

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
MIDLAND/ODESSA DIVISION**

**INTELLECTUAL VENTURES I, LLC and  
INTELLECTUAL VENTURES II LLC,**

*Plaintiffs,*

**v.**

**SOUTHWEST AIRLINES CO.,**

*Defendant.*

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**Civil Action No. 7:24-cv-00277-ADA**

**JURY TRIAL DEMANDED**

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**DEFENDANT SOUTHWEST AIRLINES CO.'S  
OPENING CLAIM CONSTRUCTION BRIEF FOR U.S. PATENT NOS.  
7,257,582, 7,712,080, 8,352,584, AND 11,032,000**

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## I. INTRODUCTION

Intellectual Ventures (“IV”) has built a licensing campaign around patents that span unrelated technologies—data storage, cloud computing, and wireless communications—and target industries with little in common beyond their reliance on common open-source software and networking solutions. Because many industries use the same software tools, IV has asserted untested patents against companies as varied as airlines, retailers, insurers, and banks, sometimes based on little more than a LinkedIn reference to experience with specific open-source technologies. Grouping such disparate patents in a single action magnifies the complexity of the case and makes careful claim construction difficult but essential.

IV contends that *none* of the terms in any of the Asserted Patents requires construction, advocating instead for “plain meaning” interpretations that would allow its experts to argue claim scope in reports and at trial. That approach should not be permitted where the intrinsic record includes definitional language and disclaimers that narrow key terms or where the patents fail to provide definite boundaries for ambiguous terms. Because claim construction is a question of law for the Court—not a factual dispute for experts—the Court should resolve the parties’ disputes now rather than allow competing claim interpretations to reach the jury.

## II. LEGAL STANDARDS

The purpose of claim construction is to give claim terms the meaning understood by a person of ordinary skill in the art at the time of invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-14 (Fed. Cir. 2005) (en banc). The plain meaning of claim language ordinarily controls *unless* the patentee acts as his own lexicographer and provides a special definition for a particular claim term or the patentee disavows the ordinary scope of a claim term either in the specification or during prosecution. *Phillips*, 415 F.3d at 1313. Even if a patent uses a term’s plain meaning, the Court must resolve any genuine dispute regarding the scope of that meaning, to prevent the parties and

their experts from presenting competing claim construction arguments to the jury. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360–62 (Fed. Cir. 2008).

#### **A. Lexicography Standards**

“[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs.” *AstraZeneca LP v. Apotex, Inc.*, 633 F.3d 1042, 1051–52 (Fed. Cir. 2010) (quoting *Phillips*, 415 F.3d at 1316). The specification need not reveal such a definition explicitly. *Id.* (citing *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Group, Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001)). “[W]hen a patentee uses a claim term throughout the entire patent specification in a manner consistent with only a single meaning, he has defined that term ‘by implication.’” *Id.* (quoting *Bell Atlantic*, 262 F.3d at 1271).

#### **B. Prosecution Disclaimer Standards**

“Prosecution disclaimer ‘preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.’” *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1359 (Fed. Cir. 2017) (quoting *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003)). “[T]he doctrine of prosecution disclaimer ensures that claims are not ‘construed one way in order to obtain their allowance and in a different way against accused infringers.’” *Id.* at 1360 (quoting *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed. Cir. 1995)). Disclaimer may occur through amendment or argument. *Id.* at 1359.

Statements disclaiming scope must be clear and unmistakable. *Omega*, 334 F.3d at 1326. Disclaimer statements include arguments made to convince the Patent Office of patentability, including when the patentee “draw[s] distinctions between the patented invention and the prior art.” *MBO Lab’ys, Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1330 (Fed. Cir. 2007). Such arguments show “the patentee intended to surrender territory, since they indicate in the inventor’s

own words what the invention is not.” *Id.*; see also *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed. Cir. 2008); *Purdue Pharma L.P. v. Endo Pharms. Inc.*, 438 F.3d 1123, 1136 (Fed. Cir. 2006).

### III. PERSON OF ORDINARY SKILL IN THE ART

A court determines the proper construction of a claim term from the viewpoint of the hypothetical person of ordinary skill in the art (“POSITA”). *Phillips*, 415 F.3d at 1313. The Asserted Patents relate to computational devices and networking. A person of ordinary skill in the art as of the respective priority dates for the Asserted Patents would have had a bachelor’s degree in electrical engineering, computer science, or the like, and/or two or more years of industry experience in networking and distributed computing. Additional experience may make up for a lack of education and *vice versa*.

