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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ANDREW D. FLOCKHART and ROBERT C. STEINER

Appeal 2017-000153
Application 12/955,676
Technology Center 3600

Before CARLA M. KRIVAK, AMBER L. HAGY, and
MICHAEL M. BARRY, *Administrative Patent Judges*.

HAGY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants¹ appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–20, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ Appellants identify Avaya Inc. as the real party in interest. (App. Br. 2.)

STATEMENT OF THE CASE

Introduction

According to Appellants, the claimed invention is directed to “[a] contact center and methods and mechanisms for administering the same” (Abs.), in which agents handle contacts (e.g., customer calls) that are assigned to agent queues based on agent skills. (Spec. ¶ 43.) According to Appellants, contact centers aim to meet performance metrics in servicing contacts, and one such performance metric is a “percent service level,” in which a certain percentage of contacts are handled within a designated period of time. (*Id.* ¶ 2.) To “increase the contact center’s overall operational efficiency and performance,” Appellants’ Specification describes a contact center that “provides the ability to calculate short-term predictor metrics for achieving particular percent service level objectives in a plurality of skills, determine an optimal skill based on the comparison of short-term predictor metrics, and assign an agent to the optimal skill.” (Abs.; Spec. ¶ 44.)

Exemplary Claim

Claims 1, 10, and 18 are independent. Claim 1, reproduced below with the disputed limitations italicized, is exemplary of the claimed subject matter:

1. A method of operating a contact center, comprising:
 - receiving, at a server responsible for making contact routing decisions in the contact center, an indication that an agent of the contact center has become available to service a contact;
 - determining, at the server, that the agent is eligible to be assigned to a first queue having a first skill associated therewith and a second queue having a second skill associated therewith;

obtaining a first level of expertise indicative of the agent's proficiency with the first skill;

obtaining a second level of expertise indicative of the agent's proficiency with the second skill;

determining, by the server, for the first queue, a short-term predictor metric which considers the impact of a next contact in the first queue failing to meet its service time objective, whereby the short-term predictor is determined, at least in part, by considering the mitigating impact of assigning the agent, with the first level of expertise, to the first queue;

determining, by the server, for the second queue, a short-term predictor metric which considers the impact of a next contact in the second queue failing to meet its service time objective, whereby the short-term predictor is determined, at least in part, by considering the mitigating impact of assigning the agent, with the second level of expertise, to the second queue;

comparing, by the server, the short-term predictor metric of the first queue with the short-term predictor metric of the second queue;

based on the comparison of the short-term predictor metrics of the first and second queues, determining, by the server, that the first queue at least one of (i) has a greater risk as compared to the second queue of failing to meet its percent service level objective and (ii) has a greater risk as compared to the second queue of falling further behind meeting its percent service level objective; and

in response to determining that at least one of (i) and (ii) is true with respect to the first queue, assigning, by the server, the agent to the first queue and not to the second queue.

REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Tonisson	US 5,903,641	May 11, 1999
Burok et al. (“Burok”)	US 2003/0152212 A1	Aug. 14, 2003
Petrovykh	US 2003/0231647 A1	Dec. 18, 2003
Li et al. (“Li”)	US 2010/0274637 A1	Oct. 28, 2010

REJECTIONS²

Claims 1–20 stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. (Final Act. 3–7, 15–17.)

Claims 1–4, 9–12, and 17–20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Li, Burok, Tonisson, and Petrovykh. (Final Act. 7–13, 17–45.)

ISSUES

(1) Whether the Examiner erred in rejecting claims 1–20 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter.

(2) Whether the Examiner erred in finding Li teaches or suggests “based on the comparison of the short-term predictor metrics of the first and second queues, determining, by the server, that the first queue at least one of (i) has a greater risk as compared to the second queue of failing to meet its percent service level objective and (ii) has a greater risk as compared to the second queue of falling further behind meeting its percent service level objective,” as recited in independent claim 1 and commensurately recited in independent claims 10 and 18.

² All rejections are under the provisions of 35 U.S.C. in effect prior to the effective date of the Leahy-Smith America Invents Act of 2011.

