

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON.COM, INC. and
AMAZON WEB SERVICES, INC.,
Petitioner,

v.

SWARM TECHNOLOGY LLC,
Patent Owner.

IPR2022-00633
Patent 10,592,275 B2

Before MICHAEL R. ZECHER, GREGG I. ANDERSON, and
SCOTT B. HOWARD, *Administrative Patent Judges*.

ZECHER, *Administrative Patent Judge*.

PRELIMINARY GUIDANCE
PATENT OWNER'S MOTION TO AMEND

I. INTRODUCTION

On September 6, 2022, we instituted trial as to claims 1–17 of U.S. Patent No. 10,592,275 B2 (Ex. 1001, “the ’275 patent”). Paper 8. After institution, Patent Owner, Swarm Technology LLC (“Swarm”), filed a Contingent Motion to Amend. Paper 11 (“Motion” or “Mot.”). Swarm proposes replacing originally challenged claims 1 and 3 with respective substitute claims 18 and 19, in the event we find any challenged claim unpatentable in a final written decision. *See* Mot. 1, App. A. Swarm requests that we provide preliminary guidance concerning the Motion in accordance with the Board’s pilot program concerning motion to amend practices and procedures. Mot. 1; *see also* Notice Regarding a New Pilot Program Concerning Motion to Amend Practice and Procedures in Trial Proceedings under the America Invents Act before the Patent Trial and Appeal Board, 84 Fed. Reg. 9,497 (Mar. 15, 2019) (providing a patent owner with the option to receive preliminary guidance from the Board on its motion to amend) (“Notice”).¹ Petitioner, Amazon.com, Inc. and Amazon Web Services, Inc. (collectively “Amazon”) filed an Opposition to the Motion. Paper 15 (“Opposition” or “Opp.”). We have considered Swarm’s Motion and Amazon’s Opposition.

In this Preliminary Guidance, we provide information indicating our initial, preliminary, non-binding views on whether Swarm has shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend in an *inter partes* review and whether Amazon (or the record) establishes a reasonable likelihood that the proposed substitute claims are unpatentable. *See* Notice, 84 Fed. Reg. at 9,497 (“The preliminary

¹ The Board’s pilot program concerning motion to amend practices and procedures has been extended through September 16, 2024. *See* 87 Fed. Reg. 60,134 (Oct. 4, 2022), *available at* <https://www.govinfo.gov/content/pkg/FR-2022-10-04/pdf/2022-21472.pdf>.

guidance . . . provides preliminary, non-binding guidance from the Board to the parties about the [motion to amend]”); *see also* 35 U.S.C. § 316(d) (2018) (statutory requirements for a motion to amend); 37 C.F.R. § 42.121 (2021) (regulatory requirements and burdens for a motion to amend); *Lectrosonics, Inc. v Zaxcom, Inc.*, IPR2018-01129, Paper 15 (PTAB Feb. 25, 2019) (precedential) (providing information and guidance regarding motions to amend).

For purposes of this Preliminary Guidance, we focus on the proposed substitute claims and, more specifically, on the amendments proposed in the Motion. *See* Notice, 84 Fed. Reg. at 9,497. We do not address the patentability of the originally challenged claims. *Id.* Moreover, in formulating our preliminary views on the Motion and Opposition, we have not considered the parties’ other substantive papers on the underlying merits of Amazon’s challenges. We emphasize that the views expressed in this Preliminary Guidance are subject to change upon consideration of the complete record, including any revision to the Motion filed by Swarm. Thus, this Preliminary Guidance is not binding on the Board when rendering a final written decision. *See id.* at 9,500.

II. PRELIMINARY GUIDANCE

A. Statutory and Regulatory Requirements

For the reasons discussed below, at this stage of the proceeding, and based on the current record, it appears that Swarm has not shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend.

1. Reasonable Number of Substitute Claims

Does Swarm propose a reasonable number of substitute claims? (35 U.S.C. § 316(d)(1)(B))
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Yes. Swarm proposes one substitute claim for each of originally challenged claims 1 and 3. Mot. 1, App. A (proposing substitute claims 18 and 19). Amazon does not argue otherwise. *See* Opp.

