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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ABHINAV KATIYAR, JAGANNATH RAGHU,
HEMANTH PANNEM and MANGESH PANGARKAR

Appeal 2019-004031
Application 12/126,705
Technology Center 3600

Before ST. JOHN COURTENAY III, LARRY J. HUME, and
PHILLIP A. BENNETT, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant,¹ Abhinav Katiyar et al.,
appeals from the Examiner's decision rejecting claims 1–17 and 25–27.
Claims 18–24 are cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

We Affirm.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37
C.F.R. § 1.42(a). Appellant identifies the real party in interest as VMware,
Inc. *See* Appeal Br. 2.

STATEMENT OF THE CASE²

The Invention

The claims are directed to systems and methods “for calculating use charges in a virtualized infrastructure.” Title.

Exemplary Claim

We reproduce *infra* claim 1 in Table One.

Rejection on Appeal

Claims 1–17 and 25–27 stand rejected under 35 U.S.C. § 101 as being directed to a judicial exception, without significantly more. *See* Final Act. 5.

CLAIM GROUPING

Based on Appellant’s arguments (Appeal Br. 8–20) and our discretion under 37 C.F.R. § 41.37(c)(1)(iv), we decide the appeal of the rejection of claims 1–17 and 25–27 under 35 U.S.C. § 101 on the basis of representative claim 1.³

² Our decision relies upon Appellant’s Appeal Brief (“Appeal Br.,” filed Nov. 7, 2018); Reply Brief (“Reply Br.,” filed April 24, 2019); Examiner’s Answer (“Ans.,” mailed Feb. 26, 2019); Final Office Action (“Final Act.,” mailed Aug. 9, 2018); and the original Specification (“Spec.,” filed May 23, 2008).

³ “Notwithstanding any other provision of this paragraph, the failure of appellant to separately argue claims which appellant has grouped together shall constitute a waiver of any argument that the Board must consider the patentability of any grouped claim separately.” 37 C.F.R. § 41.37(c)(1)(iv). When Appellant does not separately argue the patentability of dependent

ISSUES

In reaching this decision, we consider all evidence presented and all arguments actually made by Appellant.

§ 101 Rejection of Claims 1–17 and 25–27

Issue

Appellant argues (Appeal Br. 8–20; Reply Br. 3–24) the Examiner’s rejection of claim 1 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter is in error. Appellant’s contentions present us with the following issue:

Under the USPTO’s Revised Guidance, as informed by our governing case law concerning 35 U.S.C. § 101, is claim 1 patent ineligible under § 101?

Principles of Law

A. 35 U.S.C. § 101

“Eligibility under 35 U.S.C. § 101 is a question of law, based on underlying facts.” *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1166 (Fed. Cir. 2018).

An invention is patent eligible if it is a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101.⁴ However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include

claims, the claims stand or fall with the claims from which they depend. *See In re King*, 801 F.2d 1324, 1325 (Fed. Cir. 1986).

⁴ This threshold analysis of whether a claim is directed to one of the four statutory categories of invention, i.e., a process, machine, manufacture, or composition of matter, is referred to as “*Step 1*” in the USPTO’s patent-eligibility analysis under § 101. *See* MPEP § 2106.

implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70 (2012) (brackets in original) (citing *Diamond v. Diehr*, 450 U.S. 175, 185 (1981)).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 217–18 (2014) (citing *Mayo*, 566 U.S. at 75–77). In accordance with that framework, we first determine what concept the claim is “directed to.” See *Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); see also *Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk . . .”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diehr*, 450 U.S. at 191); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1853))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 U.S. at 187; *see also id.* at 191 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). Having said that, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *Id.* (citation omitted) (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”).

Abstract ideas may include, but are not limited to, fundamental economic practices, methods of organizing human activities, and mathematical formulas or relationships. *Alice*, 573 U.S. at 217–21. Under this guidance, we must therefore ensure at step one that we articulate what the claims are directed to with enough specificity to ensure the step one inquiry is meaningful. *Id.* at 217 (“[W]e tread carefully in construing this exclusionary principle lest it swallow all of patent law.”).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221 (citation omitted). “A claim

that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

B. USPTO 2019 Revised Guidance

The PTO recently published revised guidance in the Federal Register concerning the application of § 101. *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (January 7, 2019) (hereinafter “Revised Guidance”) (<https://www.govinfo.gov/content/pkg/FR-2019-01-07/pdf/2018-28282.pdf>).