(3) Whether the Examiner erred in finding the combination of Li and Petrovykh teaches or suggests “in response to determining that at least one of (i) and (ii) is true with respect to the first queue, assigning, by the server, the agent to the first queue and not to the second queue,” as recited in independent claim 1 and commensurately recited in independent claims 10 and 18.

(4) Whether the Examiner engaged in impermissible hindsight in combining the teachings of Li, Burok, Tonisson, and Petrovykh in rejecting independent claims 1, 10, and 18.

(5) Whether the Examiner erred in finding Li teaches or suggests “the server omits assigning the agent to the second queue even through the agent is qualified to process contacts from the second queue,” as recited in dependent claim 2 and commensurately recited in dependent claim 11.

(6) Whether the Examiner erred in finding Li teaches or suggests “wherein the short-term predictor metrics of the first and second queues are determined, at least in part, by calculating a predicted percent service level value,” as recited in dependent claim 4 and commensurately recited in dependent claim 12.

(7) Whether the Examiner erred in finding Burok teaches or suggests “wherein the short-term predictor metric of the first queue is less than the short-term predictor metric of the second queue even though the first queue is currently meeting its target service time objective but the second queue is not currently meeting its target service time objective,” as recited in dependent claim 9 and commensurately recited in dependent claims 17 and 19.

ANALYSIS

We have reviewed the Examiner’s rejections in light of Appellants’ arguments the Examiner has erred. We disagree with Appellants’ conclusions and we adopt as our own: (1) the findings and reasons set forth by the Examiner in the action from which this appeal is taken; and (2) the reasons set forth by the Examiner in the Examiner’s Answer in response to Appellants’ Appeal Brief. We concur with the conclusions reached by the Examiner, and we highlight the following for emphasis.³

A. § 101 Rejection

Appellants dispute the Examiner’s conclusion that claims 1–20 are directed to patent-ineligible subject matter under 35 U.S.C. § 101. (App. Br. 9–14; Reply Br. 2–6.)

Appellants first assert that the claims are entitled to a streamlined analysis as set forth in the 2014 Interim Guidance on Patent Subject Matter Eligibility, 79 Fed. Reg. 74618 (December 16, 2014) (“Interim Guidance”). (App. Br. 9–10; Reply Br. 2.) The Interim Guidance provides: “For purposes of efficiency in examination, a streamlined analysis can be used for a claim that may or may not recite a judicial exception but, when viewed as a whole, clearly does not seek to tie up any judicial exception such that others cannot practice it.” Interim Guidance, 79 Fed. Reg. at 74625. Thus, a streamlined eligibility analysis is available to examiners who are of the view that a claim clearly does not have a subject-matter eligibility problem. On the other hand, the Interim Guidance also indicates a “full analysis should be

³ Only those arguments made by Appellants have been considered in this decision. Arguments Appellants did not make have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2015).

conducted” if there is doubt that the applicant is effectively seeking coverage for a judicial exception. *Id.* Thus, it is at an examiner’s discretion as to whether a streamlined analysis is appropriate.

Appellants’ argument that the Examiner was required, but failed, to conduct a streamlined analysis is, therefore, not persuasive of error. The Examiner determined the application might be may be directed to patent-ineligible subject matter, and, accordingly, properly exercised discretion to conduct a full analysis of the claims using the *Mayo/Alice* two-step framework, consistent with the guidance set forth in the USPTO’s “2014 Interim Guidance on Patent Subject Matter Eligibility,” 79 Fed. Reg. 74618 (Dec. 16, 2014), in effect at the time the Final Office Action was mailed. (Final Act. 3–7, 15–17; Ans. 35–44.)

We turn now to evaluating Appellants’ arguments in the context of the *Mayo/Alice* two-step framework. In the first step of the analysis, we determine whether the claims at issue are “directed to” a judicial exception, such as an abstract idea. *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014) (setting forth analytical “framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts”) (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71–73 (2012)). If the claims are not directed to a judicial exception, the inquiry ends. *Thales Visionix Inc. v. U.S.*, 850 F.3d 1343, 1346 (Fed. Cir. 2017); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016). If the claims are determined to be directed to a judicial exception (such as an abstract idea), then we consider under step two whether the claims contain an

“inventive concept” sufficient to “transform the nature of the claim into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (citation omitted).

