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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte ABHIJIT BOSE,
RANI T. JAMJOOM,
ASHEQ KHAN,
DEBANJAN SAHA, and
ZON-YIN SHAE

_____

Appeal 2020-001019
Application 12/172,637
Technology Center 3600

_____

Before MURRIEL E. CRAWFORD, HUBERT C. LORIN, and
ANTON W. FETTING, *Administrative Patent Judges.*

LORIN, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant appeals from the
Examiner's Final decision to reject claims 1–8, 10–21 and 26.[1] We have
jurisdiction under 35 U.S.C. § 6(b).

We REVERSE and enter a NEW GROUND of rejection.

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[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R.
§ 1.42(a). Appellant identifies International Business Machines Corporation
as the real party in interest. Br. 2.

CLAIMED SUBJECT MATTER

The claimed subject matter relates "to the electrical, electronic and computer arts, and, more particularly, to handling service requests for computer systems and the like." (Spec., 1:6–7). Claim 1 is illustrative of the claimed subject matter:

> 1. A method for routing computer system service requests, said method comprising the steps of:
>
> receiving, by a routing system, a request for handling at least one technical issue associated with a computer system, wherein said request is associated with a problem domain, wherein said request specifies a description of work associated with handling the at least one technical issue, and at least one constraint associated with handling the at least one technical issue, and wherein the at least one constraint comprises a specified expertise level of a candidate subject matter expert to handle said request determined based at least in part on the problem domain;
>
> performing, by the routing system, a look-up operation on a routing table stored in a memory of the routing system;
>
> identifying at least a first target subject matter expert which can satisfy the at least one constraint of said request based on the performed look-up operation;
>
> routing, by the routing system, said request within a computer network comprising a plurality of computer nodes to a first computer node associated with the first target subject matter expert;
>
> tracking, by the routing system, a routing path taken by said request to other computer nodes in the computer network associated with other subject matter experts, wherein tracking the routing path comprises collecting tracking information which indicates whether said first target subject matter expert accepts said request, rejects said request, or transfers said request to a second computer node in the computer network associated with

a second subject matter expert, wherein a given computing node
is issued a reward based on an inverse function of the number
of computing node transfers needed to resolve the request;

optimizing, by the routing system, routing of future
requests for handling at least one future technical issue
substantially similar to the at least one technical issue, wherein
optimizing the routing of the future requests comprises
performing a self-learning process, and wherein performing the
self-learning process comprises the routing system:

determining, based on the collected tracking
information, a new routing path within the computer network that
provides an optimized path for routing said future requests to a
target computer node of a target subject matter expert within the
computer network in comparison to a known routing path; and

including said new routing path within the computer
network by updating said routing table; and

routing, by the routing system, a newly received request
for handling at least one new technical issue substantially similar
to the at least one technical issue, wherein the newly received
request is routed along said new routing path;

wherein said routing system comprises a hardware
processor system that executes program code to execute the
method steps.

Appeal Br. 18–19 (Claims Appendix).

REJECTION

Claims 1–8, 10–21, and 26 are rejected under 35 U.S.C. § 101 as
being directed to judicially-excepted subject matter.

OPINION

*The rejection of claims 1–8, 10–21, and 26 under 35 U.S.C. § 101 as being
directed to judicially-excepted subject matter.*

Claims 1–8, 10–21, and 26 are indefinite for the reasons discussed
below. Accordingly, the rejection of claims 1–8, 10–21, and 26 under

35 U.S.C. § 101 for claiming patent-ineligible subject matter must fall, *pro forma*, because it necessarily is based on speculative assumptions as to the meaning of the claims. *See In re Steele*, 305 F.2d 859, 862–63 (CCPA 1962).

We make the following observations to explain why we are raising a question of definiteness. We otherwise have no comment on the merits of the Examiner's position regarding the patent–eligibility of the claimed subject matter.

We cannot meaningfully review this rejection because, based on the present record, we have been unable to give the claim limitation "optimizing, by the routing system, routing of future requests for handling at least one future technical issue substantially similar to the at least one technical issue, wherein optimizing the routing of the future requests comprises performing a *self-learning* process, and wherein performing the *self-learning* process comprises the routing system:" [via determining and routing steps] (independent claim 1; independent claims 14 and 18 have similar limitations) a broadest reasonable construction in light of the Specification, as it would be interpreted by one of ordinary skill in the art.