2. Respond to Ground of Unpatentability

Does the Motion respond to a ground of unpatentability involved in the trial? (37 C.F.R. § 42.121(a)(2)(i))

Yes. Swarm responds to the grounds of unpatentability on which we instituted trial. *See* Mot. 6. For example, Swarm adds the new limitations (as underlined) in proposed substitute claim 18 of “a first autonomous co-processor configured to perform tasks of the first task type and further configured to successively: proactively interrogate the task pool to determine and retrieve a first task from the plurality of first tasks contained in the task pool without being instructed to do so by the task pool,” and argues that Lurie fails to teach these limitations. *Id.* at 26–30; App. A. Amazon presents no argument that the Motion fails to respond to a ground of unpatentability. *See* Opp.

3. Scope of Amended Claims

Does the amendment seek to enlarge the scope of the claims? (35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii))

No. The newly added limitations in Swarm’s proposed substitute claims 18 and 19 do not broaden the scope of the originally challenged claims. *See* Mot., App. A. Amazon does not argue otherwise. *See* Opp.

4. New Matter

Does the amendment seek to add new subject matter? (35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii))

Yes. Based on the current record, Swarm appears to provide insufficient written description support for proposed substitute claim 18. *See* Mot. 2–5.

Based on the current record, we agree with Amazon’s contention with respect to proposed substitute claim 18 that Swarm does not demonstrate support for the negative limitation of “‘dynamically accept[ing]’ a co-processor ‘*without any communication with the controller.*’” Opp. 19.

“For negative claim limitations . . . there is adequate written description when, for example, ‘the specification describes a reason to exclude the relevant [element].’” *Novartis Pharms. Corp. v. Accord Healthcare, Inc.*, 38 F.4th 1013, 1016 (Fed. Cir. 2022) (quoting *Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1351 (Fed. Cir. 2012)). Such reason “could be found in ‘statements in the specification expressly listing the disadvantages of using’ that element,” or where “the specification ‘distinguishes among’ the element and alternatives to it.” *Id.* (quoting *Santarus*, 694 F.3d at 1351; *Inphi Corp. v. Netlist, Inc.*, 805 F.3d 1350, 1357 (Fed. Cir. 2015)).

Here, Swarm cites to U.S. Patent Application No. 15/852,480 (Ex. 2004, the “‘480 application”) and U.S. Patent Application No. 13/750,696 (Ex. 2005, the “‘696 application”) for written description support of the negative limitation at issue. Mot. 4 (citing Ex. 2004 ¶¶ 13, 36, 52, 54, 58–62, Figs. 4, 5; Ex. 2005 ¶¶ 8, 10, 14, 18, Fig. 1). The passages relied upon, however, include descriptions of an embodiment in which “the CPU [central processing unit] 11 may recruit cells from other cell systems.” Ex. 2004 ¶ 52; *see also* Ex. 2005 ¶ 18 (stating essentially the same).² This discloses at least some involvement of the CPU in adding cells to the system, contrary to the claimed accepting of co-processors “without any communication with the controller.”

² For purposes of consistency with Swarm’s citations, we cite to the native paragraph numbers of the applications, rather than the page numbers of the exhibits. *See* Mot. 3–6.

The relied upon applications also describe that “co-processors may be added and removed without reprogramming the CPU 11 to account for the changes to the system 10.” Ex. 2004 ¶ 54; Ex. 2005 ¶ 18. But the absence of reprogramming does not mean there is no communication at all with the CPU.

The applications further provide that co-processors operate proactively and autonomously (*see, e.g.*, Ex. 2004 ¶¶ 2, 7, 9, 11, 43, 46, 56, 63, 64, 71, 75, 77, 81, 82; Ex. 2005 ¶¶ 1, 4, 5, 10, 14, 15), in contrast to a “typical multiprocessor system,” which has the disadvantages of “a significant amount of CPU bandwidth [being] consumed by task distribution” and “co-processors often remain[ing] idle while waiting for a new task from the CPU” (Ex. 2004 ¶ 5; *see also* Ex. 2005 ¶ 3 (disclosing conventional devices that operate within the “Internet of Things”)). We do not see here, however, alternatives to communication with a controller when accepting a co-processor into the system, or disadvantages of such communication. Rather, the description of co-processors as proactive and autonomous appears to relate to reducing management responsibility of a CPU in assigning tasks to co-processors, not accepting co-processors into the system.