Noting that the two stages involve “overlapping scrutiny of the content of the claims,” the Federal Circuit has described “the first-stage inquiry” as “looking at the ‘focus’ of the claims, their ‘character as a whole,’” and “the second-stage inquiry (where reached)” as “looking more precisely at what the claim elements add—specifically, whether, in the Supreme Court’s terms, they identify an ‘inventive concept’ in the application of the ineligible matter to which (by assumption at stage two) the claim is directed.” *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016). In considering whether a claim is directed to an abstract idea, we acknowledge—as did the Court in *Mayo*—that “all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.” *Mayo*, 566 U.S. at 71. We, therefore, look to whether the claims focus on a specific means or method that improves the relevant technology or are instead directed to a result or effect that is itself the abstract idea and whether the claims merely invoke generic processes and machinery. *See Enfish*, 822 F.3d at 1336.

Step One: Whether the Claims Are Directed to a Patent-Ineligible Concept (Abstract Idea)

In applying the framework set out in *Alice*, and as the first step of that analysis, the Examiner concludes the claims are directed to “the abstract idea of managing a contact center.” (Final Act. 15.) In particular, the Examiner finds the claims “include limitations that describe concepts relating to managing relationships or transactions between people,” such as receiving an indication that an agent of the contact center has become available to service a contact, determining that the agent is eligible to be assigned, and

assigning the agent to a queue. (Ans. 36.) The Examiner further notes “[c]oncepts relating to interpersonal and intrapersonal activities, such as managing relationships or transactions between people, social activities and human behavior, are considered ‘certain methods of organizing human activity.’” (*Id.*) We agree. Claim 1 is directed, in part, to assigning employees (e.g., contact center agents) to tasks (e.g., handling the next call in an assigned queue) based on the employees’ skills and ability to most efficiently service a need (e.g., to prevent a queue of calls to the contact center from falling behind or further behind in meeting service level objectives), which are fundamental steps in organizing human activity in an employment environment. As such, claim 1 is directed to the abstract idea of managing human behavior. (*See* Ans. 35–36.)

Appellants’ assertion that assigning an agent to one queue versus another does not fall within the scope of “certain methods of organizing human activity” because it does not involve “relationship[s] between people, social activity, etc.,” is not persuasive because it ignores the broader scope of “methods of organizing human activity” in the very source cited by Appellants. (App. Br. 12 (citing July 2015 Update: Subject Matter Eligibility “2015 Update”).) According to the July 2015 Update cited by Appellants, patent-ineligible methods of organizing human behavior are not limited to managing relationships between people or social activities, but broadly include “managing . . . human behavior.” (2015 Update p. 4.) As the Examiner finds, and we agree, assigning employees (agents) to handle particular tasks (calls to a contact center), even if automated by a computer system, involves managing human behavior. (*See* Ans. 35–36.)

Similarly unpersuasive is Appellants' assertion that unpatentable methods of organizing human activities are limited to the particular scenarios addressed in the cases cited at pages 4–5 of Appellants' Reply Brief. The examples provided in the 2015 Update cited by Appellants are simply that—examples. Moreover, we observe that assigning agents at a contact center to certain queues based on the application of particular rules and algorithms, as in Appellants' claimed invention, amounts to directing human activities according to the application of rules or algorithms, which is similar to the claims courts have held to be directed to patent-ineligible abstract ideas. *See, e.g., Accenture Global Services, GmbH v. Guidewire Software*, 728 F.3d 1336, 1344 (Fed. Cir. 2013) (generating task-based rules based on an event); *In re Ferguson*, 558 F.3d 1359, 1364 (Fed. Cir. 2009) (structuring a sales force or marketing company); *In re Maucorps*, 609 F. 2d 481 (CCPA 1979) (using an algorithm for determining the optimal number of visits by a business representative to a client).