Introduction

35 U.S.C. § 101 provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor."

In that regard, claim 1 (reproduced above) covers a "process" and is thus statutory subject matter for which a patent may be obtained.[2] This is not in dispute. The two other independent claims on appeal, claim 14 to "[a] computer program product" and claim 18 to "[a] system" are nominally directed to the "manufacture" and "apparatus" statutory categories of invention, respectively. This is also undisputed.

However, the 35 U.S.C. § 101 provision "contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable." *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014) (quoting *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)).

In that regard, notwithstanding claims 1, 14, and 18 cover statutory subject matter (as are the claims depending from them), the Examiner has raised a question of patent eligibility on the ground that claim 1 is directed to an abstract idea.

Alice identifies a two-step framework for determining whether claimed subject matter is directed to an abstract idea. *Alice*, 573 U.S. at 217. *Alice step one — the "directed to" inquiry:*

According to *Alice* step one, "[w]e must first determine whether the claims at issue are *directed to* a patent-ineligible concept." *Alice*, 573 U.S. at 218 (emphasis added).

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[2] This corresponds to Step 1 of the 2019 Revised 101 Guidance which requires determining whether "the claim is to a statutory category." 84 Fed. Reg. at 53. *See also id.* at 53–54 ("consider[] whether the claimed subject matter falls within the four statutory categories of patentable subject matter identified by 35 U.S.C. 101.").

The Examiner determined, *inter alia*, that the claims are directed to "the abstract idea of receiving correspondence, keeping business rules defining actions to be taken regarding correspondence based on attributes of the correspondence, applying those business rules to the correspondence and taking certain actions based on the application of business rules including forwarding the message." Final Act. 2.

Appellant disagrees, arguing *inter alia* that

> the subject matter of the current independent claims 1, 14, and 18, [ ] are directed to novel technological-based solutions to facilitate automated routing of user requests for service in an enterprise computing environment. The claimed subject matter recites features for tracking and leveraging current and historical interactions among subject matter experts and work groups in resolving user RFSs [request for service] to thereby build a dynamic self-adaptive routing system which can resolve future RFSs in a timelier fashion.

Br. 11. *See also* Br. 13:

> the claimed subject matter performs a significant technological improvement in the functioning of a computer or computerized process in routing service requests in a complex enterprise system, thereby providing results that are not achievable or otherwise not practically implementable without a computer. In particular, the claimed subject matter recites a self-learning process, that is performed by the computerized routing system, to optimize the routing of future requests for service which are associated with a given problem domain. These limitations, in conjunction with the claim features as a whole, are clearly directed to an "improvement in technology" and/or an "improvement in the functioning of the computer itself' with regard to more effectively routing requests for service in a computing system.

Accordingly, a dispute over whether claim 1 is directed to an abstract idea is present. Specifically, is claim 1 directed to "receiving correspondence, keeping business rules defining actions to be taken regarding correspondence based on attributes of the correspondence, applying those business rules to the correspondence and taking certain actions based on the application of business rules including forwarding the message." (Final Act. 2) or "a significant technological improvement in the functioning of a computer or computerized process in routing service requests in a complex enterprise system" (Br. 13)?

Claim Construction[3]

To make a determination as to whether the claims at issue are directed to a patent-ineligible concept (or not), in accordance with step one of the *Alice* framework, we need to first accurately articulate what it is that the claims are directed to. The Examiner and the Appellant have two different views on this. The correct view will be the one that aligns with the claims, properly construed. In that regard, we consider the claim as a whole[4] giving

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[3] "[T]he important inquiry for a § 101 analysis is to look to the claim." *Accenture Glob. Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1345 (Fed. Cir. 2013). "In *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1273 (Fed. Cir. 2012), the court observed that 'claim construction is not an inviolable prerequisite to a validity determination under § 101.' However, the threshold of § 101 must be crossed; an event often dependent on the scope and meaning of the claims." *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1347–48 (Fed. Cir. 2015).
[4] "In determining the eligibility of respondents' claimed process for patent protection under § 101, their claims must be considered as a whole." *Diamond v. Diehr*, 450 U.S. 175, 188 (1981).

it the broadest reasonable construction[5] as one of ordinary skill in the art would have interpreted it in light of the Specification[6] at the time of filing.

All the claims call for a "self learning process." It is described in functional terms; that is, it comprises "determining, based on the collected tracking information, a new routing path … and routing, by the routing system, a newly received request … ." Claim 1. The claims do not, however, define what the "self learning process" is.

Turning to the Specification, "self learning" is described only in four places:

- 4: 27–29: "The self-learning nature of the system applies the tracked information to automatically update the routing table 104 to efficiently route future requests of the same problem domain in a more timely manner (fewer hand-offs between SMEs)";

- 5:24–29: "One or more embodiments are self-learning in the sense that they start with the organizational structure as the initial 'routing tree' and use the hierarchy to identify the right skills for the job. Over time, as one or more exemplary inventive systems learn about skills and expertise of people, they flatten the routing hierarchy and improve the accuracy of routing by reducing the number of hops it takes to find the right skills";

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[5] *See* 2019 Revised 101 Guidance, 84 Fed. Reg. at 52, footnote 14 ("*If a claim, under its broadest reasonable interpretation*.").
[6] "First, it is always important to look at the actual language of the claims. . . . Second, in considering the roles played by individual limitations, it is important to read the claims 'in light of the specification.'" *Smart Sys. Innovations, LLC v. Chicago Transit Auth.*, 873 F.3d 1364, 1378 (Fed. Cir. 2017) (J. Linn, dissenting in part and concurring in part) (citing *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016)), among others.

- 5:30–6:4: "In one or more embodiments, a self-learning request for service (RFS) routing system takes as input an RFS 100 that contains a description of the 'work order' and associated constraints (for example, date of completion, expected quality, and so on) and objective functions (for example, minimum cost). The output out of the routing system is a list of potential service providers, such as individuals or teams, in order of preference, who would satisfy the constraints and the objective functions"; and,

- 6:9–14: "As time progresses and more and more requests l00 are routed through the system, the system learns about specific skills of service providers 106, 124, 112 as well as people with appropriate organizational knowledge (the routing nodes - people 106, 124, 112 may, in general, represent people who can do some or all of the work, and/or people who know the right people to do some or all of the work)."

These passages are apparently referring to Figs. 1 and 2 reproduced below:
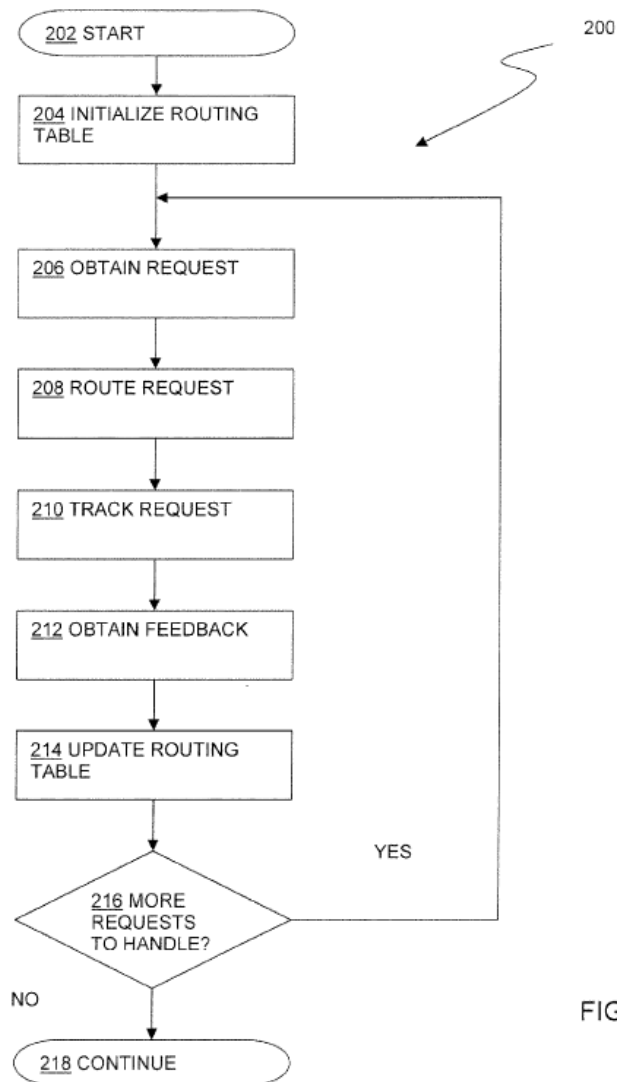
FIG. 1
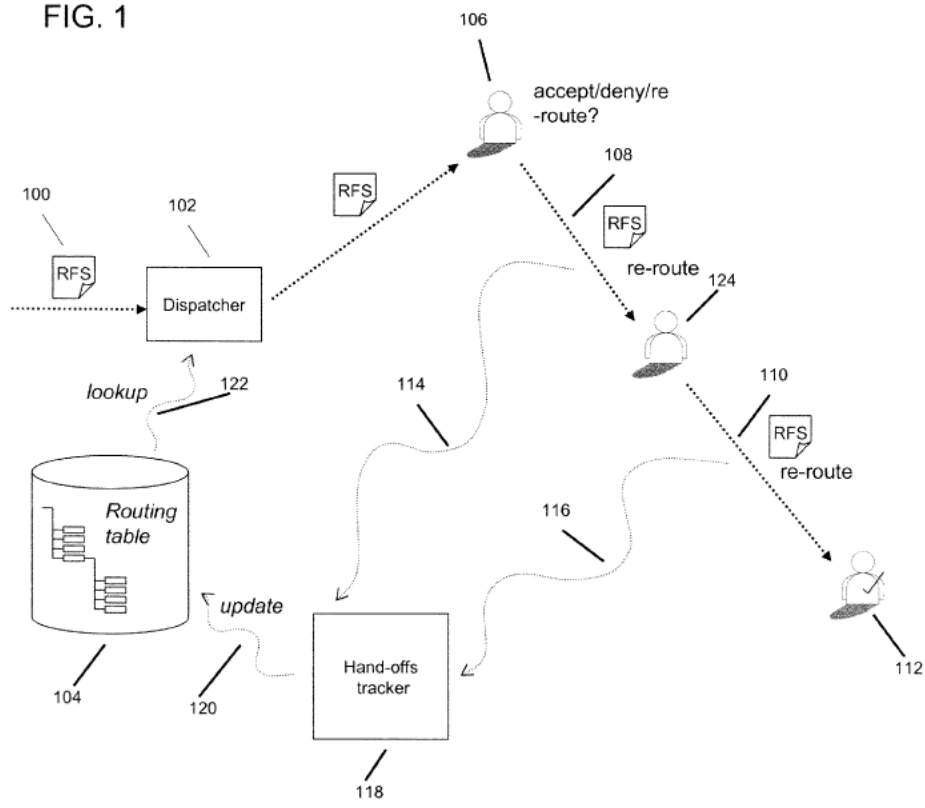
FIG. 2

Figs. 1 and 2 depict an exemplary system block diagram and processing flow of the invention and exemplary method steps, respectively.

The passages and Figures add little to our understanding of what an "a self learning process" is. As with the claims, these disclosures describe what the self learning process is intended to accomplish, not what it is. We understand that an objective of the "self learning process" is to learn about specific skills of service providers as well as people with appropriate

organizational knowledge. But what *is* the "self learning process"? Is it simply a concept, e.g., a feedback loop to collect and update information? Or is it a generic computer system (see spec., 8:20 ("general purpose processors")) performing the recited "determining" and "routing" steps? Is it a database or some other type of generic software? Or is it something more than that as Appellant suggests.

At this juncture, given nothing more than what is recited in the claims and the cited passages and Figures from the Specification, we are unable to give the phrase "self learning process" an ordinary and customary meaning. There is insufficient information to ascertain what the "self learning process" of the claims is.

The disagreement between the Examiner and the Appellant as to what the "self learning process" is mirrors our own difficulty.

The Examiner appears to view it as, for example, a "feedback." *See* Ans. 13. The Examiner also indicates that

> the claims do not provide any self-learning process a human could not perform without a computer using the human mind and hands, or pencil and paper. The computer provided in the claims is an unmodified, off the shelf, general purpose computer. The claimed subject matter merely instructs a practitioner to implement the kind of self learning activity a human can perform without a computer, using the general purpose computer in the claims.

Id. at 20.

The Appellant argues, for example, that the claimed "self learning process" "build[s] a dynamic self-adaptive routing system" (Br. 11). In so doing,

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the claimed subject matter performs a significant technological improvement in the functioning of a computer or computerized process in routing service requests in a complex enterprise system, thereby providing results that are not achievable or otherwise not practically implementable without a computer

Br. 13. And yet the technology underlying the "self learning process," which would help us understand the *technological* improvement over prior art processes is never spelled out.

We agree that the Specification provides support for the suggestion that the "self learning process" provides an *essential* element in practicing the claimed method. *See* e.g., 6:14–15 ("the organizational knowledge is 'institutionalized' and flatter, more accurate routing tables 104 are formed.") But given no further technical details about the "self learning process," we cannot determine whether said "self learning process" is a generic computer system simply performing feedback as the Examiner understands it to be, or, for example, more complex software that when applied to route service requests as claimed yields a technological improvement over prior art "techniques for social network routing for request matching in enterprise environments" (Spec. 1:27–28), as Appellant suggests. Based on the present record, we are unable to resolve that dispute in any meaningful way.

The Abstract Idea[7]

Since we are unable to ascertain what the "self learning process" is, we are unable to give the claims a broadest reasonable construction (*see* above). Consequently, we cannot proceed to identify those limitations that

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[7] *See* Step 2A of the 2019 Revised 101 Guidance. Step 2A determines "whether a claim is 'directed to' a judicial exception," such as an abstract idea. *Id.* at 53. Step 2A is a two prong inquiry.

recite an abstract idea.[8] Knowing what the "self learning process" consists of is crucial to determining whether the claimed subject matter is directed to an abstract idea; that is to say, whether the claimed subject matter falls within the enumerated groupings of abstract ideas; that is, "Mathematical concepts," "Certain methods of organizing human activity," and "Mental processes."[9]

Specific asserted technological improvements, when claimed, can render claimed subject matter not directed to an abstract idea.[10] *Cf. McRO,*

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[8] *See* Prong One (a) of Step 2A of the 2019 Revised 101 Guidance. "To determine whether a claim recites an abstract idea in Prong One, examiners are now to: (a) Identify the specific limitation(s) in the claim under examination (individually or in combination) that the examiner believes recites an abstract idea . . . ." *Id.* at 54.

[9] *See* Prong One ["Evaluate Whether the Claim Recites a Judicial Exception"] (b) of Step 2A of the 2019 Revised 101 Guidance. "To determine whether a claim recites an abstract idea in Prong One, examiners are now to . . . (b) determine whether the identified limitation(s) falls within the subject matter groupings of abstract ideas enumerated in Section 1 of the [2019 Revised 101 Guidance]." *Id.* at 54.

[10] *See* Prong Two ("**If the Claim Recites a Judicial Exception, Evaluate Whether the Judicial Exception Is Integrated Into a Practical Application**") of Step 2A of the 2019 Revised 101 Guidance. "A claim that integrates a judicial exception into a practical application will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." 2019 Revised 101 Guidance 54. One consideration, implicated here, that is "indicative that an additional element (or combination of elements) may have integrated the exception into a practical application" (*id.*, at 55) is if "[a]n additional element reflects an improvement in the functioning of a computer, or an improvement to other technology or technical field" (*id.*).

Inc. v. Bandai Namco Games America Inc., 837 F.3d 1299, 1316 (Fed. Cir. 2016) ("When looked at as a whole, claim 1 is directed to a patentable, technological improvement over the existing, manual 3–D animation techniques."). In that regard, we can consider specific asserted technological improvements in the step one analysis of the *Alice* framework. This is consistent with the case law. *See Ancora Techns., Inc. v. HTC America, Inc.*, 908 F.3d 1343, 1347 (Fed. Cir. 2018) ("We have several times held claims to pass muster under *Alice* step one when sufficiently focused on such improvements.")

Nonetheless, as we have explained, without an understanding of what the "self learning process" technically entails, we are unable to ascertain a broadest reasonable construction for the claims. That inability prevents us from accurately articulating what the claims are directed to and then reaching a determination as to whether what the claims are directed to is a patent-ineligible concept under step one of the *Alice* framework. We do not reach step two of the *Alice* framework.

For the foregoing reasons, we are not placed in a position to do a meaningful review of this rejection.

The rejection of claims 1–8, 10–21, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Thanner, Peyravian, and Santos.

Claims 1–8, 10–21, and 26 are indefinite for the reasons discussed below. Accordingly, the rejection of claims 1–8, 10–21, and 26 under 35 U.S.C. § 103 as being unpatentable over Thanner (US 5,732,072, issued March 24, 1998), Peyravian (*Network path caching: Issues, algorithms and a simulation study* 20 COMPUTER COMMUNICATIONS 605–614 (Sept. 11,

1996)), and Santos (US 2003/0028525 A1, published February 6, 2003) must fall, *pro forma*, because it necessarily is based on speculative assumptions as to the meaning of the claims. *See In re Steele*, 305 F.2d 859, 862–63 (CCPA 1962).

NEW GROUND OF REJECTION

Claims 1–8, 10–21, and 26 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellant regards as the invention.

The claims and the Specification fail to inform those skilled in the art about the scope of the "self learning process" with any reasonable certainty. Appellant provides no definition for "self learning process" either in the brief or the Specification. A process of "self learning" has no ordinary meaning, and its scope is unclear based on the intrinsic record. At most, the brief and Specification describe the "self learning process" in terms of its functions – e.g., "[t]he self-learning nature of the system applies the tracked information to automatically update the routing table 104 to efficiently route future requests of the same problem domain in a more timely manner (fewer hand-offs between SMEs)." Spec. 4:26–29. This is a result–oriented description that gives no insight into what the "self learning process" is. It insufficiently circumscribes the scope of the "self learning process."

Appellant argues that said "a self-learning process" is "clearly directed to an 'improvement in technology' and/or an 'improvement in the functioning of the computer itself' with regard to more effectively routing requests for service in a computing system" (Br. 13), which the Specification

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arguably supports (*see* Spec. 4:26–29). This suggests that there are technical details associated with the "self learning process" that

> provide novel and technological solutions with regard to tracking and leveraging current and historical interactions among subject matter experts in resolving user RFSs to thereby build a dynamic self-adaptive routing system which learns to route RFSs to target computer nodes of subject matter experts to thereby resolve RFSs in a more efficient and timely fashion.

Br. 12.

However, because the present record provides insufficient insight into what those technical details are, the claim phrase "self learning process" remains vague. "[U]nder the broadest reasonable interpretation when read in light of the Specification, [the phrase "self learning process"] is vague and unclear, and a person having ordinary skill in the art would not be able to discern the metes and bounds of the claimed invention in light of this claim language." *Ex parte McAward*, 2015–006416 (PTAB Aug. 25, 2017) (precedential).

Accordingly, claims 1–8, 10–21, and 26 are rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim Appellant's invention.

CONCLUSION

The decision of the Examiner to reject claims 1–8, 10–21, and 26 is reversed and a new rejection is entered as a new ground of rejection.

More specifically:

The decision of the Examiner to reject claims 1–8, 10–21, and 26 under 35 U.S.C. § 101 for claiming patent-ineligible subject matter is reversed *pro forma*.

The rejection of claims 1–8, 10–21, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Thanner, Peyravian, and Santos is reversed *pro forma*.

Claims 1–8, 10–21, and 26 are newly rejected under 35 U.S.C. § 112, second paragraph.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed	New Ground
1–8, 10–21, 26	101	Eligibility		1–8, 10–21, 26	
1–8, 10–21, 26	103	Thanner, Peyravian, Santos		1–8, 10–21, 26	
1–8, 10–21, 26	112 ¶ 2	Indefiniteness			1–8, 10–21, 26
Overall Outcome				1–8, 10–21, 26	1–8, 10–21, 26

NEW GROUND

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). 37 C.F.R. § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." 37 C.F.R. § 41.50(b) also provides that the Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

> (1)   *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the

examiner, in which event the prosecution will be remanded to the examiner. . . .

(2)   *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same Record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

<u>REVERSED; 37 C.F.R. § 41.50(b)</u>