

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION,

Petitioner,

v.

ADVANCED CLUSTER SYSTEMS, INC.,

Patent Owner.

Case IPR2025-00915

U.S. Patent No. 11,563,621

PATENT OWNER'S SUR-REPLY

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I. THE BAJAJ SUPPLEMENTAL DECLARATION AND EXHIBITS 1164-1167 ADVANCE A NEW “SUBSTRATE” CLAIM-CONSTRUCTION THEORY ABSENT FROM THE PETITION AND SHOULD BE REFUSED UNDER § 42.23(b)

The Bajaj Supplemental Declaration at paragraphs 22-29 and the four newly introduced utility patents — Thomsen (Ex. 1164), Nguyen (Ex. 1165), Lee (Ex. 1166), and Chu (Ex. 1167) — supply, for the first time in Reply, a “substrate” claim-construction theory that the Petition never identified. The Petition disclaimed any need for claim construction: “For purposes of this proceeding, Petitioners submit that no claim term requires express construction.” Pet. 12-13. The Reply now asks the Board to construe “reside on the same die” by analogy to “substrate” usage in four utility patents that the Petition omitted, asserting the construction is broad enough to read on RS6000’s card-mounted discrete processors. Reply 9-13; Ex. 1163 ¶¶22-29. That is a new claim-construction theory and a new evidentiary record, each first raised in Reply, and § 42.23(b) bars both.

A. The §42.23(b) Framework: Reply May Respond, Not Substitute

A reply may not proceed in a new direction or present evidence that could have been submitted earlier to make out a *prima facie* case. 37 C.F.R. § 42.23(b); Office Patent Trial Practice Guide, 84 Fed. Reg. 64,280, 64,299 (Nov. 21, 2019). Federal Circuit precedent enforces the same boundary. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.* rejects reply arguments that raise new issues or rely on belated evidence needed to make out the petitioner’s case. 821 F.3d 1359, 1369 (Fed.

Cir. 2016). *Anacor* does not allow a petitioner to introduce a new theory absent from the Petition. *Anacor Pharms., Inc. v. Iancu*, 889 F.3d 1372, 1380-81 (Fed. Cir. 2018). *Apple Inc. v. Andrea Elecs. Corp.* does not permit substitution of a new identified prior-art structure. 949 F.3d 697, 706-07 (Fed. Cir. 2020).

Axonics, Inc. v. Medtronic, Inc. permits a petitioner to argue and present evidence under a patent owner's new claim construction, but only when the petitioner "relies on the same embodiments for each invalidity ground as were identified in the petition." 75 F.4th 1374, 1384 (Fed. Cir. 2023). The Federal Circuit expressly reserved "the question of whether, when presented with a new claim construction, a petitioner can rely in its reply on new embodiments from the prior art references that were relied on in the petition." *Id.* *Rembrandt* confirms that permissible Reply elaboration must rest on "the same legal ground" based on "the same prior art reference[s]" and the same embodiment. *Rembrandt Diagnostics, LP v. Alere, Inc.*, 76 F.4th 1376, 1383-85 (Fed. Cir. 2023). The Board may decline to consider a new theory first raised in Reply. *Id.*

B. Petitioner's "Substrate" Theory Is a New Claim-Construction Position the Petition Affirmatively Disavowed

The Petition addressed the "reside on the same die" limitation in claims 20 and 25 by relying on RS6000's "Symmetric MultiProcessor (SMP)" hardware. Pet. 67-71. The Petition cited Ex. 1007 pages 2 and 9 — system-level SMP descriptions — and treated those passages as the disclosure that satisfies the claim. The Petition

did not propose any construction of “die,” and did not argue that “die” should be construed to encompass card-level assembly substrates. The POR, applying plain and ordinary meaning, challenged the Petition’s proof of this claim limitation.

The Reply now proposes a construction of “die” and relies on four new patents. It cites Ex. 1163 ¶¶22-29 and Exs. 1164-1167 to argue that “die” is properly construed by reference to the broader “substrate” usage in semiconductor and electronics engineering, and that RS6000’s card-mounted processors satisfy that construction. Reply 9-11. Petitioner’s expert quotes Thomsen’s “flat, rectangular substrate or card 34” disclosure (Ex. 1164, 1:62-64), Nguyen’s “PC motherboard . . . substrate” disclosure (Ex. 1165, 2:7-22), and analogous Lee and Chu passages — to argue that “die” encompasses card-level assembly. Ex. 1163 ¶¶24-29. This is a claim-construction theory the Petition did not advance. The Petition stated no construction was required and elected not to identify a card-level substrate as the mapped structure for “die.” Even if responsive evidence to PO’s POR is permitted under *Axonics*, Petitioner exceeds *Axonic’s* scope by introducing a new mapped structure (card-level assembly) rather than merely defining the claim term. Pet. 12.

C. The Four Utility Patents Were Publicly Available and Could Have Been Cited in the Petition

Thomsen (US 5,973,386), Nguyen (US 5,914,855), Lee (US 7,200,011), and Chu (US 7,733,664) were all publicly available years before the Petition was filed. The decision to withhold these references from the Petition and introduce them in

Reply is the precise gap-filling that *Intelligent Bio-Sys*, *Henny Penny*, and *Anacor* prohibit. Petitioner cannot “wait and see” what Patent Owner argues, then use Reply to introduce the documentary record the Petition required.