The Examiner additionally finds the claims “consistently recite[] limitations that are essentially directed to comparing new and stored information and using rules to identify options,” such as comparing “short-term predictor metric[s]” for different queues and, based on the comparison, determining relative risks of failing to meet, or falling further behind in meeting, “percent service level objective[s].” (Ans. 37.) The Examiner notes that “gathering data, comparing data and computing a short-term predictor metric is considered an abstract idea, specifically an idea of itself,” and analogizes such subject matter to “collecting and comparing known information,” as addressed in *Classen*. (*Id.*) *See Classen Immunotherapies Inc. v. Biogen IDEC*, 659 F.3d 1057, 1067–68 (Fed. Cir. 2011) (holding a

claim involving “the idea of collecting and comparing known information,” without more, is directed to an abstract idea). We agree, and we further note that our reviewing court has repeatedly held that information collection and analysis, including when limited to particular content, is within the realm of abstract ideas. *See, e.g., Elec. Power Grp. LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016) (holding that “collecting information, analyzing it, and displaying certain results of the collection and analysis” are “a familiar class of claims ‘directed to’ a patent-ineligible concept”); *Fair Warning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1093–94 (Fed. Cir. 2016) (claims directed to collecting information and analyzing it according to certain rules were directed to an abstract idea); *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011) (computer-implemented system for “verifying the validity of a credit card transaction[] over the Internet” was patent-ineligible); *Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1344–45 (Fed. Cir. 2013) (patent-ineligible claims recited “generalized software components arranged to implement an abstract concept [of generating insurance-policy-related tasks based on rules to be completed upon the occurrence of an event] on a computer”).

We additionally note that a claim need not be addressed to a single abstract idea to be patent ineligible. As our reviewing court has held, combining several abstract ideas does not render the combination any less abstract. *RecogniCorp, LLC v. Nintendo Co., Ltd.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (“Adding one abstract idea . . . to another abstract idea . . . does not render the claim non-abstract.”); *see also FairWarning IP*, 839 F.3d

at 1093–94 (patent-ineligible claims were directed to a combination of abstract ideas).

We have considered all of Appellants’ arguments challenging the characterization of their claims as being directed to abstract ideas, but we do not find them to be persuasive of error. (App. Br. 10–12; Reply Br. 3–6.) Rather, we agree with the Examiner, at step one of the *Alice* analysis, that the claims are directed to one or more abstract ideas. Accordingly, we turn to the second step of the *Alice* analysis, in which we determine whether the additional elements of the claims transform them into patent-eligible subject matter.

Step Two: Whether Additional Elements Transform the Idea Into Patent-Eligible Subject Matter

Having concluded that the claims are directed to an abstract idea, the Examiner also finds that the additional elements or combinations of elements beyond the abstract idea do not amount to “significantly more” than the abstract idea itself. (Final Act. 5–7, 15–17; Ans. 38–44.) In particular, the Examiner finds:

[T]here is no actual improvement to another technology or technical field, no improvement to the functioning of the computer itself, and no meaningful limitations beyond generally linking the use of the abstract idea to a particular technological environment evident in the claims. The steps recited in [Appellants’ claims] could be programmed to be performed on a variety of different computer platforms.

(Final Act. 6.) The Examiner also finds “[t]he recited elements, e.g., a processor and a data repository[,] are all generic computer elements.” (Ans. 38.)

Appellants assert that the claimed invention establishes “meaningful limitations” because “the claims are directed to the assignment of an agent to

one of two work queues depending on skills and the risk associated with not assigning the agent to the other of the two work queues.” (App. Br. 15.) Appellants do not, however, persuasively argue why the cited claim limitations contain an inventive concept that transforms the abstract idea into patent-eligible subject matter. The need for effective assignment of contact-center agents to particular call queues, as Appellants’ claimed invention purports to address, is not a technical problem; it is a business problem. And assigning agents to queues by taking into consideration relative risks of assigning them to one queue over another, as in Appellants’ claimed invention, is a commercial solution, not a technical solution.