### IV. DISPUTED CONSTRUCTIONS

#### A. U.S. Patent No. 7,257,582

The ’582 Patent (Ex. A-1)—titled *Load Balancing with Shared Data*—relates to distributed data processing and the concept of processing tasks on a “first-come/first-served” basis. More specifically, the patent describes splitting a preexisting input file into logical partitions, making descriptions of those partitions available to the processors executing subtasks, having subtasks claim unallocated partitions on a first-come/first-served basis, and combining the outputs. ’582 Patent at Abstract, claim 1. Claim 1 requires “(a) automatically determining file allocation and logically subdividing records of said input file into a plurality of partitions;” “(b) distributing descriptions of all of said partitions to each of a plurality of subtask processors;” “(c) simultaneously executing at least a respective one of the subtasks of the computer-executable process in each of at least some of said processors on a respective one of the partitions;” and “(d)

thereafter repeating step (c) in at least some of the subtask processors each with another unprocessed partition on a first-come/first-served basis.” *Id.* at 6:44–61.

**1. “distributing descriptions of all of said partitions to each of a plurality of subtask processors” (Claim 1)**

| <b>Defendant</b>                                                                                         | <b>Plaintiff</b> |
|----------------------------------------------------------------------------------------------------------|------------------|
| providing each subtask processor with a control file specifying the logical partitions of the input file | plain meaning    |

Plain meaning will not suffice here because it leaves open whether “distributing descriptions” involves system-wide exposure of partition information or centralized control. The specification and prosecution history foreclose the latter and require exposure of the control file to each subtask processor so that work can be claimed without a central scheduler.

Step (b) of claim 1 recites “distributing descriptions of all of said partitions to each of a plurality of subtask processors.” This step requires advance distribution to all subtask processors—before execution begins—of the information that identifies every partition and defines its boundaries within the input file. After the file is logically subdivided in step (a), the system distributes not the partition data itself, but descriptive information specifying how each partition is defined, and it distributes that information to every subtask processor. ’582 Patent at 6:44–61. Because step (d) directs processors to take “another unprocessed partition on a first-come/first-served basis,” each processor must already possess system-wide visibility into which partitions exist and which remain unallocated. That visibility is achieved through the comprehensive, prior distribution required by step (b). *Id.* at 6:59–61.

As shown in Fig. 1, the “Split step” is used “to create the control file 4 specifying a logical partition of the input,” and the “[i]nput files 9 are, thus, logically partitioned.” ’582 Patent at 3:13–35, Fig. 1. “When the split step terminates, the various Sub Tasks ... can be activated,” either “by the split step ... or by an external scheduler,” at which point, “[e]ach Sub Task finds the

subdivision of the input in the control file 4.” *Id.* at 3:64–4:1. “Each such Sub Task then repeatedly tries to allocate for itself and then process, an input partition that has not been allocated yet.” *Id.* at 4:1–3. Figure 4’s narrative illustrates the same operation: e.g., “Sub Task 2 updates the control file to take responsibility of Input 1,” later “Sub Task 2 takes responsibility (using the control file) for Input 2 and starts processing it.” *Id.* at 6:23–27, Fig. 4.

This intrinsic record shows that “descriptions of all of said partitions” are the partition-identifying characteristics exposed system-wide (e.g., via the control file) so that each subtask can determine what exists and what remains unallocated. Read in this context, “distributing descriptions of all of said partitions to each of a plurality of subtask processors” requires “providing each subtask processor with a control file specifying the logical partitions of the input file.”

During prosecution, the applicants distinguished prior-art systems that rely on a centralized, load-metric control routine and characterized the claimed approach as distributing work “without a special load process.” They explained to the Examiner:

The primary difference between the instant invention and the [prior art] is that these systems rely on a special control process that uses load information to distribute the load between processors that share the load. With the instant invention as defined in the claims there is no such process. The prior art’s load information is not created with the process of the instant invention. Instead, the load information is done as a byproduct of the fact that the load-sharing process take parts of the load on a first-come/first-served basis.

The amended claims, refer to a distribution of a description of the work to be done. The sharing process can use such a description to distribute the load without a special load process.

For these reasons the instant invention is clearly allowable over the cited art.

Ex. A-2 at 6–7. The concept of “distributing descriptions” cannot encompass a “special control process that uses load information” because the applicants drew that distinction.

Moreover, the applicants amended step (b) to change the object of distribution from “distributing said partitions ...” to “distributing descriptions of all of said partitions to each of a plurality of subtask processors ...,” with underlined added. Ex. A-3 at 2. That amendment distinguishes distributing the data partitions themselves from distributing information that identifies the partitions for allocation purposes—the latter being precisely what the control file does. *See* ’582 Patent at 3:52–4:3, 6:23–27, Fig. 1, Fig. 4. Thus, step (b) requires distribution of descriptions of the partitions (i.e., the control file) to each processor, not distribution of the partitions themselves.

Accordingly, both the specification and the prosecution history support Southwest’s construction of step (b): “providing each subtask processor with a control file specifying the logical partitions of the input file.”

**2. “simultaneously executing at least a respective one of the subtasks of the computer-executable process in each of at least some of said processors on a respective one of the partitions” (Claim 1)**

| <b>Defendant</b> | <b>Plaintiff</b> |
|------------------|------------------|
| indefinite       | plain meaning    |

Step 1(c) is indefinite. The text of 1(c) requires “simultaneously executing at least a respective one of the subtasks of the computer-executable process in each of at least some of said processors on a respective one of the partitions.” ’582 Patent at 6:52–55. On its face, this claim presents competing, reasonable readings that the intrinsic record does not resolve:

- **Reading 1 (point-in-time parallelism):** at a given moment, multiple processors must each be executing a subtask on a respective partition (“simultaneously ... in each of at least some ... processors”); or

- **Reading 2 (general overlap capability):** the system need only support overlap during the overall process, with “at least a respective one” permitting even a single subtask instance at various times.

The clause “at least a respective one of the subtasks” amplifies the ambiguity by encompassing a *single* subtask, which conflicts with the requirement of *simultaneous* execution “in each of at least some ... processors.” The specification’s narrative and figures show overlapping activity (e.g., subtasks claiming and processing partitions) but provide no objective boundary or test for when the “simultaneously ... in each of at least some” condition is satisfied or not. *See id.* at 6:14–37, 6:23–27, Fig. 4. Because the patent fails to inform a POSITA on the scope of step 1(c) with reasonable certainty, the claim is invalid. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

To uphold the validity of this claim, the Court would effectively need to rewrite it to require that “in parallel, each of at least some processors executes a subtask on a respective partition.” While that revision of the claim might remove the ambiguity introduced by “at least a respective one,” and more closely align with the multi-processor overlap shown in the figures, *see id.* at 6:14–37, 6:23–27, Fig. 4, the Federal Circuit has cautioned that it is improper for a Court to rewrite claims to preserve validity. *See Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004).

### 3. “first-come/first-served basis” (Claim 1)

| Defendant                                                                                                                                                                               | Plaintiff     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| a subtask processor independently selects the next available partition to process without coordination from any central controller or scheduler and without relying on load information | plain meaning |

Step (d) governs how work proceeds after step (c), and it does so against the backdrop of step (b), which already “distribut[es] descriptions of all of said partitions to each of a plurality of

subtask processors.” Thus, when step (d) applies—“thereafter repeating step (c) in at least some of the subtask processors each with another unprocessed partition on a first-come/first-served basis”—each processor has visibility into the universe of partitions and their boundaries.

The specification describes the operative mechanism: once the split step is completed and the subtasks are activated, “[e]ach Sub Task finds the subdivision of the input in the control file 4,” and “repeatedly tries to allocate for itself and then process, an input partition that has not been allocated yet.” ’582 Patent at 3:64–4:1, 4:1–3. The figures depict the same behavior (e.g., “Sub Task 2 updates the control file to take responsibility of Input 1,” then “takes responsibility (using the control file) for Input 2”). *Id.* at 6:14–37, 6:23–27, Fig. 4. Read together, the intrinsic record shows step (d) implements “first-come/first-served” by subtask-initiated selection from the shared partition descriptions—i.e., a subtask independently claims the next available unprocessed partition.

During prosecution, the applicants explained this operation to the Examiner in distinguishing the prior art and in support of allowance. They contrasted earlier systems that “rely on a special control process that uses load information to distribute the load” with the claimed approach, where “there is no such process,” and where load sharing occurs “as a byproduct of the fact that the load-sharing process take parts of the load on a first-come/first-served basis.” Ex. A-2 at 6–7. They further stated: “The amended claims, refer to a distribution of a description of the work to be done. ***The sharing process can use such a description to distribute the load without a special load process.*** ... For these reasons the instant invention is clearly allowable over the cited art.” *Id.* (emphasis added). Those statements were made to overcome the rejection and secure allowance; they therefore inform the scope of the claim language by clarifying how “first-come/first-served” selection operates in the claimed method—selection by the subtasks themselves using the

distributed descriptions, and not by a centralized controller applying load metrics. *See Computer Docking Station*, 519 F.3d at 1374. Thus, the applicants stated categorically that “as defined in the claims there is no such process”—i.e., no special control process that uses load information to distribute the load between processors—as the claims instead require processors to take work on a first-come/first-served basis using the control file’s descriptions of partitions. Ex. A-2 at 6–7.

In sum, the claim language and specification establish how first-come/first-served works—a subtask independently selects the next available unprocessed partition from the shared descriptions. And the prosecution history confirms that understanding and cabins the scope in view of the applicants’ statements to the Examiner. Southwest’s construction—a *subtask processor independently selects the next available partition to process without coordination from any central controller or scheduler and without relying on load information*—faithfully reflects the intrinsic record and the prosecution history and should be adopted.

#### **B. U.S. Patent No. 7,712,080**

The ’080 Patent (Ex. A-4)—titled *Systems and Methods for Parallel Distributed Programming*—generally relates to computer programming and describes a “navigational programming” approach that it contrasts with prior art “message passing” and “distributed shared memory” techniques. ’080 Patent at 1:31–2:2, Figs. 1(a)–(b). Unlike prior art techniques, the patent’s “navigational programming” approach relies on a single locus of computation that *migrates* to the processor where to-be-processed data resides to resume execution of tasks at that node. *Id.* at 3:13–20, 3:50–67. The patent teaches sequential navigational programming implemented by “self-migrating threads” or algorithms that are “configured to migrate from one processor to another.” *Id.* at 2:16–20, Fig. 2. The specification defines “distributed sequential computing (‘DSC’)” as “computing using a single locus of computation over distributed data, possibly stored in a DSV [distributed shared variable],” effected by a self-migrating thread that

moves to access data on different processors. *Id.* at 3:50–59. Parallel processing is achieved by running “multiple concurrent DSC programs.” *Id.* at 5:57–6:1, Figs. 3–5. In short, “navigational programming” uses a sequential single locus of computation that migrates across processors to access distributed data. *Id.* at 2:16–20, 3:50–59.

**1. “distributed sequential computing program” (Claims 1 and 7)**

| <b>Defendant</b>                                                                                                                                            | <b>Plaintiff</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| a program that executes sequentially across distributed memory by navigating to the processor that owns the needed memory and then resuming execution there | plain meaning    |

The parties disagree whether the claims require sequential execution across distributed memory. IV asks for plain-and-ordinary meaning, but that would leave the jury to resolve claim scope. The term should be construed.

Starting with the claim language, claim 1 recites “developing at least one distributed sequential computing program to access the at least one distributed shared variable,” where the “distributed shared variable is a single variable that includes several variables” that “may be physically distributed across multiple memories.” The program’s directive to “access” distributed data entails navigating to the location where the data resides. Dependent claim 2 specifies that the DSC program must include “at least one self-migrating thread, capable of migrating among at least one processor.” Thus, even before looking at the specification, the claim language requires *sequential* execution by navigation and resumption at the processor that owns the needed memory.

In the specification, the patentee expressly defines “distributed sequential computing” as “computing using a single locus of computation over distributed data,” implemented via a “self-migrating thread” that, when operating on Processor 1 and needing data on Processor 2, “can migrate to Processor 2 to access the data ... and then continue the computations.” *Id.* at 3:50–59. A “program” is “a set of instructions.” *Ancora Techs., Inc. v. Apple, Inc.*, 744 F.3d 732, 734 (Fed.

Cir. 2014). Thus, a “distributed sequential computing program” is a set of instructions that performs computing with a single locus of computation over distributed data. Southwest’s construction translates that technical definition into concrete terms: sequential execution across distributed memory by navigating to the processor that owns the needed memory and resuming execution there. That is exactly what the specification describes.

The patent contrasts navigational programming with message passing and traditional distributed shared memory. ’080 Patent at 1:31–2:2. Rather than (i) decomposing an algorithm into multiple communicating tasks (message passing) or (ii) pulling remote data into a local thread (distributed shared memory), DSC preserves algorithmic and data-structure integrity by keeping a single thread of control that “navigates” to the data. *See id.*; *id.* at 3:60–67. When the program needs memory hosted on another processor, the self-migrating thread suspends, moves to the owning processor, restores state, and resumes execution. *Id.* at 5:26–56. The specification summarizes this property: DSC is “computing using a single locus of computation over distributed data, possibly stored in a DSV,” performed by a self-migrating thread that moves to the processor owning the needed data and “then continue[s] the computations.” *Id.* at 3:50–60.

Any parallel computing arises from the step of “transforming the at least one [DSC] program into at least one distributed parallel computing program by spawning at least one child [DSC] program” that “concurrently uses” parent and child. Each DSC program remains a single-locus, sequential program. The specification calls this “composition orthogonality.” *Id.* at 5:65–6:15.

Southwest’s construction merely adopts the patentees’ definitional language and consistent usage: a “distributed sequential computing program” (1) executes sequentially as a single locus of computation, (2) operates across distributed memory (e.g., via DSVs), and (3) reaches remote data

by navigating to the owning processor and resuming execution there. This construction best harmonizes the claim text, dependent claims, and specification. The Court should adopt it.