Under the Revised Guidance, 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);⁵ and

(2) additional elements that integrate the judicial exception into a practical application (*see* Manual for Patent Examining Procedure (“MPEP”) § 2106.05(a)–(c), (e)–(h)).⁶

See Revised Guidance 52–53.

⁵ Referred to as “*Revised Step 2A, Prong 1*” in the Revised Guidance (hereinafter “*Step 2A(i)*”).

⁶ Referred to as “*Revised Step 2A, Prong 2*” in the Revised Guidance (hereinafter “*Step 2A(ii)*”).

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

(3) adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); 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.⁷

See Revised Guidance 56.

Step 2A(i) — Abstract Idea

Informed by our judicial precedent, the Revised Guidance extracts and synthesizes key concepts identified by the courts as abstract ideas to explain that the abstract idea exception includes the following groupings of subject matter, when recited as such in a claim limitation:

(a) Mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations;

(b) Certain methods of organizing human activity — fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions); and

(c) Mental processes—concepts performed in the human mind (including an observation, evaluation, judgment, opinion).

Revised Guidance 52 (footnotes omitted).

⁷ Items (3) and (4) continue to be collectively referred to as “*Step 2B*” of the Supreme Court’s two-step framework, described in *Mayo* and *Alice*.

Under the Revised Guidance, if the claim does not recite a judicial exception (a law of nature, natural phenomenon, or subject matter within the enumerated groupings of abstract ideas above), then the claim is patent eligible at *Step 2A(i)*. This determination concludes the eligibility analysis.⁸

However, if the claim recites a judicial exception (i.e., an abstract idea enumerated above, a law of nature, or a natural phenomenon), then the claim requires further analysis to determine if the judicial exception is integrated into a practical application in *Step 2A(ii)*.

Step 2A(ii) — Practical Application

If a claim recites a judicial exception in *Step 2A(i)*, we determine whether the recited judicial exception is integrated into a practical application of that exception in *Step 2A(ii)* by: (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception(s); and (b) evaluating those additional elements individually and in combination to determine whether they integrate the exception into a practical application.

For example, limitations that **are** indicative of *integration into a practical application* include:

1. Improvements to the functioning of a computer, or to any other technology or technical field — *see* MPEP § 2106.05(a);
2. Applying the judicial exception with, or by use of, a particular machine — *see* MPEP § 2106.05(b);

⁸ In the rare circumstance in which an Examiner believes a claim limitation that does not fall within the enumerated groupings of abstract ideas should nonetheless be treated as reciting an abstract idea, the procedure described in the Guidance for analyzing the claim should be followed. *See* Revised Guidance, Section III.C.

3. Effecting a transformation or reduction of a particular article to a different state or thing — *see* MPEP § 2106.05(c); and
4. Applying or using the judicial exception in some other meaningful way beyond generally linking the use of the judicial exception to a particular technological environment, such that the claim as a whole is more than a drafting effort designed to monopolize the exception — *see* MPEP § 2106.05(e).

In contrast, limitations that are **not** indicative of *integration into a practical application* include:

1. Adding the words “apply it” (or an equivalent) with the judicial exception, or merely include instructions to implement an abstract idea on a computer, or merely uses a computer as a tool to perform an abstract idea — *see* MPEP § 2106.05(f);
2. Adding insignificant extra-solution activity to the judicial exception — *see* MPEP § 2106.05(g); and
3. Generally linking the use of the judicial exception to a particular technological environment or field of use — *see* MPEP § 2106.05(h).

See Revised Guidance, 84 Fed. Reg. at 54–55 (Step 2A, “Prong Two”).