Appellants also insist “the claims cannot be practiced by an unaided human.” (Reply Br. 6.) Appellants overstate the technical nature of the claims. At most, the claims (and Specification) refer to the use of a “server” or a “computing system.” But even under Appellants’ argument that the claimed invention requires the use of a computer, mere application of an abstract idea on a computer system does not make a claimed invention patentable. *See Alice Corp.*, 134 S. Ct. at 2358 (“[I]f a patent’s recitation of a computer amounts to a mere instruction to ‘implemen[t]’ an abstract idea ‘on . . . a computer,’ []that addition cannot impart patent eligibility.”) (citations omitted). Notably, although Appellants’ Specification describes various systems for routing calls, Appellants’ Specification broadly states that the server “can be *any architecture* for directing contacts to one or more communication devices.” (Spec. ¶ 42 (emphasis added).) And Appellants do not argue that their claims are directed to any improvement in computer technology or the underlying hardware.

In that regard, we note that there is a fundamental difference between computer functionality improvements, on the one hand, and uses of existing computers as tools to perform a particular task, on the other. Indeed, the Federal Circuit applied this distinction in *Enfish* in rejecting a § 101 challenge because the claims at issue focused on a specific type of data structure, i.e., a self-referential table for a computer database, designed to improve the way a computer carries out its basic functions of storing and retrieving data, and not merely on asserted advances in uses to which existing computer capabilities could be placed. *Enfish*, 822 F.3d at 1335–36.

We find no parallel here between the claims before us and the claims in *Enfish*, nor can we identify any comparable aspect in the claims before us that represents “an improvement to computer functionality”—i.e., an improvement in the way a computer carries out its basic functions. (*See* Ans. 38–44.) The alleged advantages that Appellants tout do not concern an improvement to computer capabilities, but instead relate to an alleged improvement in the way a contact center is *managed* by employing rules-based comparisons to be “more efficient” in assigning agents to queues in order to “maintain[] or at least mitigat[e] objectives.” (*See* Reply Br. 7.)

We also are not persuaded of Examiner error by Appellants’ argument that the pending claims are patent-eligible because the claims contain sufficient other meaningful elements so that the claims “comprise more than a drafting effort designed to monopolize an exception.” (App. Br. 15 (emphasis omitted).) There is no dispute that the Supreme Court has described “the concern that drives this exclusionary principle [i.e., the exclusion of abstract ideas from patent eligible subject matter] as one of pre-emption.” *See Alice Corp.*, 134 S. Ct. at 2354. However, characterizing

preemption as a driving concern for patent eligibility is not the same as characterizing preemption as the sole test for patent eligibility. As our reviewing court has explained: “The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability” and “[f]or this reason, questions on preemption are inherent in and resolved by the § 101 analysis.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (citing *Alice Corp.*, 134 S. Ct. at 2354). Although “preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.” *Id.* (See also Ans. 39–40.)

Appellants also argue their claims are patent eligible because they “are directed to novel and unconventional steps that confine the claim[s] to a particular useful application, assignment of an agent to minimize an identified risk.” (App. Br. 15.) As noted *infra*, however, we agree with the Examiner’s conclusion that at least claims 1–4, 9–12, and 17–20 are not patentable over the cited art. But even if novel and nonobvious, a claim directed to a purely abstract idea is, nonetheless, patent-ineligible. See *Mayo*, 566 U.S. at 90. Thus, an abstract idea does not transform into an inventive concept just because the Examiner has not cited prior art that discloses or suggests it. Indeed, “[t]he ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.” *Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981). Therefore, even as to claims that the Examiner concludes are allowable over the art of record, such novelty would not persuade us that the claims are patent eligible under § 101. (See also Ans. 44.)

For the foregoing reasons, we are not persuaded the Examiner erred in rejecting independent claim 1 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter, or in rejecting on the same basis independent claims 10 and 18, as well as dependent claims 2–9, 11–17, 19, and 20, which Appellants do not argue separately. (App. Br. 8.) We, therefore, sustain this rejection.