In short, based on the current record, Swarm has not identified disclosure that either expresses a disadvantage of communication with a controller when accepting a co-processor into the system, or discusses alternatives that include the absence of this feature. Although written description support for a negative limitation may exist through inherent disclosure, even when the disclosure is silent about the negative limitation (*Novartis*, 38 F.4th, at 1017–18), Swarm provides no explanation showing that communication with a controller when accepting a co-processor into the system is necessarily excluded from any embodiment disclosed in the ’480 application or ’696 application.

Accordingly, at this stage of the proceeding, based on the negative limitation discussed above, there does not appear to be a reasonable likelihood that either the ’480 or ’696 application provides sufficient written description support for proposed substitute claim 18.

B. Patentability

For the reasons discussed below, at this stage of the proceeding, and based on the current record,³ it appears that Amazon (or the record) has shown a reasonable likelihood that proposed substitute claims 18 and 19 are unpatentable.

Does the record establish a reasonable likelihood that the proposed substitute claims are unpatentable?

Yes. Based on the current record, it appears that there is a reasonable likelihood that proposed substitute claims 18 and 19 are unpatentable for the reasons discussed below.

We note that Swarm will have the opportunity to respond to the evidence cited in Amazon’s Opposition and this Preliminary Guidance in a Reply or in a Revised Motion in this proceeding.

Indefiniteness

No. Based on the current record, it does not appear that there is a reasonable likelihood of establishing that proposed substitute claim 18 is indefinite.

Amazon contends that proposed substitute claim 18 is indefinite because “[n]either the claims, specification, nor file history informs a POSITA [person of ordinary skill in the art], with reasonable certainty, what it means to act ‘proactively.’” Opp. 21. In particular, Amazon argues that “the specification provides multiple inconsistent definitions” of “proactive” that “do not merely offer differing degrees of proactivity, but fundamentally different views of the term.” *Id.* Based on the current record, we are not persuaded by Amazon’s arguments.

In the context of a motion to amend filed in an *inter partes* review, we apply the same test for indefiniteness as applied in district courts, namely, whether the “claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014); USPTO Memorandum on the Approach to Indefiniteness Under 35 U.S.C. § 112 in AIA Post-Grant Proceedings (Jan. 6,

³ We express no view on the patentability of originally challenged claims 1–17 in this Preliminary Guidance.

2021) (“Indefiniteness Memorandum”), *available at* <https://www.uspto.gov/sites/default/files/documents/IndefinitenessMemo.pdf>.

Although the ’275 patent describes several variations of proactivity by a co-processor (*see, e.g.*, Ex. 1001, 2:48–51, 3:8–12, 8:35–38), we do not conclude that the recitation of “proactively interrogat[ing]” renders proposed substitute claim 18 indefinite. The specification of the ’275 patent provides the following relevant disclosures: (1) “the term proactive suggests that each co-processor may be configured (e.g., programmed) to periodically send an agent to monitor the task pool for available tasks appropriate to that co-processor” (Ex. 1001, 2:48–51); (2) “[e]ach solidarity cell is proactive, in that it obtains a task to perform by sending its agent to the task pool when the solidarity cell has no processing to perform or, alternatively, when the solidarity cell is able to contribute processing cycles without impeding its normal operation” (*id.* at 3:8–12); and (3) “[e]ach cell acts proactively in that it seeks a task 22 from the task pool 13 as soon as the cell becomes available for further processing” (*id.* at 8:35–38). These disclosures identify different ways in which a co-processor, or solidarity cell, may be proactive in retrieving tasks from the task pool. There is nothing, however, inconsistent about providing different possible ways of behaving proactively. *See ClearOne, Inc. v. Shure Acquisition Holdings, Inc.*, 35 F.4th 1345, 1351 (Fed. Cir. 2022) (“[Petitioner’s] arguments for indefiniteness merely identify different ways one could interpret [the disputed term]. Just because a term is susceptible to more than one meaning does not render it indefinite.”). In fact, some modes of described proactivity are not even mutually exclusive, but rather express different aspects of proactivity. A co-processor could, for instance, send an agent to the task pool as soon as it finishes a task and therefore has no processing to perform (*see id.* at 3:8–10), and thereafter periodically resend an agent until the task pool has another available task (*see id.* at 2:48–51).