If the recited judicial exception is integrated into a practical application as determined under one or more of the MPEP sections cited above, then the claim is not directed to the judicial exception, and the patent-eligibility inquiry ends. *See* Revised Guidance 54. If not, then the analysis proceeds to *Step 2B*.

Step 2B — “Inventive Concept” or “Significantly More”

Under our reviewing courts’ precedent, it is possible a claim that does not “integrate” a recited judicial exception under *Step 2A(ii)* is nonetheless patent eligible. For example, the claim may recite additional elements that render the claim patent eligible even though a judicial exception is recited in

a separate claim element.⁹ The Federal Circuit has held claims eligible at the second step of the *Alice/Mayo* test (USPTO *Step 2B*) because the additional elements recited in the claims provided “significantly more” than the recited judicial exception (e.g., because the additional elements were unconventional in combination).¹⁰ Therefore, if a claim has been determined to be directed to a judicial exception under the Revised Guidance *Step 2A*, prong two, we must also evaluate the additional elements individually and in combination under *Step 2B* to determine whether they provide an inventive concept (i.e., whether the additional elements amount to significantly more than the exception itself).¹¹

Under the Revised Guidance, we must consider in *Step 2B* whether an additional element or combination of elements: (1) “Adds a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field, which is indicative that an inventive concept may be present”; or (2) “simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception, which is indicative

⁹ See, e.g., *Diehr*, 450 U.S. at 187.

¹⁰ See, e.g., *Amdocs (Israel), Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1300, 1304 (Fed. Cir. 2016); *BASCOM Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349–52 (Fed. Cir. 2016); *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257–59 (Fed. Cir. 2014).

¹¹ The patent eligibility inquiry may contain underlying issues of fact. *Mortg. Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1325 (Fed. Cir. 2016). In particular, “[t]he question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).

that an inventive concept may not be present.” *See Revised Guidance, Section III.B.*¹²

In the *Step 2B* analysis, an additional element (or combination of elements) is not well-understood, routine or conventional unless the Examiner finds an evidentiary basis, and expressly supports a rejection in writing with one or more of the following:

1. A citation to an express statement in the specification or to a statement made by an applicant during prosecution that demonstrates the well-understood, routine, conventional nature of the additional element(s). . . .
2. A citation to one or more of the court decisions discussed in MPEP § 2106.05(d)(II) as noting the well-understood, routine, conventional nature of the additional element(s).
3. A citation to a publication that demonstrates the well-understood, routine, conventional nature of the additional element(s). . . .
4. A statement that the examiner is taking official notice of the well-understood, routine, conventional nature of the additional element(s). . . .

See Berkheimer Memorandum.

¹² In accordance with existing *Step 2B* guidance, an Examiner’s finding that an additional element (or combination of elements) is well understood, routine, conventional activity must be supported with at least one of the four specific types of evidence required by the USPTO *Berkheimer* Memorandum. For more information concerning evaluation of well-understood, routine, conventional activity, *see* MPEP § 2106.05(d), as modified by the USPTO *Berkheimer* Memorandum (USPTO Commissioner for Patents Memorandum dated Apr. 19, 2018, “Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (*Berkheimer v. HP, Inc.*)” (hereinafter “*Berkheimer Memorandum*”).

The analysis in *Step 2B* further determines whether an additional element or combination of elements:

(a) Adds a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field, which is indicative that an inventive concept may be present; or

(b) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception, which is indicative that an inventive concept may not be present.

Revised Guidance, and *see Berkheimer Memorandum*.

If the Examiner or the Board determines under *Step 2B* that the element (or ordered combination of elements) amounts to significantly more than the exception itself, then the claim is patent eligible.

However, if a determination is made that the additional element (or combination of elements) does not amount to significantly more than the exception itself, the claim is ineligible under *Step 2B*, and the claim should be rejected as being patent ineligible.

ANALYSIS

Step 1 — Statutory Category

Claim 1 is a method (process) claim, which is one of the statutory categories of subject matter enumerated under 35 U.S.C. § 101.

Step 2A, Prong 1: Does the Claim Recite a Judicial Exception?