B. § 103 Rejection

The Examiner finds the combination of Li, Burok, Tonisson, and Petrovykh teaches or suggests the limitations of independent claim 1. (Final Act. 17–36.) With regard to the disputed limitation of “based on the comparison of the short-term predictor metrics of the first and second queues, determining, by the server, that the first queue at least one of (i) has a greater risk as compared to the second queue of failing to meet its percent service level objective and (ii) has a greater risk as compared to the second queue of falling further behind meeting its percent service level objective,” the Examiner relies on Li. (*Id.* at 25–267.) In particular, the Examiner finds Li discloses, in connection with managing a contact center, comparing predictor metrics of first and second queues and determining whether resources “may need to be reallocated” between queues to “correct the situation” if it appears that a queue is at risk of failing to satisfy a Key Performance Indicator (KPI) according to a Service Level Agreement (SLA) for the contact center. (*Id.* (citing Li ¶¶ 25, 68.) The Examiner further finds:

Li relates generally to contact centers and particularly to contact center monitoring and control. . . . [Li makes] a determination based upon the claimed risk of falling further behind meeting its percent service level objective. For instance, Li describes that

when the threshold has a high probability of cross over, it indicates that a KPI or other SLA target may be missed (or violated). A calculation can be performed to understand the priority of the threshold against previously administered enterprise SLA goals. If high priority contact center resources may need to be reallocated to correct the situation, additional processing will continue to determine the optimal solution for the contact center based on a variety of factors as predetermined by the enterprise; these could include, without limitation, reassignment of agents, diversion of traffic (or inbound or outbound contacts), call back of staff, etc.

(Ans. 45.)

With regard to mapping the claimed “percent service level objective” to Li’s disclosure, the Examiner finds:

[F]or examination purposes[,] the action of comparing the thresholds of a first queue with a second queue to determine if there’s a risk of the first group of missing the service level agreement target was equated to the action of comparing two queues to determine which queue has a greater risk of failing to meet its percent service level objective. As described in the previous Office Action, the SLA target has been equated to the percent service level objective. Li teaches that [t]he SLA sets one or more thresholds for the KPI and, for each threshold, defines a consequence, typically a monetary penalty, in the event that the KPI crosses the threshold absolutely or for the duration of a defined time interval.

(Ans. 46.)

Appellants argue the Examiner’s findings regarding Li are in error because Li fails to disclose “evaluation of a *risk*” of failing to meet a percent service level objective, as “recited in claim 1,” but instead discloses “a *threshold* and *an impact* associated with a failure to meet a service objective for two customer queues utilizing two different thresholds and having two different consequences for a contact center falling below the thresholds.”

(App. Br. 17.) Appellants further contend Li fails to disclose the disputed limitation because “a risk of an event is different from a threshold and a consequence associated with the threshold.” (*Id.*) Appellants articulate the argument more directly in their Reply Brief, asserting claim 1 requires determining *relative risk* as between two different queues, and further asserting “[w]hile Li may be attempting to address a similar issue, Li still remains silent to, *inter alia*, whether the first queue has a greater risk, compared to a second queue, of failing to meet its objectives and falling further behind.” (Reply Br. 8.)

We are not persuaded by Appellants’ argument because it is premised on an overly narrow view of Li, which ignores Li’s disclosure of assessing a relative risk as between queues of causing a Key Performance Indicator (“KPI”) to cross a threshold. As noted above, the Examiner finds, and we agree, Li discloses determining whether one queue has a greater risk than another of failing to meet its objective. (Ans. 46.) The Examiner’s findings are supported by Li, which discloses determining a “risk” that a selected KPI for a queue will cross a threshold. (Li ¶ 68.) If Li’s system determines there is a “risk of the selected KPI crossing the selected threshold,” then the system will make recommendations and assess the “cost/benefit of each recommendation.” (*Id.* ¶¶ 71, 75.) In making this assessment, Li’s system considers, for example, whether to “reassign one agent from a first agent queue **212a** to a second agent queue **212b** to prevent a KPI associated with the second agent queue **212b** from passing a selected threshold.” (*Id.* ¶ 76.) Li discloses that part of the consideration includes determining the likelihood that the reassignment of an agent from the first queue to the second queue may then cause the first queue to cross over a selected

threshold—in other words, Li considers whether moving an agent to a second queue may pose a risk of the first queue failing to meet its objective. (*Id.*) Li then discloses that the system evaluates the relative risk by calculating the “penalty or benefit” of each queue failing to meet its objective “multiplied by the probability that it will occur in response to the recommendation.” (*Id.*)