D. Targeted Relief: Decline to Consider Exhibits 1164-1167 and Bajaj ¶¶22-29

Patent Owner does not ask the Board to strike Ex. 1163 wholesale. The Board should decline to consider Exs. 1164-1167 in their entirety and decline to consider Ex. 1163 ¶¶22-29 to the extent Petitioner relies on those paragraphs to advance a new “substrate” construction of “die.” *Rembrandt*, 76 F.4th at 1383-85. That remedy preserves legitimate rebuttal while enforcing the Petition-stage particularity required by 35 U.S.C. § 312(a)(3) and 37 C.F.R. § 42.104(b)(2).

II. EVEN IF EXHIBITS 1164-1167 AND BAJAJ ¶¶22-29 ARE CONSIDERED, RS6000's CARD-MOUNTED DISCRETE PROCESSORS DO NOT SATISFY THE CLAIMED “RESIDE ON THE SAME DIE” LIMITATION

A. The Specification's “Die” Terminology Reflects Semiconductor Fabrication, Not Assembly-Level Card Mounting

The '621 Patent uses “die” in its ordinary semiconductor-fabrication sense. The specification describes “processor cores” as “generally independent microprocessors, but more than one can be included in a single chip package.” Ex. 1001, 5:13-17. The specification's examples — Pentium, Core 2 Duo, Xeon, Athlon, MIPS, PowerPC, ALPHA — are processor devices and chip packages, not card-level assemblies of discrete processors mounted on a printed-circuit board. The

specification's repeated use of "processor" in the singular alongside "cores" in the plural inside that processor confirms that the "die" terminology refers to the semiconductor substrate on which the cores are fabricated, not to a card-level assembly substrate on which discrete processors are mounted.

B. RS6000's Card-Mounted Discrete Processors Rest on Separate Chips in Separate Slots, Not Integrated on a Single Semiconductor Die

RS6000 describes "four 375 MHz, 630FP processors mounted on one card" with the processors mounted in processor slots. Ex. 1007, 9-10. The processors are discrete, separately packaged, separately socketed devices. They share a card-level substrate the way components of any printed-circuit-board assembly share the board; they do not share a semiconductor die. A POSITA reading "reside on the same die" against the specification's framework — single-chip multi-core packages — would not equate card-mounted discrete processors with on-die fabrication. Petitioner's argument requires conflating two distinct levels of physical organization.

C. The Utility Patents Address Assembly-Level Substrate Mounting; They Do Not Establish That Semiconductor "Die" Encompasses Card-Level Assembly

Thomsen, Nguyen, Lee, and Chu describe assembly-level substrate usage — boards, cards, motherboards on which components are mounted; the fabrication-integrated multi-core processors the claim recites. Even taken on their own terms, the utility patents establish only that "substrate" has a broad meaning in electronics

engineering — a fact the specification's contrasting use of “die” actually reinforces. The specification does not say “substrate”; it speaks of cores within a processor and of single-chip multi-core configurations. Ex. 1001, 5:11-16. The contrast between the specification's “die”/“chip” framework and the utility patents' “substrate”/“board” framework is the reason the Board should reject Petitioner's proffered construction.

D. Under *Phillips*, Specification-Driven Claim Construction Controls, and “Die” Requires Fabrication-Integrated Processors on a Single Semiconductor Die

Phillips v. AWH Corp. directs that claim language is read in light of the specification. 415 F.3d 1303, 1315-17 (Fed. Cir. 2005) (en banc). The specification's framework — single-chip packages with internal cores — is the proper anchor for “die.” Borrowing assembly-level “substrate” usage from unrelated patents to broaden “die” to card-mounted discrete processors is not *Phillips*-compliant claim construction; it is hindsight-driven reconstruction designed to fit RS6000's actual disclosure.

E. Petitioner's “Reside” Argument Conflates Software Storage with Hardware Integration on a Die

Petitioner's separate argument that “reside” means “currently located” — citing the specification's use of “reside” for software components such as kernels and cluster node modules (Reply, 11 (citing Ex. 1001, 2:34-61, 11:6-9, 11:27-29, 22:64-67)) — proves nothing about the claimed phrase “reside on the same die.” The

specification's "reside" examples describe software components stored in a computer-readable medium: "A first kernel resides in the at least one computer-readable medium"; "A first cluster node module resides in the at least one computer-readable medium." Ex. 1001, 2:55-61. Those passages confirm only that software can be stored in memory; they do not address how processors physically relate to a die. "Die" is a semiconductor term of art meaning a single semiconductor chip, and the specification's examples — Pentium, Core 2 Duo, Xeon, Athlon, MIPS, PowerPC, ALPHA — are processor devices, including single-chip multi-core configurations. Reading "reside on the same die" to encompass discrete processors mounted on a card requires substituting "card" for "die" — not interpreting "reside."

III. THE BOARD SHOULD ALSO DECLINE TO CONSIDER BAJAJ SUPPLEMENTAL DECLARATION PARAGRAPHS 30-32 BECAUSE PETITIONER FIRST IDENTIFIES POWER3 EXECUTION UNITS AS CLAIMED CORES IN REPLY

A. The Petition's RS6000 Theory Addressed System-Level Processor Architecture, Not POWER3 Internal Structure

The Petition's discussion of RS6000 at Pet. 67-71 cites Ex. 1007 pages 2 and 9 at the SMP level. The Petition did not cite Ex. 1010 for execution-unit detail. The Petition did not describe POWER3 internals, nor did it identify execution units as the structure satisfying the cores limitation. The Petition's mapping operated at one structural level — the SMP system. Bajaj's Reply-stage paragraphs now operate at a different structural level — internal POWER3 execution units.