The Examiner determined: “[c]laims 1–17 and 25–27 recite the activities of creating mappings between different elements, retrieving data related to usage and billing, calculating charges based on retrieved parameters, and updating data related to usage and billing.” Final Act. 6 (underline omitted).

We evaluate, *de novo*, whether claim 1 **recites** an abstract idea based upon the Revised Guidance.

In TABLE 1 below, we identify in *italics* the specific claim limitations that we conclude recite an abstract idea. We additionally identify in **bold** the additional (non-abstract) claim limitations that are generic computer components and techniques:

TABLE 1

Independent Claim 1	Revised Guidance
<p>(a) A method for <i>calculating computing resource use charges for a data center consumer entity</i>, the data center consumer entity accessing one or more of a plurality of computing resources in a data center hierarchy, the data center consumer entity being a member of an organization hierarchy, the method including methods steps executed by a computer, the method steps comprising:</p>	<p>Calculating computing resource use charges is an abstract idea, i.e., “Mathematical concepts — mathematical relationships, mathematical formulas or equations, mathematical calculations” that could be performed alternatively as a mental process. <i>See</i> Revised Guidance 52.</p> <p>Charging for resource use is also a certain method of organizing human activity including commercial interactions, sales</p>

Independent Claim 1	Revised Guidance
	activities, and business relations. <i>See Revised Guidance 52.</i>
<p>(b) <i>creating mappings between one or more members of the organization hierarchy and one or more members of the data center hierarchy in a database, the organization hierarchy including a plurality of data center consumer entities arranged in a parent-child form and the data center hierarchy including one or more physical hosts and one or more virtual machines running on the one or more physical hosts, each host including the plurality of computing resources, wherein each of the plurality of computing resources includes at least one of a CPU, a disk, a Network Interface Card (NIC), and a memory, each virtual machine comprising a plurality of virtual computing resources and including at least one of a virtual CPU and a virtual NIC, the one or more members of the organization hierarchy being not part of the data center hierarchy, wherein the mappings include a mapping between a particular member of the organization hierarchy and a particular member of the data center hierarchy defining at least one computing resource of the particular member of the data center hierarchy as being reserved for use by the particular member of the organization hierarchy;</i></p>	<p>Creating mappings is an abstract idea, i.e., “concepts performed in the human mind, including an observation, evaluation judgment, opinion” that could be performed alternatively as a mental process.” <i>See Revised Guidance 52.</i></p>

Independent Claim 1	Revised Guidance
<p>(c) retrieving usage data of each of the plurality of computing resources using an application programming interface (API), the usage data being retrieved for a selected period of use of each of the plurality of computing resources by either the data center consumer entity or a parent entity of the data center consumer entity;</p>	<p>Retrieving usage data of each of the plurality of computing resources, i.e., data gathering, is insignificant extra-solution activity. Revised Guidance 55, n.31; <i>see also</i> MPEP § 2106.05(g).</p>
<p>(d) retrieving a rate plan data for the data center consumer entity from the database;</p>	<p>Retrieving rate plan data, i.e., data gathering, is insignificant extra-solution activity. Revised Guidance 55, n.31; <i>see also</i> MPEP § 2106.05(g).</p>
<p>(e) retrieving base rate and rate factor for each of the plurality of computing resources from the database, wherein the rate factor of a computing resource within the data center hierarchy is different from the rate factor of a child node of the computing resource within the data center hierarchy;</p>	<p>Retrieving base rate and rate factor data, i.e., data gathering, is insignificant extra-solution activity. Revised Guidance 55, n.31; <i>see also</i> MPEP § 2106.05(g).</p>
<p>(f) using a cost calculation module executing in a computer server, <i>calculating a charge for usage of billed units for each of the plurality of the computing resources using the base rate and the rate factor, wherein the charge is based on a maximum usage of one or more of the computing resources</i>, the billed units include one of actual used units or reserved units, wherein the rate plan data includes information whether the actual used units or the reserved units are to be</p>	<p>Calculating usage charges is an abstract idea, i.e., “Mathematical concepts — mathematical relationships, mathematical formulas or equations, mathematical calculations” that could be performed alternatively as a mental process. <i>See</i> Revised Guidance 52.</p>