Amazon faults Swarm’s declarant for supplying an additional definition of “proactive” that “injects yet further uncertainty,” and contrasts the relevant disclosures in the specification with the allegedly “ordinary meaning of proactive” from a dictionary, but these arguments fail to persuade us of indefiniteness. We need only rely on the intrinsic evidence to determine whether “proactively interrogat[ing]” renders proposed substitute claim 18 indefinite. *See ClearOne*, 35 F.4th at 1349 (“Based on the intrinsic record alone, we conclude that the written description provides, with reasonable certainty, the scope of the [disputed term].”). As noted above, the

specification provides varying, but not inconsistent, ways in which a co-processor, or solidarity cell, may be proactive in retrieving tasks from the task pool. We conclude that these differences outline the scope of “proactively interrogat[ing]” with reasonable certainty.

Accordingly, based on the current record, Amazon has not established a reasonable likelihood that proposed substitute claim 18 is indefinite.

Patent Ineligibility

Yes. Based on the current record, it appears that there is a reasonable likelihood of establishing that proposed substitute claims 18 and 19 are patent ineligible under 35 U.S.C. § 101.

Amazon contends that proposed substitute claims 18 and 19 are patent ineligible. *See* Opp. 2–19. Swarm alerts us (Mot. 8) to an order in the parallel litigation in the U.S. District Court for the District of Arizona in which the court concludes, with respect to the ’275 patent, that there are “sufficient factual allegations to survive dismissal under § 101 at the Rule 12(b)(6) stage.” Ex. 2009, 2. We, however, agree with Amazon that a district court’s analysis whether to dismiss a patent infringement complaint under § 101 at the Rule 12(b)(6) stage is different than that performed in the context of an *inter partes* review. *See* Opp. 11.

We consider proposed substitute claims 18 and 19 under the 2019 Revised Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (Revised Guidance), which is now incorporated in the Manual of Patent Examining Procedure (“MPEP”) at Section 2106 (9th ed. Rev. 10.2019, rev. June 2020).

Under MPEP § 2106, if the claimed invention falls within one of the statutory categories under 35 U.S.C. § 101 (Step 1), we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) (“Step 2A, Prong One”); and
- (2) additional elements that integrate the judicial exception into a practical application (“Step 2A, Prong Two”).

MPEP § 2106.04(a) and (d).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look, under Step 2B, to whether the claim:

- (3) adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional activity” in the field; or
- (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

MPEP § 2106.05(d).

Step 1

Proposed substitute claim 18 relates to “[a] collaborative intelligence multiprocessor computing system, comprising” certain hardware such as first and second co-processors, and so at least nominally fits within one of the statutory categories of patent eligible subject matter, namely, “a machine.” 35 U.S.C. § 101. Proposed substitute claim 19 directly depends from proposed substitute claim 18 and, therefore, would at least nominally fit within the same category.

Step 2A, Prong One

Proposed substitute claim 18 recites the following: “populat[ing] the task pool with a plurality of first tasks of a first task type, wherein each task of the plurality of first tasks includes an indicia of the first task type”; “populat[ing] the task pool with a plurality of second tasks of a second task type, wherein each task of the plurality of second tasks includes an indicia of the second task type, and wherein the task pool is configured to contain the plurality of first tasks and the plurality of second tasks at the same time”; “perform[ing] tasks of the first type”; “proactively interrogat[ing] the task pool to determine and retrieve a first task from the plurality of tasks contained in the task pool without being instructed to do so by the task pool”; “process[ing] the first task”; “generat[ing] first resulting data”; “updat[ing] the task pool to reflect completion of the first task”; performing similar functions with respect to tasks of the second type; “after . . . updat[ing] the task pool to reflect completion of the first task, . . . send[ing] a notification . . . that the first task is completed”; “after . . . updat[ing] the task pool to reflect completion of the second task, . . . send[ing] a notification . . . that the second task is completed”; and “wherein the plurality of first tasks and the plurality of second tasks are associated with a common objective.” Mot., App. A.

Based on the current record, we find that these limitations in proposed substitute claim 18 are analogous to a way of managing a project by posting a number of tasks and then having people separately perform the tasks. In other words, these limitations are akin to a “scrum board,” which is used by a project manager to post tasks on one side of a board, for example, using sticky notes, and by team members to collect and perform tasks, and then move tasks to the other side of the board. A scrum board can be completely performed by humans using pen and paper. Based on the current record, proposed substitute claim 18 does no more than apply the features of a scrum board to computer components. Accordingly, at this stage of the proceeding, we determine that the limitations identified above are directed to the abstract ideas category of “certain methods of organizing human activity,” namely, “managing personal behavior or relationships or interactions between people (including . . . following rules or instructions),” as well as the category of “mental processes.” MPEP § 2106.04(a); *see also Broadcom Corp. v. Netflix Inc.*, 598 F.Supp.3d 800, 808 (N.D. Cal. 2022) (finding claim patent ineligible where it “does not teach any specific improvement to computer functionality, but instead teaches using general, abstract resource allocation principles to pick the best computer device to perform a job”).