B. Bajaj Ex. 1163 ¶¶30-32 Introduce a Fallback Theory: POWER3 Execution Units Satisfy the Claimed Multi-Core Requirement

The Reply now advances a different identification: a single POWER3 chip with eight execution units, with Intel treating each as a claimed core. Reply 13; Ex. 1163 ¶¶30-32. *Axonics* permits a petitioner to argue and present evidence under a patent owner's new claim construction, but only when the petitioner "relies on the same embodiments for each invalidity ground as were identified in the petition." 75 F.4th at 1384. The Federal Circuit expressly reserved "the question of whether, when presented with a new claim construction, a petitioner can rely in its reply on new embodiments from the prior art references that were relied on in the petition." *Id.* Petitioner's Reply does not satisfy that test. Petitioner initially asserted SMP-level system-of-discrete-processors theory. Now, rather than defend its theory, Petitioner relies upon Bajaj's Supplemental Declaration to advance a different RS6000 embodiment and new theory — POWER3 execution units inside one chip — to satisfy the same limitation. Ex. 1163 ¶¶30-32. This structural substitution falls within the *Axonics* reservation and squarely inside the rule of *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1330-31 (Fed. Cir. 2019), and *Intelligent Bio-Sys.*, 821 F.3d at 1369, that a Reply may not introduce a new prior-art structure to satisfy a disputed claim element.

C. An Execution Unit Is a Pipeline Functional Element, Not an Independently Executing Processing Core

Independently of the § 42.23(b) point, the execution-units identification fails on the merits. The specification describes “processing cores” as “processing units capable of single-threaded execution.” Ex. 1001, 7:30-33. An execution unit in a superscalar core is a pipeline functional unit — for example, the POWER3 “superscalar core [is] comprised of eight execution units” that “allows concurrent operation of fixed-point, load/store, branch, and floating-point instructions.” Ex. 1010, 57. Multiple execution units within a single superscalar core allow concurrent operation of instructions issued from one instruction stream; they do not independently execute separate instruction streams. They are not “processing units capable of single-threaded execution.” Petitioner’s expert quotes the specification’s “units capable of single-threaded execution” and Ex. 1010’s “eight execution units” and concludes — without independent technical reasoning — that “execution units” satisfy the specification’s description of “processing cores.” Ex. 1163 ¶¶31-32. Such conclusory expert testimony is entitled to little weight. *Xerox Corp v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15 (Aug. 24, 2022) (precedential); 37 C.F.R. § 42.65(a); see also *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1351 (Fed. Cir. 2020).

Treating each execution unit as a “core” would improperly convert every superscalar single-core processor into a multi-core processor. Under *Phillips*, claim

language identifying a processor with internal cores cannot be stretched to encompass pipeline subcomponents within a single processor. 415 F.3d at 1315-17.

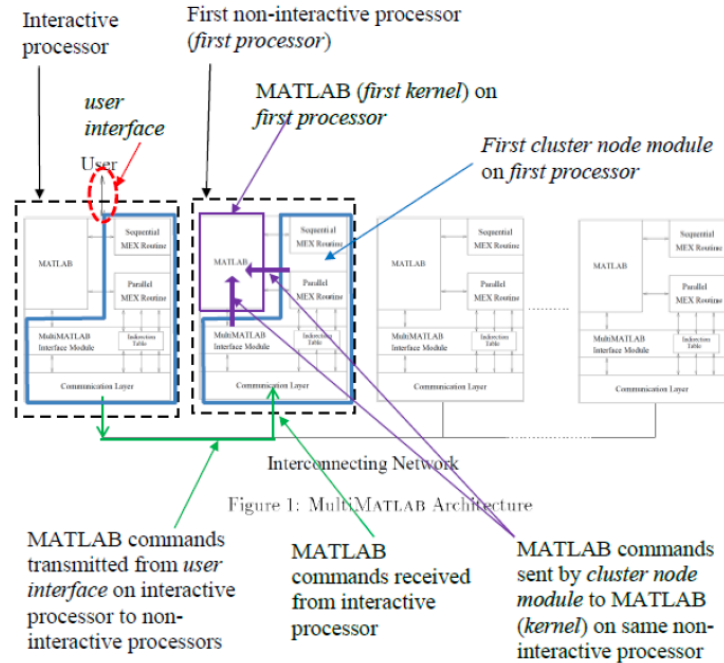
D. Targeted Relief: Decline to Consider ¶¶30-32 for a Reply-Only Execution-Unit-as-Core Theory

Patent Owner's relief request is targeted: decline to consider Ex. 1163 ¶¶30-32 to the extent Petitioner relies on those paragraphs to identify POWER3 execution units as the claimed cores. *Rembrandt*, 76 F.4th at 1383-85.

IV. MENON AND TREFETHEN DO NOT TEACH THE CLAIMED “CONFIGURED TO RECEIVE COMMANDS FROM A USER INTERFACE WITHOUT THE COMMANDS FIRST PASSING THROUGH THE FIRST KERNEL” REQUIRED BY CLAIMS 1 AND 13

A. Petitioner's Current Reading of Menon and Trefethen Contradicts Its Explanation in IPR2025-00913

Petitioner's arguments regarding Menon and Trefethen plainly misread the references to improperly cobble together its invalidity position. Specifically, Petitioner argues that the references “teach that the user enters commands (first commands) that are received by the ‘first non-interactive processor’ directly from the ‘interactive processor’ without first passing through the ‘MATLAB process’ on the ‘first non-interactive processor’ (the first kernel).” Reply 2. In support of this, the Reply includes the following Petitioner annotated image.



Id. at 3. In other words, Petitioner ignores the leftmost node of Menon by labeling it an “Interactive” node, and alleges that the second node is a “first node” with a “first kernel” and “first cluster node module.”