Thus, we disagree with Appellants’ contention that Li fails to consider whether one queue has a “greater risk as compared to” another queue of failing to meet its objective. (*See Reply Br. 8.*) As the Examiner finds, and we agree, Li does disclose assessing the relative risk of moving an agent from one queue to another, this risk premised on an assessment of which queue has a greater risk of failing to meet its service level objective. We, therefore, are not persuaded of error in the Examiner’s finding that Li discloses the disputed limitation.

Appellants also argue the Examiner erred in finding the cited combination of Li and Petrovykh teaches or suggests “in response to determining that at least one of (i) and (ii) is true with respect to the first queue, assigning, by the server, the agent to the first queue and not to the second queue.” (*App. Br. 17–18.*) We disagree. The Examiner finds, and we agree, Petrovykh discloses reassignment of resources (agents) from one group to another if a queue is in danger of a time threshold being breached:

Petrovykh relates to managing a communication center by assigning agents to different groups. Moreover, Petrovykh discloses that[,] for example, in the first case using the simple example of groups 1 and 2, a resource re-allocation recommendation may not be issued until a snapshot of queue activity reflects an event-purpose shift from technical service requirements to account management requirements above a

certain percentage of events waiting. In the second case, the threshold for issuing a *re-allocation of resource recommendation may occur only if the resource-starved events begin to breach a time threshold for waiting for a response*. Once the time threshold is reported to be breached[,] a recommendation to re-allocate resources is issued to add resources for those particular events [paragraph 0231]. *Since a reassignment of an agent to group 1 is essentially an assignment of an agent to a first queue, it is determined that the method and apparatus for optimizing response time to events in queue does indeed assign the agent to the first queue and not to the second queue.*

(Ans. 48–49 (emphases added).) Appellants do not persuasively rebut these findings.

We are also not persuaded by Appellants’ argument that the Examiner engaged in impermissible hindsight reconstruction in combining the teachings of Li and Petrovykh. (App. Br. 19.) In particular, Appellants argue “Petrovykh discloses queues only as a means for holding work items that may be segregated by media type and fails to consider an agent being eligible to work two skill-based queues. Li discloses the prediction of threshold exceptions and a combination wherein tasks within a queue are reordered.” (*Id.*)

Appellants’ argument is not persuasive. We recognize the Examiner must articulate “reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). However, the Examiner’s reasoning need not appear in, or be suggested by, one or more of the references on which the Examiner relies. Instead, a reason to combine teachings from the prior art “may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved.” *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d

1339, 1355 (Fed. Cir. 1999) (citing *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)). “Under the correct [obviousness] analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007).

In the instant appeal, the Examiner has provided rationales supporting motivation by a person of ordinary skill in the art to achieve the claimed subject matter by combining the teachings of Li, Burok, and Tonisson with Petrovykh. (Final Act. 33–36.) For example, the Examiner finds the modification of Li, Burok, and Tonisson with Petrovykh is “merely a combination of old elements, and in the combination each element merely would have performed the same functions as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable,” and further finds “[t]he combination provides a more comprehensive method by allowing allocat[ion of] resources to best handle the events stacked in queue.” (Final Act. 35–36.) Appellants have not provided persuasive evidence or a persuasive line of reasoning explaining why the Examiner’s stated rationales are erroneous. Moreover, as noted above, assigning an agent to one queue over another, based on a determination of relative risk of each queue failing to meet service level objectives, is consistent with Li’s disclosure of determining the relative risk of reassigning an agent from one queue to another. (Li ¶ 76.) If an agent is reassigned to a different queue, the agent is no longer assigned to the original queue. Consequently, we are not persuaded that the Examiner engaged in impermissible hindsight in combining the teachings of the cited references.