**C. U.S. Patent No. 8,352,584**

The '584 Patent (Ex. A-5)—titled *System for Hosting Customized Computing Clusters*—purports to claim a system for hosting computing clusters for client use. The problem it identifies is logistical rather than technological: although “multiple cluster systems” were known and conventional, they were “typically limited” because “clients are required to host and manage the clusters that are located on their site or in their facilities.” ’584 Patent at 4:60–5:2, 5:19–21. The patent’s proposed solution—outsource cluster management by providing a remotely “hosted cluster system.” *Id.* at 5:22–25. Framed as alleviating the burdens of cluster administration, the invention hosts client clusters via “a network for communications with a corresponding client and monitoring equipment and/or software modules,” thereby supplying “computational assets or power” without imposing an “unacceptable burden on the clients’ resources.” *Id.* at 4:53–58, 2:52–56.

The specification describes the “present invention” as “hosting a plurality of clusters that are each configured for a particular task ... and optionally providing for configuration, access control, and monitoring.” *Id.* at 2:64–3:3. The '584 Patent has only two independent claims 1 and 10, which expressly require the systems to comprise “high performance” or “high performance computing (HPC)” clusters. *Id.* at claims 1, 10. While the specification expressly defines “load balancing” and “high availability” clusters and distinguishes them from HPC clusters, *id.* at 2:12–25 (defining a “high availability” cluster as “a configuration in which a first server watches a second server and if the second server fails, then the first server takes over the function of the second server”), the patent lacks any objective criteria for identifying what qualifies as a “high performance” cluster.

1. “communications . . . are isolated” (Claims 1 and 10)

| Defendant                                                                                             | Plaintiff     |
|-------------------------------------------------------------------------------------------------------|---------------|
| communications with each cluster are isolated and maintained separate by the gateway for each cluster | plain meaning |

The dispute is whether the claims require that isolation be accomplished by the per-cluster gateway. IV seeks plain and ordinary meaning, which would leave undefined how isolation occurs. The term should be construed to reflect the patentees’ consistent description of isolation as gateway-implemented separation.

Claim 1 recites that “the first cluster establishes communications between the set of computing resources of the first cluster and a first gateway” and that “the second cluster establishes communications among the set of computing resources of the second cluster and a second gateway,” followed by the requirement that “communications between the first cluster and the second cluster are isolated.” ’584 Patent at claim 1. The claim thus links each cluster to its own gateway before imposing isolation between clusters, indicating that the gateways—positioned between clusters and capable of controlling inter-cluster communications—perform the isolation function.

The specification confirms this understanding. The Abstract states: “*Gateway mechanisms isolate each cluster such that communications within a cluster* or on a private cluster communications network *are maintained separate.*” *Id.* at Abstract (emphasis added). The patent explains that “[t]he gateway mechanisms operate, in part, to isolate each cluster such that communications within a cluster such as on the private cluster communications network are separated (e.g., do not have to share bandwidth of a single system network).” *Id.* at 3:52–56. And it equates the isolation with using the gateways: “The individual cluster configurations requested by the client and implemented in the system 200 do not affect the overall network design due to

the isolation of each cluster, *i.e., using the gateways* 240, 241, 242 as described previously.” *Id.* at 7:63–67 (emphasis added). The use of “i.e.” (meaning “that is”) signals a definition. *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1334 (Fed. Cir. 2009); *Sinorgchem Co. v. Int’l Trade Comm’n*, 511 F.3d 1132, 1138 (Fed. Cir. 2007) (“When the specification explains and defines a term used in the claims, without ambiguity or incompleteness, there is no need to search further for the meaning of the term.”).

The specification also describes *how* gateways achieve isolation. “The traffic separation is achieved through the gateway 240, 241, and/or 242 located between each cluster 250, 251, and 252 and the company network 230. Each gateway 240, 241, 242 is configured with software and hardware to apply a standard set of rules to only permit traffic destined for its corresponding cluster to pass through from the company network 230 while keeping all cluster traffic internal to the cluster.” ’584 Patent at 5:39–46. Consistent with that mechanism, gateways “ensure[] that a client cannot gain access to another clients cluster,” *id.* at 8:19–21, and the system “prevent[s] one client from accessing another client's cluster as a result of the gateways between each cluster.” *Id.* at 9:62–64.

The disclosed embodiments uniformly attribute separation to gateways: in Figure 2, “traffic separation is achieved through the gateway 240, 241, and/or 242.” *Id.* at 5:39–40. In Figure 4, even with per-cluster firewalls, “the gateway 240, 241, 242” still “connect[s] the private cluster network 300, 301, 302 to the private company network 230 . . . .” *Id.* at 9:35–37. This consistent usage shows that the patentees used “isolate” to mean separation effected by gateways. *See AstraZeneca*, 633 F.3d at 1051–52 (definition by implication where a term is used throughout with a single meaning).

For these reasons, the Court should adopt a construction for “communications ... are isolated” that expressly requires that *communications with each cluster are isolated and maintained separate by the gateway for each cluster*.

**2. “high performance cluster” / “HPC cluster” (Claims 1 and 10)**

| <b>Defendant</b> | <b>Plaintiff</b> |
|------------------|------------------|
| indefinite       | plain meaning    |

The term “high performance cluster” is indefinite because it is a term of degree lacking any objective baseline in the intrinsic record. A claim is indefinite if, read in light of the specification and prosecution history, it fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus*, 572 U.S. at 901.

“Terms of degree are problematic if their baseline is unclear to those of ordinary skill in the art.” *Liberty Ammunition, Inc. v. United States*, 835 F.3d 1388, 1395 (Fed. Cir. 2016). Courts have frequently found terms with “high” or “low” indefinite when the intrinsic record lacks measurable criteria for comparison. *See, e.g., U.S. Well Servs., Inc. v. Halliburton Co.*, 2022 WL 819548, at \*6–7, 9 (W.D. Tex. Jan. 17, 2022), *aff’d*, 2025 WL 798863, at \*1 (Fed. Cir. Mar. 13, 2025) (“high pressure” indefinite); *Bayer Intell. Prop. GmbH v. Warner Chilcott Co., LLC*, 2015 WL 1849015, at \*1 (D. Del. Apr. 21, 2015), *aff’d*, 645 F. App’x 993 (Fed. Cir. 2016) (claim terms containing “high” and “low” indefinite).

Here, the intrinsic evidence provides no objective boundaries for “high performance cluster.” Although claims 1 and 10 require “high performance” or “high performance computing (HPC)” clusters, the specification does not define “high performance,” identify a quantitative threshold, or supply any benchmark that would inform a skilled artisan how to determine, with reasonable certainty, whether a given cluster is “high performance.” Instead, the specification uses “high performance” as an undefined label untethered to measurable attributes.

The patent's descriptions underscore the absence of a standard. It states that "HPC clusters are difficult to setup, configure, and manage" and that "when utilized, HPC systems allow a set of computers to work together to solve a single problem." '584 Patent at 1:39–43, 1:58–59. It contrasts "HPC" with "load balancing" and "high availability" clusters but never articulates a dividing line—such as minimum node count, performance target, bandwidth or latency threshold, degree of parallelism, interconnect requirement, or storage metric. *See id.* at 2:12–25, 5:10–20. The patent broadly notes that clusters "may be configured for high availability, for higher performance, or to suit other functional parameters," but fails to provide any objective metric, baseline, or test. *Id.* at 1:30–31. Other passages merely rebrand hosted client clusters as "HPC clusters," without any standard by which to determine what is, and is not, a HPC cluster. *See id.* at 3:19–23, 10:18–21.

Compounding the ambiguity, the patent defines "cluster" expansively to include virtually any grouped computing resources. It explains that "grouped resources are often labeled clustered computing environments or computing clusters or simply 'clusters,'" which may include "a computer or processors, network or communication links for transferring data among the grouped resources, data storage, and other devices to perform one or more assigned computing processes or tasks." *Id.* at 1:22–29. Clusters "may be configured for high availability, for higher performance, or to suit other functional parameters," *id.* at 1:29–31, and may take "custom or differing configurations" tailored to particular client tasks, differing in node configuration, storage, private network, software modules, and other hardware or software components. *Id.* at 3:3–8, 3:19–31. This breadth, coupled with the lack of any objective threshold, reduces claim interpretation to subjective, post hoc line-drawing about what counts as "high performance."

This is precisely the situation in which courts find indefiniteness: the claim language provides no objective anchor for a term of degree. *See U.S. Well Servs.*, 2022 WL 819548, at \*6–7, 9; *Warner Chilcott*, 2015 WL 1849015, at \*1; *J.R. Simplot Co. v. McCain Foods USA, Inc.*, 713 F. Supp. 3d 904, 942 (D. Idaho 2024) (“high electric field” indefinite); *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (indefiniteness where “no informed and confident choice is available among the contending definitions”). The patent provides no guidelines or worked examples that demarcate “high performance” from “not high performance.”