This is contradictory to how Petitioner and Bajaj read the combination of Menon and Trefethen in connection with its co-pending petition against Patent Owner’s U.S. Patent No. 11,570,034. Specifically, in IPR2025-00913, Petitioner and its expert provided the following annotated figure of the combination:

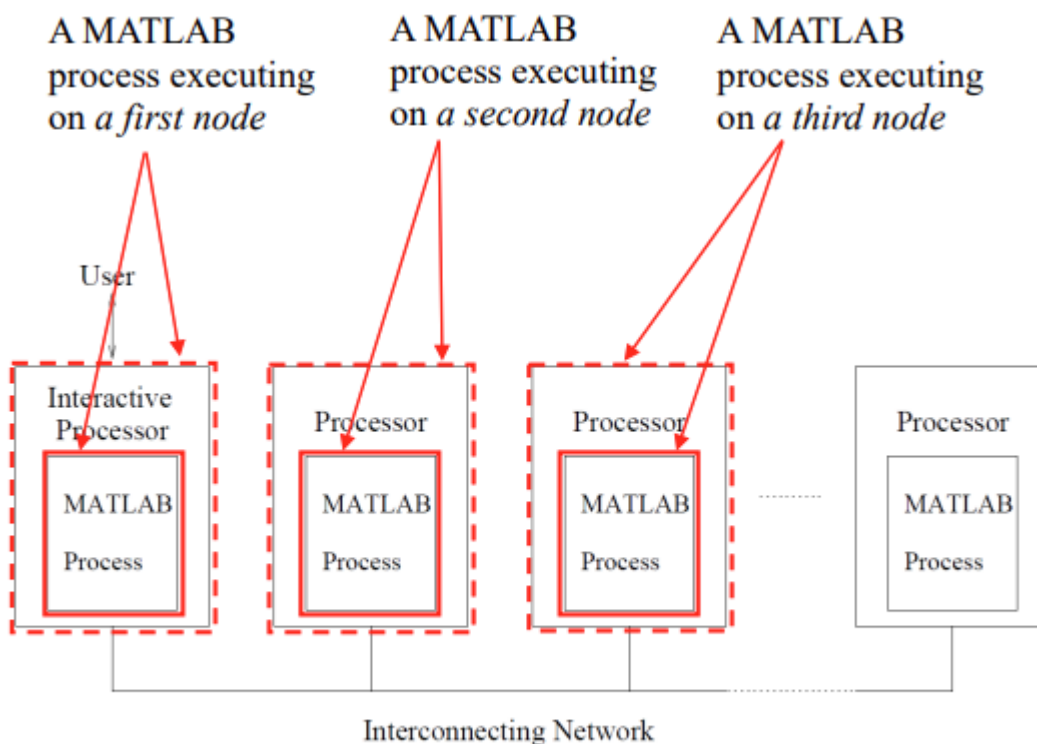


Figure 1: MultiMATLAB Architecture

IPR2025-00913, Paper 3, at 31. There, Petitioner and its expert read the leftmost node as the “first node.” *Id.* Petitioner further explained, relying on its expert, that “[b]ecause MATLAB is ‘MATLAB software,’ a POSITA would recognize MATLAB is program code executed by a hardware processor. Ex. 1006, 2; Ex. 1005, 3; Ex. 1007, 3; Ex. 1003, ¶174. Accordingly, each node executing MATLAB discloses each node executing a single-node kernel.” IPR2025-00913, Paper 3, at 32 (italics in original).

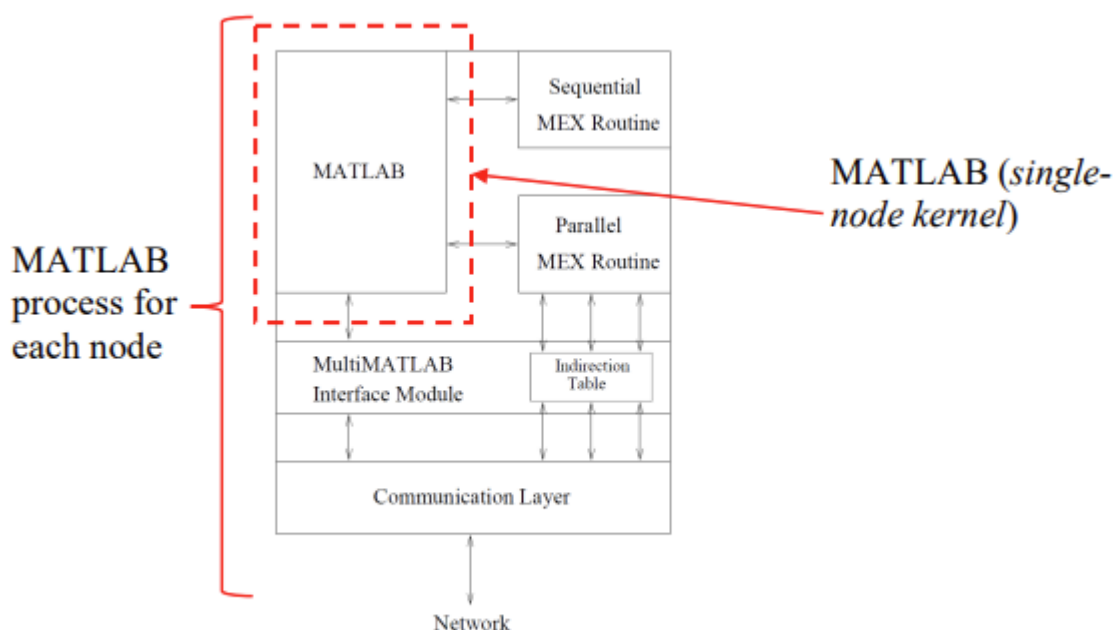
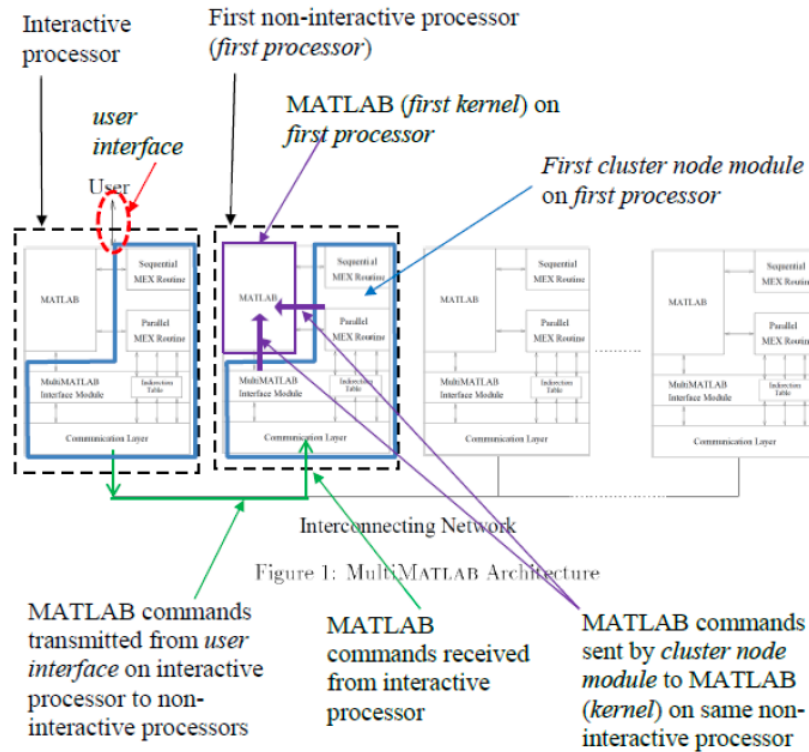


Figure 2: MATLAB Process Address Space

Id. Petitioner and its expert further explained that “Trefethen describes how user instructions are interpreted. Ex. 1006, 3-7.” IPR2025-00913, Pet. 41. “For example, Trefethen discloses the user instruction `Eval([4 5], cond(hilb(ID)))`. MATLAB interprets the instruction and calls the Eval MEX routine so that the calls `cond(hilb(ID))` are distributed to the MATLAB processes on processor ID=4 and ID=5 for each to perform. Ex. 1006, 4; Ex. 1003, ¶203.” IPR2025-00913, Pet. 41 (internal quotations omitted). The “MATLAB” referenced in connection with the execution here is the “single-node kernel.”

Thus in IPR2025-00913, Petitioner and its expert asserted that when a user instruction is received, it is processed by **the single-node kernel** of the leftmost node, which interprets the instruction and uses its MEX commands to distribute calls

to other MATLAB processes. In other words, the user commands are first passed through the first single-node kernel. Petitioner and its expert offered no basis to ignore the leftmost node, and its improper reading of the references is the only way to read it on the claim language.



Reply 3.

B. On the Merits, the Combination of Menon and Trefethen Does Not Teach the Claimed “Configured to Receive Commands From a User Interface Without the Commands First Passing Through the First Kernel” Required by Claims 1 and 13

Even considering Petitioner’s argument that Menon’s first node can be ignored because it is an “interactive processor” and not the “first non-interactive processor,” the combination still does not disclose the claimed limitation that the

first cluster node module be “configured to receive commands from a user interface without the commands first passing through the first kernel.” Ex. 1001, claim 1.

Petitioner's Reply mapping requires the Board to accept two incorrect assertions: (i) that user commands flow from the interactive processor to the first non-interactive processor's cluster-node module without intervening interpretation; and (ii) that the MATLAB process running on the interactive processor is the “user interface” rather than a kernel. Neither is supported by the record. Trefethen describes a user command (e.g., `Eval([4 5], cond(hilb(ID)))`) that is **interpreted** by the MATLAB process on the interactive processor before being dispatched to other nodes via MEX routines and MPI primitives. Ex. 1006, 4; Ex. 1003, ¶203. Petitioner's own analysis in IPR2025-00913 makes the same point explicit. IPR2025-00913, Pet. 32, 41. The commands the first non-interactive processor receives are not raw user-interface inputs; they are interpreted and dispatched commands that have already passed through the interactive processor's MATLAB — which Petitioner itself identified as a “single-node kernel” in the parallel '034 proceeding.

Bajaj's characterization of the interactive processor's MATLAB into “the user interface” is improper hindsight reconstruction. Ex. 1163, ¶12. Menon and Trefethen do not describe MATLAB-as-user-interface; they describe MATLAB as the program code that interprets and executes mathematical expressions — the same

function Petitioner elsewhere calls the “single-node kernel.” The dependent claims confirm the same architecture: claims 2, 14, 24, and 27 each require that “the first cluster node module is logically positioned between the user interface and the first kernel,” preserving a distinct user interface, a distinct first cluster node module, and a distinct first kernel. Ex. 1001, cl. 2, 14, 24, 27. Reading Menon’s interactive processor as both “user interface” and not-a-kernel writes those architectural distinctions out of the claims.

**V. PETITIONER FAILED TO CARRY ITS BURDEN ON
MOTIVATION TO COMBINE BECAUSE MENON REDESIGNED
AWAY FROM THE TREFETHEN ARCHITECTURE PETITIONER
SEEKS TO RECONSTRUCT**

**A. Menon’s Redesign Rationale Identifies the Trefethen Architecture
as Architecturally Limited**

Menon describes the Trefethen MultiMATLAB architecture and identifies limitations: tight coupling to MPICH, lack of extensibility, and performance constraints. Ex. 1005, 14. Menon then describes a redesigned architecture using vendor-specific MPI implementations and parallel MEX routines, with the explicit purpose of overcoming those fundamental limitations. Ex. 1005, 2, 14. A POSITA reading Menon would adopt the redesigned architecture — not return to the Trefethen architecture Menon redesigned away from. The Reply’s framing that “Menon builds on Trefethen” (Reply 14-15) describes the conceptual lineage but ignores Menon’s specific architectural changes. A reference that identifies particular

features of a prior design as limitations — and then replaces them — does not invite a POSITA to put those limitations back. See *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068-69 (Fed. Cir. 2018) (PTAB cannot disregard prior-art teachings that an alternative is undesirable by characterizing them as “subjective preferences”); *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550-51 (Fed. Cir. 1983) (reference statements identifying specific defects in a prior design are properly considered in the teach-away analysis). Menon’s statements that the first MultiMATLAB architecture is “more tightly coupled” to MPICH/P4 and not extensible via parallel MEX routines (Ex. 1005, 14) are not stylistic preferences; they are the identified defects that drove Menon’s redesign.

**B. Petitioner’s Common-Authorship and “MEX Routines”
Arguments Are Not Articulated Motivation**

The Reply argues that Menon and Trefethen share two authors, both papers describe “aspects of the same system,” and “Menon explicitly cites Trefethen.” Reply 14-15; Ex. 1163 ¶¶33-38. Common authorship and shared subject matter are not articulated motivation. The burden of persuasion on motivation to combine always lies with the patent challenger. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016). Motivation cannot rest on “mere conclusory statements”; it requires “articulated reasoning with some rational underpinning.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). The Board cannot adopt expert testimony that announces a motivation without explaining it. *In re NuVasive*,

Inc., 842 F.3d 1376, 1383-85 (Fed. Cir. 2016). Two authors writing two papers about the same general system does not establish that a POSITA reading either paper would be motivated to combine the references in the specific way Petitioner now proposes — a chained result-passing architecture in which the cluster node module is positioned between user interface and kernel, with results returning to the first node for delivery to the user interface.

Petitioner's invocation of "MEX routines" proves the opposite of what Petitioner claims. Reply 16; Ex. 1163 ¶36. Menon's MEX-routines extension was Menon's response to limitations Menon expressly identified in Trefethen's architecture: "more tightly coupled" to MPICH and lack of "extensibility." Ex. 1005, 14. MEX routines are not the architectural change Petitioner needs to bridge the obviousness gap. Bajaj's testimony that "the authors of the Menon paper actually implemented the modification" of adding MEX routines does not address the architectural shift Petitioner now relies on. That kind of conclusory expert testimony, which substitutes a different modification for the architectural change Petitioner needs, is entitled to little weight. *Xerox*, IPR2022-00624, Paper 9, 15 (Aug. 24, 2022) (precedential); 37 C.F.R. § 42.65(a). The Federal Circuit has been clear that an expert's say-so that a POSITA "could" implement a modification is not the same as articulated reasoning that a POSITA "would" be motivated to do so. *Polaris*, 882 F.3d at 1069.

Menon does not supply motivation to preserve Trefethen's earlier architecture; it supplies the reason to move past it. Menon expressly presents a "new MultiMATLAB architecture redesigned" for performance and extensibility, then identifies the "first MultiMATLAB architecture" as more tightly coupled to MPICH/P4, unable to use vendor-specific MPI implementations, unable to support extensions via parallel MEX routines, and subject to performance limitations. Ex. 1005, 2, 14. That is a concrete redesign to avoid identified architectural limitations, not a mere preference among equivalent options. A reference that "criticize[s], discredit[s], or otherwise discourage[s]" the proposed path is properly considered as teaching away, and a reference that discourages the proposed path or undercuts the rationale for pursuing it defeats motivation and reasonable expectation of success, *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009). Menon does both: it identifies the Trefethen architecture by name as the design Menon redesigned to avoid.

C. Reconstructing the Trefethen Architecture Would Change Menon's Principle of Operation and Defeat Reasonable Expectation of Success

Petitioner's motivation theory rests on Menon's reported performance results on the SP2/IBM platform. Ex. 1005, 13. Petitioner cannot rely on those results while reverting to the architectural premise Menon abandoned to obtain them. A combination that would "require a substantial reconstruction and redesign of the

elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate” is not obvious. *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959). Menon’s principle of operation is the redesigned architecture using vendor-specific MPI and parallel MEX routines (Ex. 1005, 2, 14); Petitioner’s combination requires un-doing that redesign and restoring the very coupling and extensibility limits Menon identified as limitations. *KSR* does not authorize the Board to fill an evidentiary gap with hindsight or to credit reported performance numbers that depend on a different architecture than the one Petitioner proposes. *KSR*, 550 U.S. at 418-21. *DePuy Spine* confirms the point: a reference teaches away — and undercuts reasonable expectation of success — when it suggests the path urged would not be productive of the result sought by the applicant. 567 F.3d at 1327. Menon’s redesign rationale and reported performance results do not support Petitioner’s proposed reconstruction of the Trefethen architecture.