Based on the current record, we are not persuaded by Swarm’s argument that proposed substitute claim 18 is not directed to a judicial exception. *See* Mot. 9–15. At Step 2A, Prong One, we consider only whether the claim at issue recites a judicial exception, such as an abstract idea. *See* MPEP § 2106.04.II.A.2 (“The mere inclusion of a judicial exception . . . in a claim means that the claim ‘recites’ a judicial exception under Step 2A Prong One. However, mere recitation of a judicial exception does not mean that the claim is ‘directed to’ that judicial exception under Step 2A Prong Two.”). Further, the color-annotated classification of the elements of proposed substitute claim 18 that Swarm’s declarant provides “to illustrate the specific structure, organization, and behavior of the components (i.e., architecture) of the claimed multiprocessor system” (Mot. 13–15) does not correspond to the analytical framework for Step 2A, Prong One of the Revised Guidance, at which point we simply determine whether the claim recites a judicial exception. *See* MPEP § 2106.04.II.A.1.

Accordingly, at this stage of the proceeding, Swarm has not persuasively rebutted Amazon’s contention that proposed substitute claim 18 recites an abstract idea. *See* Opp. 3–11.

Step 2A, Prong Two

Based on the current record, we find the additional limitations in proposed substitute claim 18 fail to integrate the abstract idea into a practical application. The additional limitations in proposed substitute claim 18 include “a controller,” “a first autonomous co-processor,” “a second autonomous co-processor,” “an additional autonomous co-processor,” together with the functions of “dynamically accept[ing] the first autonomous co-processor, the second autonomous co-processor, and an additional autonomous co-processor into the collaborative intelligence multiprocessor system on a plug-and-play basis without any communication with the controller,” and “the first and second autonomous co-processors autonomously work[ing] together in solidarity with the task pool to complete the common objective.” Mot., App. A. At this stage of the proceeding, we find that limiting proposed substitute claim 18 to the particular environment of a parallel processing computing architecture does not make the claims patent eligible, and that nothing in proposed substitute claim 18 defines an improvement in how such computing architecture operates so as to lend eligibility to an otherwise patent-ineligible abstract idea. We see nothing in proposed substitute claim 18 “[a]pplying or using the [abstract idea] in some other meaningful way beyond generally linking the use of the [abstract idea] to a particular environment, such that the claim as a whole is more than a drafting effort designed to monopolize the [abstract idea].” MPEP § 2106.04(d). Instead, proposed substitute claim 18 does no more than “[g]enerally linking the use of [an abstract idea] to a particular technological environment or field of use.” *Id.*

At this stage of the proceeding, we are not persuaded by Swarm’s argument that proposed substitute claim 18 integrates the judicial exception into a practical application. *See* Mot. 15–24. In particular, Swarm argues that proposed substitute claim 18 provides an improvement in multiprocessor systems (*see id.* at 16–24), specifically by reciting “a controller configured to populate the task pool with a plurality of first tasks of a first task type” (*id.* at 20). But the improvement in “configuring the CPU to deposit tasks into a task pool (instead of managing co-processors directly)” (*id.* (quoting Ex. 2006 ¶ 42)) is attributable to the use of a scrum board, where computer components are only used as tools to execute an abstract idea. Similarly, other alleged multiprocessor system improvements Swarm asserts, for example, “configuring co-processors to autonomously and proactively determine and retrieve tasks from the task pool” and “configuring the

multiprocessor system to dynamically accept additional co-processors on a plug-and-play basis” (Mot. 22, 23 (quoting Ex. 2006 ¶¶ 74, 72)), are also part and parcel of the use of a scrum board. That is, proactively retrieving tasks and adding resources such as additional workers when needed are all features of a scrum board. Swarm has not identified limitations in proposed substitute claim 18 that specifically define how the claimed computer components perform the alleged abstract idea in a way that is different than how humans would perform it. *Cf. McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016) (determining that “[t]he computer here is employed to perform a distinct process to automate a task previously performed by humans,” unlike other cases “where the claimed computer-automated process and the prior method were carried out in the same way”).