The claims’ ambiguity is fatal. Because both independent claims (1 and 10) require “high performance” clusters, the absence of an objective boundary means that one expert could deem a tens-of-nodes cluster “high performance” while another could not, leaving skilled artisans without reasonable certainty about claim scope. *Nautilus*, 572 U.S. at 910. Plaintiffs’ anticipated reliance on the “plain meaning” of HPC cannot cure the defect; the patent incorporates no external standards or references that would meaningfully define the boundaries of what is a “high performance” cluster. Accordingly, the term “high performance cluster” is indefinite under 35 U.S.C. § 112(b), and all claims requiring such clusters are invalid.

#### **D. U.S. Patent No. 11,032,000**

The ’000 Patent (Ex. A-6)—titled *Communications in a Wireless Network*—concerns enabling active feedback control between a base station and user equipment (“UE”) in wireless communication systems. ’000 Patent at 2:25–29. It specifically addresses how to expand a Time Division Duplex (“TDD”) system—where uplink and downlink communications occur on the same frequency and benefit from channel reciprocity—to operate in Frequency Division Duplex (“FDD”) mode, where uplink and downlink use different frequencies and reciprocity is lost. *Id.* at 1:23–40, 4:5–23. To compensate for the loss of reciprocity, the patent discloses a closed-loop control scheme in which the UE transmits an uplink beacon (“UL\_Beacon”) and receives feedback

information on a physical layer control channel (“PLCCH”). *Id.* at 2:25–55, 4:45–5:4. Critically, the UL\_Beacon is transmitted in a dedicated uplink control timeslot separate from the physical uplink shared channel (“PUSCH”). *Id.* at 2:37–41, 4:60–5:4; *see also id.* at Fig. 2 (showing UL\_Beacon separated from PUSCH data by timeslot).

### 1. “time interval” (Claims 1 and 13)

| Defendant | Plaintiff     |
|-----------|---------------|
| timeslot  | plain meaning |

The Court should construe “time interval” as “timeslot,” consistent with the PTAB’s construction of the same term in an IPR on a closely related family member, U.S. Patent No. 8,811,356 (“the ’356 Patent”). *See Cont’l Auto. Sys., Inc. v. Intellectual Ventures II LLC*, 2023 WL 8432718, at \*8, \*12 (P.T.A.B. Dec. 4, 2023). Claim 1 of the ’000 Patent recites that “the transmitter and the processor are further configured, in a **time interval** that is not sending information over the physical uplink shared channel, to send the uplink physical signal based on the received resource allocation information[.]” ’000 Patent at 9:64–10:1 (emphasis added). Claim 13 similarly requires “sending, in a time interval that it is not sending information over the physical uplink shared channel, the uplink physical signal based on the received resource allocation information[.]” *Id.* at 11:23–26 (emphasis added). The ’356 and ’000 Patents share a common specification and inventor, use the same figures and terminology, and trace to the same parent, U.S. Patent No. 8,009,639. Where multiple patents derive from the same parent and share common terms, courts interpret the claims consistently across the family. *See SightSound Techs, LLC v. Apple, Inc.*, 809 F.3d 1307, 1316 (Fed. Cir. 2015); *Boss Indus., Inc. v. Yamaha Motor Corp. U.S.A.*, 333 F. App’x 531, 536–37 (Fed. Cir. 2009); *see also Jonsson v. Stanley Works*, 903 F.2d 812, 818 (Fed. Cir. 1990).

In IPR2022-01130, the PTAB rejected a plain meaning argument and construed “time interval” as “timeslot,” noting the patent owner treated the terms as interchangeable. *Cont’l Auto.*,

2023 WL 8432718, at \*9, \*12. As in the '356 record, the term “interval” does not appear in the shared specification and is used only in the claims and Abstract, which further supports looking to how the specification describes the relevant *time resource*. *Id.* at \*10; '000 Patent at Abstract. The intrinsic evidence in this family consistently depicts a dedicated UL\_Beacon control timeslot separated from the traffic (PUSCH) timeslots in the uplink frame. *See Cont'l Auto.*, 2023 WL 8432718 at \*10 (citing '356 Patent at 2:29–33, 5:15–19); *cf.* '000 Patent at 2:37–41, 5:27–32. In substance, the claimed “time interval” is the assigned timeslot in which the UL\_Beacon (or analogous uplink control signal) is transmitted, and it is distinct from the timeslots used to carry uplink shared-channel data. *See Cont'l Auto.*, 2023 WL 8432718, at \*10–11.