Independent Claim 1	Revised Guidance
<p>used in calculating the charge, wherein calculating the charge for usage of the billed units for each of the plurality of the computing resources comprises specifying a varying cost of access of a particular computing resource depending upon particular time periods and varying the charge based on the varying cost of access and the selected period of use of each of the plurality of computing resources;</p>	
<p>(g) using the cost calculation module executing in the computer server, <i>calculating a charge for the data center consumer entity to access one or more of the virtual computing resources of a particular VM of the one or more virtual machines based on the usage of computing resources</i> to operate a physical host on which the particular VM is running, wherein the particular VM is a child of the physical host within the data center hierarchy;</p>	<p>Calculating charges is an abstract idea, i.e., “Mathematical concepts — mathematical relationships, mathematical formulas or equations, mathematical calculations” that could be performed alternatively as a mental process. <i>See</i> Revised Guidance 52.</p>
<p>(h) using the cost calculation module executing in the computer server, aggregating use charges for a <i>child consuming entity to the parent entity of the child consuming entity in the organization hierarchy</i>; and</p>	<p>Aggregating use charges is an abstract idea, i.e., “Mathematical concepts — mathematical relationships, mathematical formulas or equations, mathematical calculations” that could be performed alternatively as a mental process. <i>See</i> Revised Guidance 52.</p>
<p>(i) using the cost calculation module executing in the computer server,</p>	<p>Waiving a usage charge during a time period when the usage data</p>

Independent Claim 1	Revised Guidance
waiving a usage charge during a time period when the usage data is unavailable.	is unavailable is insignificant post-solution activity. Revised Guidance 55, n.31; <i>see also</i> MPEP § 2106.05(g); <i>and see buySAFE, Inc. v. Google, Inc.</i> , 765 F.3d 1350, 1355 (Fed. Cir. 2014) (determining a claim reciting a computer that receives and sends information over a network is directed to an abstract idea).

Appeal Br. 22–24 (Claims App’x.).

We conclude that calculation of computer resource use charges in a data center is a fundamental economic practice, which includes commercial interactions, sales activities, and business relations. *See* Revised Guidance 52. The abstract limitations of claim 1 (as identified in TABLE 1) also recite mathematical relationships that could be performed alternatively as mental processes, with the aid of pen and paper.¹³ *Parker v. Flook*, 437 U.S.

¹³ Our reviewing court recognizes that “[a]n abstract idea can generally be described at different levels of abstraction.” *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1240 (Fed. Cir. 2016). That need not and, in this case does not, “impact the patentability analysis.” *Id.* at 1241. Further, “[t]he Board’s slight revision of its abstract idea analysis does not impact the patentability analysis.” *Id.* Moreover, merely combining several abstract ideas does not render the combination any less abstract. *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (“Adding one abstract idea (math) to another abstract idea . . . does not render the claim non-abstract.”); *see also FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1093–94 (Fed. Cir. 2016) (determining the pending claims were directed to a combination of abstract ideas).

584, 594–95 (1978); *SAP America Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018).

Thus, under Step 2A(i), we agree with the Examiner that claim 1’s “activities of creating mappings between different elements, retrieving data related to usage and billing, calculating charges based on retrieved parameters, and updating data related to usage and billing” recite judicial exceptions under our Revised Guidance, and thus an abstract idea.

Additional Limitations

As emphasized in **bold** in TABLE 1, *supra*, we note the additional non-abstract limitations, *inter alia*, for example (claim 1):

[a] “one or more of a plurality of computing resources,” and “a computer”
[b] “a database,” “wherein each of the plurality of computing resources includes at least one of a CPU, a disk, a Network Interface Card (NIC), and a memory”
[f] “a computer server”
[g] “a physical host”

We further note the supporting exemplary descriptions of generic computer components in the Specification, for example:

Any of the operations described herein that form part of one or more embodiments of the invention are useful machine operations. One or more embodiments of the invention also relates to a device or an apparatus for performing these operations. The apparatus may be specially constructed for the required purposes, such as the carrier network discussed above, or it may be **a general purpose computer** selectively activated or configured by a computer program stored in the computer. In particular, various **general purpose machines** may be used with computer programs written in accordance with the teachings herein, or it may be more convenient to construct a more specialized apparatus to perform the required operations.