Step 2B

As Amazon correctly argues, the ’275 patent describes implementing the claimed system with generic computer components. Opp. 15. For example, the ’275 patent provides that “[t]he CPU 11 may be *any* single or multi-core processor, applications processor or microcontroller, used to execute a software program,” and that “[a] cell 12 may be a *general* or special purpose co-processor.” Ex. 1001, 5:30–32, 6:12–13 (emphases added). Therefore, at this stage of the proceeding, we find that the additional limitations cover merely conventional activity and do not provide an inventive concept. *See* MPEP § 2106.05(d).

At this stage of the proceeding, we are not persuaded by Swarm’s argument that the computer components in proposed substitute claim 18 operate in an unconventional manner. *See* Mot. 25–26. In particular, Swarm argues that the “co-processors are configured to act in an unconventional manner by autonomously and proactively retrieving tasks from the task pool without waiting for a predicate instruction from the CPU or Task Pool.” *Id.* at 25. But this simply describes the use of a scrum board, only with generic computer components performing the functions of human workers.

Accordingly, based on the current record, we find that Amazon has established a reasonable likelihood that proposed substitute claim 18 is patent ineligible because it is directed to an abstract idea without significantly more. We also find that Amazon has established a reasonable likelihood that proposed substitute claim 19 is patent ineligible, for the same reasons provided above, and because it only introduces additional limitations that further define the abstract idea. That is, we are persuaded by Amazon’s argument, which Swarm does not address separately on the current record,

that the limitations of proposed substitute claim 19 do not add significantly more to the abstract ideas of “certain methods of organizing human activity” or “mental processes” (i.e., scrum board) because they are akin to a first or second team member sending his/her assistant to retrieve tasks from the scrum board that correspond to the first or second team member’s job duties. *See* Opp. 6–7.

Obviousness

No. Base on the current record, it does not appear that there is a reasonable likelihood of establishing that proposed substitute claims 18 and 19 would have been obvious.

Amazon contends that proposed substitute claims 18 and 19 would have been unpatentable over either Lurie (Ex. 1007) alone, or in combination with Ethernet Specification (Ex. 1009), Chow (Ex. 1008), and/or Andrews (Ex. 1011). *See* Opp. 22–30.

Proposed Substitute Independent Claim 18

Proposed substitute claim 18 recites the following newly added limitations (as underlined):

- a controller configured to populate the task pool with a plurality of first tasks of a first task type, wherein each task of the plurality of first tasks includes an indicia of the first task type, the controller further configured to populate the task pool with ~~and~~ a plurality of second tasks of a second task type, wherein each task of the plurality of second tasks includes an indicia of the second task type, and wherein the task pool is configured to contain the plurality of first tasks and the plurality of second tasks at the same time;
- a first autonomous co-processor configured to perform tasks of the first task type and further configured to successively: proactively interrogate the task pool to determine and retrieve a first task from the plurality of first tasks contained in the task pool without being instructed to do so by the task pool; . . .
- a second autonomous co-processor configured to perform tasks of the second task type and further configured to successively: proactively interrogate the task pool to determine and retrieve a second task from the plurality of second tasks contained in the task pool without being instructed to do so by the task pool; . . .

wherein after the first autonomous co-processor updates the task pool to reflect completion of the first task, the task pool is configured to send a notification to the controller indicating that the first task is completed;

wherein after the second autonomous co-processor updates the task pool to reflect completion of the second task, the task pool is configured to send a notification to the controller indicating that the second task is completed

Mot., App. A.

With respect to the “indicia” of first and second task types recited in proposed substitute claim 18, Amazon contends that a POSITA “would have understood that Lurie’s tasks include a string or other indicia of the MATLAB version or software library or environment necessary to run it.” Opp. 25 (citing Ex. 1007 ¶¶ 58, 182–183; Ex. 1040 ¶¶ 46–55, 156). Alternatively, Amazon argues that, “[t]o the extent these indicia are not expressly disclosed in Lurie, it would have been obvious to include them, as a well-known method of implementing Lurie’s teaching that ‘the operational and/or performance characteristics’ of each TCW are utilized when determining which tasks it takes.” *Id.* (citing Ex. 1007 ¶ 81; Ex. 1040 ¶¶ 158–160).

With respect to the task pool containing first and second tasks “at the same time” recited in proposed substitute claim 18, Amazon contends that Lurie discloses “any number of tasks, of any type, can reside in the ATD [Automatic Task Distribution] Mechanism together,” and that “Lurie imposes no limitation on multiple ‘types’ of tasks simultaneously existing in the task pool,” where a task’s type could correspond to “the ‘job’ it is a part of, or the function class, MATLAB version, MATLAB library, or software environment it requires.” *Id.* at 25 (citing Ex. 1007 ¶ 72, Figs. 3B–3D; Ex. 1040 ¶¶ 162–164).

With respect to the “notification to the controller” upon completion of each of the first and second tasks recited in proposed substitute claim 18, Amazon contends that Lurie teaches that, “[w]hen a task is complete, the ATD mechanism ‘notifies . . . the technical computing client [TCC] . . . that the result is available,’ indicating to the TCC that the task is complete.” *Id.* at 26 (quoting Ex. 1007 ¶ 86) (citing Ex. 1007 ¶ 88, Figs. 5B–5D; Ex. 1040 ¶¶ 171–172).

We find insufficient evidence or argument in the current record regarding the newly added “indicia,” “at the same time,” and “notification to the controller” limitations recited in proposed substitute claim 18 that persuasively rebuts Amazon’s obviousness contentions. In particular, Swarm does not explain specifically, at this juncture in the proceeding, why Lurie fails to teach or suggest the “indicia,” “at the same time,” or “notification to the controller” limitations. *See* Mot. 26–30.

We, however, are not persuaded by Amazon’s contentions that Lurie alone, or in combination with Ethernet Specification, Chow, and/or Andrews, teaches co-processors that are “autonomous” and configured to “proactively interrogate the task pool to determine and retrieve” tasks “without being instructed to do so by the task pool,” as recited in proposed substitute claim 18. *See* Opp. 26, 28–30. In particular, Amazon asserts that, “[w]hen implemented over Ethernet, Lurie’s TCWs [technical computing workers] dispatch a data frame carrying in its payload an index, name, or function pointer associated with the task types the TCW can perform, and searches the ATD Mechanism by associative lookup to find a task of that type,” and, alternatively, asserts that “it would have been obvious to include in the payload an executable file or script configured to search the ATD Mechanism for the same.” *Id.* at 26 (citing Ex. 1003 ¶¶ 260–262; Ex. 1040 ¶¶ 168–169).

Based on the current record, the cited disclosures in Lurie do not appear to explain how the TCWs allegedly interrogate the ATD mechanism by searching for a task of the type they can perform. Rather, we find Lurie describes, for example, that “*the system* may determine the technical computing worker 270A–270N to work on a task by any configuration or properties set on the technical computing worker 270A–270N or workstation 170A–170N.” Ex. 1007 ¶ 81 (emphasis added). Amazon does not provide a sufficient rationale as to why a person of ordinary skill in the art would have modified Lurie such that the TCWs search the ATD mechanism for tasks based on type. *See* Opp. 26.

Amazon further asserts that in Lurie, “[o]nce the ATD sends an initial notification that ‘one or more tasks’ is available, each TCW repeatedly takes a task, performs it, deposits the results, and then (having freed up) takes another suitable task—repeating that cycle until the ATD has no more tasks.” Opp. 29 (citing Lurie ¶¶ 86–88, 95–97; Ex. 1040 ¶¶ 71–76, 178). Alternatively, to the extent Lurie does not teach this cycle, Amazon asserts that “it would have been obvious to implement Lurie using this tried-and-true bag-of-tasks technique taught in Andrews,” such that “Lurie’s TCWs each

retrieve a task, process it, and when done, retrieve another task, until the bag is empty and all tasks are complete.” *Id.* (citing Ex. 1040 ¶¶ 179–180). Amazon argues that “[a] POSITA would turn[] to the bag-of-tasks technique in Lurie, as a well-known solution for efficient parallel processing, reducing unnecessary processing overhead.” *Id.* at 28 (citing Ex. 1011 ¶¶ 132–135; Ex. 1040 ¶¶ 179–180).

Based on the current record, the cited disclosures in Lurie do not appear to explain how the TCWs repeatedly take tasks to perform after an initial notification. Instead, Lurie describes, for example, that “[t]he automatic task distribution mechanism 260 provides notification (step 538) to the technical computing worker 260 of the availability of the task,” and, “[i]n response to receiving the notification (step 540), the technical computing worker obtains (step 544) the task provided (step 540) from the automatic task distribution mechanism 260.” Ex. 1007 ¶ 86. Here, each TCW obtains only the task for which it was notified by the ATD mechanism. The other cited portions of Lurie similarly fail to teach that each TCW is “autonomous” and configured to “proactively interrogate” the ATD mechanism “without being instructed to do so by” the ATD mechanism, as required by proposed substitute claim 18.

Amazon argues that Lurie’s “‘notification’ is not an ‘instruction’” as that term is used in the context of the ’275 patent because it “does not instruct, or obligate, a TCW to take any action.” Opp. 30. But Amazon has not shown, at this stage of the proceeding, where in Lurie each TCW obtains a task without first being notified that the task is available. Accordingly, Lurie’s TCWs appear to be dependent upon notifications from the ATD mechanism for obtaining and performing each task, contrary to proposed substitute claim 18, which newly recites co-processors that are “autonomous” and configured to “proactively interrogate the task pool to determine and retrieve” tasks “without being instructed to do so by the task pool.”

Based on the current record, Amazon’s reliance on Andrews to cure the deficiency of Lurie noted above also is unavailing. Amazon has not sufficiently explained why a person of ordinary skill in the art would have modified Lurie in view of Andrews so as to eliminate the feature of the ATD mechanism notifying the TCW of a task prior to the TCW obtaining and performing the task. *See* Ex. 1007 ¶ 86. Although Amazon argues that repeated retrieval and processing of tasks without intervening notifications provides “for efficient parallel processing, reducing unnecessary processing overhead” (Opp. 28), this rationale fails to account for the processing overhead incurred by each TCW in “search[ing] the ATD Mechanism by

associative lookup to find a task of [the] type” that it can perform, per Amazon’s assertion of how Lurie’s TCW would retrieve a task (*id.* at 26). Amazon fails to explain specifically why a POSITA would change Lurie’s implementation that uses notifications from the ATD mechanism to another approach that does not necessarily reduce overall processing overhead.

Accordingly, based on the current record, it appears that Amazon has not shown a reasonable likelihood that proposed substitute claim 18 would have been obvious based on Lurie alone, or in combination with Ethernet Specification, Chow, and/or Andrews.

Proposed Substitute Dependent Claim 19

Proposed substitute claim 19 recites the following newly added limitations (as underlined):

the first autonomous co-processor is configured to determine when it has available processing capacity, and to dispatch the first agent to the task pool in response to the determination;

the first autonomous co-processor is configured to determine the first task by sending the first agent to the task pool to search the task pool for an available first task having indicia of the first task type;

...

the second autonomous co-processor is configured to determine when it has available processing capacity, and to dispatch the second agent to the task pool in response to the determination; and,

the second autonomous co-processor is configured to determine the second task by sending the second agent to the task pool to search the task pool for an available second task having indicia of the second task type.

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With respect to each of the claimed co-processors being “configured to determine when it has available processing capacity, and to dispatch [an agent] to the task pool in response to the determination,” and being “configured to determine [a task] by sending [the agent] to the task pool to search the task pool for an available” task as recited in proposed substitute claim 19, Amazon relies on similar alleged disclosures in the asserted references, declarant testimony, and arguments as relied upon above to account for the “proactively interrogat[ing]” feature recited in proposed substitute claim 18. *See* Opp. 26–29. For the same reasons identified above with respect to proposed substitute claim 18, we are not persuaded, at this stage of the proceeding, by the arguments and evidence presented as to the aforementioned limitations of proposed substitute claim 19.

Accordingly, for the same reasons discussed above, and based on the current record, it appears that Amazon has not shown a reasonable likelihood that proposed substitute claim 19 would have been obvious based on Lurie alone, or in combination with Ethernet Specification, Chow, and/or Andrews.

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FOR PETITIONER:

Jonathan M. Strang
Adam M. Greenfield
David Zucker
Kimberly Q. Li
LATHAM & WATKINS LLP
jonathan.strang@lw.com
adam.greenfield@lw.com
david.zucker@lw.com
kimberly.li@lw.com

FOR PATENT OWNER:

Daniel R. Pote
JENNINGS STROUSS & SALMON PLC
p@jsslaw.com
dpote@jsslaw.com

Michael K. Kelly
BEUS GILBERT McGRODER PLLC
mkelly@beusgilbert.com