VI. PETITIONER DID NOT ESTABLISH THAT THE FIVE REFERENCES ARE PRINTED PUBLICATIONS

The issue is not whether Menon, Trefethen, RS6000, POEref, and MPIref could in some abstract sense qualify as prior art. The issue is whether the Petition — not theories added in Reply — meets the preponderance-of-the-evidence standard on public accessibility. It does not. The Petition’s printed-publication allegations relied on facial indicia and a small set of Petition-stage exhibits. Pet. 14-16. The

Reply now relies on Ex. 1086 (Hsieh-Yee declaration) and dozens of supporting exhibits to argue public accessibility through library cataloging records, MARC records, WorldCat records, Academia Sinica records, and Internet Archive captures. Reply 19-22. Petitioner has not disputed the insufficiency of the Petition's original showing; instead, Petitioner has added new theories. That confirms the Board must evaluate whether the Reply's new evidence merely corroborates the Petition-stage theories or supplies missing public-access channels. Ex. 1086 should not supply new theories as substitutes for theories the Petition omitted. And on the link-chain theory Petitioner does carry forward from the Petition, the record contains no evidence — only assumption — that the hyperlink chain Petitioner asks the Board to walk actually existed in the form Petitioner needs.

A. *Hulu* Requires Petition-Stage Identification of Public-Access Evidence with Particularity

Printed-publication status is not presumed. The petitioner must identify, with particularity, evidence sufficient to establish a reasonable likelihood that an asserted reference was publicly accessible before the critical date. *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29, at 13-16 (Dec. 20, 2019) (precedential). Reply evidence may not establish a public-access channel the Petition never identified. *VidStream LLC v. Twitter, Inc.*, 981 F.3d 1060, 1064-67 (Fed. Cir. 2020). The statutory and regulatory framework reinforces the same line. 35 U.S.C. § 312(a)(3); 37 C.F.R. § 42.104(b)(2), (b)(5). Public accessibility is the touchstone.

In re Hall, 781 F.2d 897, 898-99 (Fed. Cir. 1986); *In re Lister*, 583 F.3d 1307, 1311-17 (Fed. Cir. 2009); *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348-50 (Fed. Cir. 2016).

B. The Petition Relied on Facial Indicia; Ex. 1086 Improperly Adds New Channels

For each of the five references, the Petition relied on the references' facial indicia and a small set of ACM/Internet-Archive exhibits. Pet. 14-16. Ex. 1086 introduces library cataloging records and expands the public-accessibility theory beyond what the Petition presented.

The reference-by-reference picture is consistent. For Menon, the Petition cited Ex. 1005 (the reference itself), Exs. 1026 and 1027 (SC97 proceedings), Ex. 1028 (citation count), and Exs. 1023 and 1029 (Cornell webpages and Internet Archive affidavit). Pet. 14. Hsieh-Yee's declaration adds WorldCat records (Ex. 1090) and Academia Sinica MARC records (Ex. 1091) — library cataloging records the Petition did not cite. Ex. 1086, ¶¶28-70. Internet Archive captures of Menon (Ex. 1092) corroborate the same kind of evidence the Petition already relied on (Ex. 1029); the WorldCat and Sinica records, by contrast, supply a new evidentiary channel. For Trefethen, the Petition cited Ex. 1023 (Cornell), Ex. 1029 (Internet Archive affidavit), and Ex. 1035 (ACM citations). Pet. 14-15. Hsieh-Yee adds Washington State University MARC records (Ex. 1101) — again, library cataloging records the Petition did not cite. Ex. 1086, ¶¶71-104. The same pattern repeats for

RS6000, POEref, and MPIref. Reply 17, 23-24; Ex. 1086, ¶¶105-180. The targeted objection is to the new library-cataloging-records theory that the Petition never identified.

C. *VidStream* Permits Reply Corroboration of the Same Theory; It Does Not Permit Substitution

VidStream addressed reply evidence that corroborated the publication date of the same asserted reference after the patent owner challenged the publication date. 981 F.3d at 1064-67. The Federal Circuit approved that use because the petition had identified the publication and the reply evidence supported the same publication theory. *VidStream* did not authorize a petitioner to use a reply declaration as the first identification of a distinct public-access channel.

The objection here is targeted. Patent Owner does not ask the Board to exclude Ex. 1086 wholesale. Ex. 1086 should not become the first source of theories that the Petition was required to identify with particularity. As applied to each reference, the Board should rely on Ex. 1086 only for corroboration of public-access channels the Petition presented.

D. Petitioner's "Link Chain" Theory Rests on an Assumption That No Wayback Capture Establishes

Petitioner's preponderance burden on public accessibility cannot be carried by assumption of a missing predicate fact. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d at 1380 (the Board "must base its decision on arguments . . . advanced by a

party,” and may not “fill in” the petition’s gaps); *Hulu*, IPR2018-01039, Paper 29 at 13 (petitioner must “identify with particularity” evidence of public accessibility, with no presumption in its favor); *In re Lister*, 583 F.3d at 1316-17 (mere existence of a record is not evidence that a POSITA could reach the underlying reference).

Petitioner’s printed-publication theory for Menon, Trefethen, RS6000, POEref, and MPIref rests on a chain of hyperlinks. Petitioner asks the Board to find that a POSITA, exercising reasonable diligence, could have started at a root webpage and clicked through one or more intermediate pages to arrive at the prior-art reference. See Pet. 14-16; Ex. 1086 ¶¶46-53 (Menon), ¶¶76-77 (Trefethen), ¶¶112-118 (RS6000), ¶¶128-136 (POEref), ¶¶153-180 (MPIref). Each step in the chain is authenticated only by a separate Wayback Machine capture — and each capture bears its own archival date.