For the foregoing reasons, we are not persuaded of error in the Examiner's 35 U.S.C. § 103(a) rejection of independent claim 1, or of claims 3, 10, 18, or 20, argued collectively with claim 1. We, therefore, sustain the rejection of those claims.

Appellants present separate arguments with regard to dependent claims 2, 4, 9, 11, 12, 17, and 19. (App. Br. 20.) Claims 2 and 11 depend from independent claims 1 and 10, respectively. Claim 2 recites “the server omits assigning the agent to the second queue even though the agent is qualified to process contacts from the second queue.” (Claims App’x 3.) Claim 11 contains a commensurate recitation. (*Id.* 6.) The Examiner finds, and we agree, this limitation is taught by Li, which discloses that an agent may have multiple skills to qualify the agent to be assigned to multiple queues. (Final Act. 36 (citing Li ¶ 49).) The Examiner further finds, and we agree, Li discloses removing agents from a second queue and moving them to a first queue based on a “tradeoff calculation” to determine the impact of reassigning agents. (*Id.* (citing Li ¶ 83).) Thus, Li discloses an agent is qualified to service both queues, but is assigned to one queue instead of another based on a tradeoff calculation. Appellants do not persuasively rebut these findings. We, therefore, sustain the Examiner’s rejection of independent claims 2 and 11.

Claims 4 and 12 depend from claims 1 and 10, respectively. Claim 4 recites “wherein the short-term predictor metrics of the first and second queues are determined, at least in part, by calculating a predicted percent service level value.” (Claims App’x 3.) Claim 12 recites a commensurate limitations. (*Id.* 6.) The Examiner finds Li teaches these limitations by disclosing Key Performance Indicators, including “predicted wait time,” to

calculate “performance relative to their Service Level Agreements,” and also discloses a “real time threshold *prediction module*” that determines whether a “selected performance measure will, during a future time interval, *likely cross* a selected threshold.” (Final Act. 38 (citing Li ¶¶ 6, 14–18) (emphases added).) Appellants’ argument that Li discloses only “observed” or “indicated” Key Performance Indicators, and fails to disclose “predicted percent service level value” (App. Br. 20 (emphases omitted)), is not consistent with the teachings of Li, and is, therefore, not persuasive of Examiner error. We sustain the Examiner’s rejection of claims 4 and 12.

Claim 9 depends from claim 1 and recites “wherein the short-term predictor metric of the first queue is less than the short-term predictor metric of the second queue even though the first queue is currently meeting its target service time objective but the second queue is not currently meeting its target service time objective.” (Claims App’x 4.) Claims 17 and 19 depend from claims 10 and 18, respectively, and recite similar limitations. (*Id.* at 7, 9.) The Examiner finds Burok discloses assigning different thresholds to work items and also discloses a determination of critical status based on the work activity status of that work item relative to its threshold. (Final Act. 41.) In other words, according to Burok, a work item may be closer to meeting its objective than another work item, but may still be deemed unacceptable because the work item is more critical than the other. (*See* Burok Abs., claim 19, and ¶ 84.) We agree the Examiner’s findings are supported by the cited teachings. Appellants do not address these findings by the Examiner, and hence do not persuade us of error. We, therefore, sustain the Examiner’s rejection of claims 9, 17, and 19.

The Examiner indicates that claims 5–8 and 13–16 are allowable over the art of record, but objects to these claims as being “dependent upon a rejected base claim.” (Final Act. 14.) Although the Examiner indicates these claims would be “allowable if rewritten in independent form” (*id.*), we note that this would not cure their status as being rejected under 35 U.S.C. § 101 as directed to patent-ineligible subject matter.

DECISION

The Examiner’s rejection of claims 1–20 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter is affirmed.

The Examiner’s rejection of claims 1–4, 9–12, and 17–20 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED