evidence that the term is definite under any construction proposed.

Rather than present a plausible case for the term's indefiniteness, Defendants instead imply that indefiniteness stems from uncertainty over which construction is correct. But this is plainly wrong, since both parties at least agree that construing "said first/second wrapper" as "said first/second memory" is reasonable in light of the claims and specification. (Resp. at 44-45). Even if that were not the case, uncertainty over which interpretation is correct is not grounds for invalidation; it is a basis for claim construction. Defendants could have proposed alternative constructions but chose not to. NST's unrebutted should therefore be adopted.

In its brief, NST explained why the claims and specification support construing "said first/second wrapper" as "said first/second memory," but not Defendants' other two constructions. (Resp. at 44-45.) As stated above, the parties already agree that this interpretation is reasonable. Whether other alternative interpretations might exist is irrelevant. A patentee is not required disprove any number of implausible interpretations that might exist, (Reply at 25), as such a requirement would unfairly shift Defendants' burden of proving indefiniteness onto NST. (Resp. at 29 (collecting cases)).

III. <u>Conclusion</u>

For the reasons set forth above, Defendants' proposed constructions should be rejected in favor of NST's constructions.

Date: December 14, 2023

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing document was served via electronic mail on December 14, 2023, to all opposing counsel of record.

/s/ William E. Davis, III
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