A hyperlink does not traverse time. A Wayback Machine capture proves only what content existed at one URL on one date. That a 2003 capture of a Cornell index page (Ex. 1023, capture 20031118185911) contains a string formatted as a link to Trefethen says nothing about what content sat at the linked URL in 2001 or in 1996 — the dates on which Petitioner asserts public accessibility. The same gap pervades the RS6000 chain: the entry-point Product Documentation Library was archived April 10, 2001 (capture 20010410025356); the Volume 1 landing page was not archived until June 17, 2001 (20010617011337); the section pages Petitioner

actually offers as RS6000 (Ex. 1007) were not archived until July 26, 2001 (20010726184202; 20010726183314) and August 2001 (Ex. 1038, 1-5); and the parallel pSeries entry path runs from October 24, 2001 (20011024235023) to December 4, 2001 (20011204190353). The chain spans ten months. For POEref the chain is worse: Petitioner's own expert concedes "Internet Archive . . . has not archived POE-2001." Ex. 1086 ¶128. The chain never reaches the document at any date.

The Board cannot supply the missing link. To prove a POSITA could have actually navigated the chain on the asserted critical date, Petitioner needed to tie the separately dated captures together into a navigable public-access path at the relevant date — either through contemporaneous evidence or testimony establishing that each intermediate page existed and contained the same link in the relevant state. Petitioner has neither. Asking the Board to assume that all linked pages existed identically on a single date is precisely the gap-filling *In re Magnum Oil* forbids. 829 F.3d at 1380. The preponderance burden on each reference's public accessibility is therefore unmet.

Additionally, with respect to RS6000, the Hsieh-Yee links the Reply relies on for accessibility of RS6000 differ from the evidence presented in the Petition. And Bajaj's declarations do not state that he actually traversed any of these pages in a reasonably diligent manner to locate the alleged RS6000 reference. Hsieh-Yee's

declaration does not corroborate the pages relied upon in the Petition by Bajaj, but rather cites different pages accessed after the fact in 2026. Ex. 1086 ¶¶112-119. Neither Bajaj nor Hsieh-Yee provides evidence that RS6000 was viewed or downloaded from the IBM website prior to the critical date. Blue Calypso, 815 F.3d at 1349. Petitioner bears the burden to clearly and consistently present its evidence in the Petition that a POSITA could have located the documents exercising reasonable diligence. The record lacks sufficient evidence that this was the case, and Hsieh-Yee's declaration cannot fill that gap: Hsieh-Yee may authenticate cataloging and archival records, but her expertise does not extend to the technical-diligence inference about how a cluster-computing POSITA would have located IBM/Cornell materials through the asserted path at the relevant time. Compare Pet. 12 with Ex. 1086 ¶7. The Board should not condone Petitioner's hindsight do-over analysis.

E. *Suffolk Techs* Required Contemporaneous Access Evidence; Petitioner Has None

Petitioner's reliance on *Suffolk Techs. v. AOL*, 752 F.3d 1358, 1365 (Fed. Cir. 2014), for the proposition that subsequent citation establishes accessibility (Reply, 17, 21-23), misreads the case. *Suffolk Techs* addressed a Usenet post where access was established by replies posted to the same Usenet group during the critical period; the court relied on contemporaneous evidence that interested researchers actually accessed the post in the forum where it was published. *Id.* at 1361, 1365. Here, Petitioner offers no contemporaneous evidence that any skilled person actually

accessed Menon, Trefethen, RS6000, POEref, or MPIref through the cataloging records or citation chains the Reply now invokes. Citations in later publications by other authors prove only that those authors had heard of the references, not that the references were publicly accessible to a POSITA on the priority date. Mere proof of subsequent awareness is the very “mere existence” theory *In re Lister* rejected. 583 F.3d at 1316-17.

The Reply’s citation-counts theory — that Menon, Trefethen, RS6000, and MPIref are publicly accessible because they were later cited by other publications (Reply, 17, 21-23, citing Exs. 1028, 1035, and the Hsieh-Yee declaration) — fails on the same logic. Citation counts establish that some authors knew of the references after the priority date; they do not establish that the references were publicly accessible to a POSITA in 1998. The Reply identifies no contemporaneous evidence — testimony, library records dated before the priority date, or cataloging entries timestamped before the critical date — connecting the later-cited references to a publicly navigable channel on the priority date. *Blue Calypso*, 815 F.3d at 1350 (public accessibility “must be assessed on a case-by-case basis”); *In re Lister*, 583 F.3d at 1314 (“mere existence” is insufficient).

VII. CONCLUSION

Petitioner has not proven by a preponderance of the evidence that claims 1-30 are unpatentable. Patent Owner respectfully requests that the Board confirm the patentability of all challenged claims.

Dated: May 29, 2026

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION

Pursuant to 37 C.F.R. § 42.24(d), Patent Owner certifies that this Sur-Reply complies with the type-volume limits of 37 C.F.R. § 42.24 because, according to the word count provided by the word-processing system used to prepare this paper, it contains 5,555 words, excluding the parts of the document exempted by 37 C.F.R. § 42.24.

Dated: May 29, 2026

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that a true and correct copy of the foregoing Patent Owner's Sur-Reply was served in its entirety on May 29, 2026 by filing this document through the Patent Trial and Appeal Board End to End (PTACTS) System, and by causing true and correct copies to be served by electronic mail on Petitioner's lead and back-up counsel of record at the following email addresses:

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