The PTAB also relied on prosecution history from the '356 Patent in which Patent Owner explained that the recited “time interval” corresponds to the period allocated for uplink control (e.g., UL\_Beacon) transmission rather than uplink shared-channel data. *See id.* at \*11. That reading accords with the common specification, which states that the UE allocates resources so that the physical control signal is separate from the uplink (shared) physical channel—i.e., a dedicated control timeslot grouped for UL\_Beacon transmissions across UEs to obtain separation from standard uplink data channels. *See id.* (citing '356 Patent at 4:49–60, 2:35–42); *cf.* '000 Patent at 2:45–49, 4:60–64. Figure 2 in both patents reinforces the same point by depicting a UL\_Beacon control timeslot 216 distinct from normal traffic carrying timeslots 214. *See Cont'l Auto.*, 2023 WL 8432718, at \*10 (citing '356 Patent at 5:58–60); *cf.* '000 Patent at 6:3–6, Fig. 2.

Given the PTAB's reasoned construction in a co-pending family member, the shared specification and figures, and the prosecution history, the most faithful and administrable construction here is “timeslot.” This court should adopt that construction.

2. “configured, in a time interval that it is not sending information over the physical uplink shared channel, to send the uplink physical signal based on the received resource allocation information” (Claim 1)

| Defendant                                                                                                                   | Plaintiff     |
|-----------------------------------------------------------------------------------------------------------------------------|---------------|
| Indefinite; alternatively, the UE must transmit the uplink physical signal in a timeslot separate from those used for PUSCH | plain meaning |

This time interval phrase is self-contradictory: it defines a single interval as both (i) one in which the UE is not sending *information* on PUSCH; and (ii) one in which the UE is sending the “uplink physical signal.” While the specification teaches resource allocation that keeps the UL\_Beacon “separate from the uplink (shared) physical channel,” in a “UL\_Beacon control timeslot” distinct from “normal traffic carrying timeslots,” the claim recites something different and broader. The claim does not recite “separate timeslot(s)” or equivalent objective boundaries; it instead uses a negative condition—“*in a time interval that is not sending information over [PUSCH]*.” That imprecise drafting injects fatal ambiguity because the UL\_Beacon *is information* (even if transmitted on different resources).

The claim is thus indefinite because it leaves a skilled artisan without reasonable certainty as to the timing requirement. *See Nautilus*, 572 U.S. at 901; *WSOU Invs. LLC v. Google LLC*, 2023 WL 6210607, at \*7 (Fed. Cir. Sept. 25, 2023) (“One circumstance in which claims are indefinite is where the claims, as properly construed, are nonsensical.”); *HZNP Medicines LLC v. Actavis Labs. UT, Inc.*, 940 F.3d 680, 688 (Fed. Cir. 2019) (a claim is indefinite if “its language might mean several different things and no informed and confident choice is available among the contending definitions.”). This is the same drafting defect condemned in *Chef America*: “where as here, claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated.” 358 F.3d at 1373–74.

Here, the claim describes the same temporal period as simultaneously characterized by both transmission and non-transmission: (1) a time when the UE is *not* sending information over PUSCH, and (2) a time when the UE *is* sending the uplink physical signal (i.e., information) on different resources. The specification confirms that the patentee understood how to describe separate transmission periods clearly. The patent depicts distinct, non-overlapping timeslots for different channels: “The uplink frame includes a UL\_Beacon control timeslot 216, an access control timeslot 218, and normal traffic carrying timeslots 214.” ’000 Patent at 6:3–6; *see also id.* at Fig. 2 (depicting distinct timeslots). The specification thus teaches transmission in separate, distinct timeslots—the UL\_Beacon is transmitted in its own dedicated timeslot 216, while PUSCH data is transmitted in the separate “normal traffic carrying timeslots 214.” *Id.* Yet the claim language does not recite “separate timeslots” or any other comprehensible temporal separation. Instead, it defines the transmission timing by reference to non-transmission over PUSCH—a condition that is not met when the UE sends the uplink physical signal.

The claim is indefinite because it effectively requires the UE to transmit the uplink physical signal during a time interval defined by the absence of transmission over PUSCH, without providing an objective boundary for the interval (as opposed to reciting a separate, dedicated timeslot in which no PUSCH data is being transmitted). *Nautilus*, 572 U.S. at 901. This mirrors *Chef America*, where the Federal Circuit held that a claim requiring heating dough “to a temperature in the range of about 400°F to 850°F” was limited to heating the dough itself to that temperature, even though such an interpretation was nonsensical and the specification clearly taught heating an *oven* to that temperature. 358 F.3d at 1373–74. Although the specification teaches separate, dedicated timeslots, the claim’s wording relies on an illogical negative condition that yields a nonsensical operational requirement.

Alternatively, if the Court declines to hold this term indefinite, it should construe the phrase to require what the specification actually teaches: “the UE must transmit the uplink physical signal in a *timeslot* separate from those used for PUSCH.” *See* ’000 Patent at 6:3–6, Fig. 2.

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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that on October 14, 2025, the foregoing document has been served on all counsel of record in accordance with the Federal Rules of Civil Procedure.

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