Spec. ¶ 33 (emphasis added).

One or more embodiments of the invention may be practiced with other computer system configurations including hand-held devices, microprocessor systems, microprocessor-based or programmable consumer electronics, minicomputers, mainframe computers and the like. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a network.

Spec. ¶ 36.

We emphasize that *McRO, Inc. v. Bandai Namco Games Am. Inc.*, (837 F.3d 1299 (Fed. Cir. 2016)), guides: “[t]he abstract idea exception prevents patenting a *result* where ‘it matters not by what process or machinery the result is accomplished.’” 837 F.3d at 1312 (quoting *O’Reilly v. Morse*, 56 U.S. 62, 113 (1853)) (emphasis added). *See supra* TABLE 1. Because we conclude all claims 1–17 and 25–27 on appeal **recite** an abstract idea, as identified above, under *Step 2A, Prong One*, we proceed to *Step 2A, Prong Two*.

2019 Revised Guidance, Step 2A, Prong Two
Integration of the Judicial Exception into a Practical Application

Pursuant to the 2019 Revised Guidance, we consider whether there are additional elements set forth in the claims that integrate the judicial exception into a practical application. *See* 2019 Revised Guidance, 84 Fed. Reg. at 54–55.

MPEP § 2106.05(a)
Improvements to the Functioning of a Computer or
to Any Other Technology or Technical Field

Appellant argues the claimed invention provides an improvement to computer functionality. In particular, Appellant contends the instant claims

are similar to the subject claims considered by the CAFC in *Finjan Inc. v. Blue Coat Systems, Inc.*, 879 F.3d 1299 (Fed. Cir. 2018) (“*Finjan*”); *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356, 1363 (Fed. Cir. 2018) (“*Core Wireless*”), and *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016). *See* Appeal Br. 13–16.

Appellant refers to prior USPTO guidance regarding § 101, including the May 2016 Subject Matter Eligibility Update, 81 Fed. Reg. 27,381 (May 6, 2016). *See* Appeal Br. 10, 16. However, we note this prior guidance has been superseded by the 2019 Revised Guidance, 84 Fed. Reg. at 52. Our *de novo* review will apply the 2019 Revised Guidance.

Finjan

We are not persuaded by Appellant’s comparison of the claims on appeal to the patent-eligible subject claim considered by the court in *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1303 (Fed. Cir. 2018). *See* Appeal Br. 13–14. In *Finjan*, the court found the claimed behavior-based virus scan constituted an improvement in computer functionality over the “traditional, ‘code-matching’ virus scans.” *Finjan*, 879 F.3d at 1304. The court determined that the *Finjan* claimed method employed a new kind of file that allowed access to be tailored for different users, and allowed the system to accumulate and use newly available, behavior-based information regarding potential threats. *Id.* at 1305. The court ultimately held that the *Finjan* claims were “directed to a non-abstract improvement in computer functionality, rather than the abstract idea of computer security,” and “recite[d] specific steps— generating a security profile that identifies suspicious code and linking it to a downloadable— that accomplish the desired result.” *Id.*

Unlike the subject claims of *Finjan*, claim 1 fails to employ a newly generated file containing a security profile in a downloadable, and does not use a new file to enable a computer security system to improve on or add a computer functionality by reciting specific steps accomplishing the desired improved security results. Although we have considered Appellant's arguments, we are not persuaded that claim 1 on appeal is sufficiently analogous to the subject claim(s) in *Finjan*.

Core Wireless

We find Appellant's reliance on *Core Wireless* is also misplaced because the claims presented here do not *improve* a user interface. *See* Appeal Br. 14–15. The court's holding in *Core Wireless* is much narrower than asserted by Appellant, as the court analyzed specific limitations of the claimed interface, such as: an application summary that can be reached through a menu, the data being in a list and being selectable to launch an application, and additional limitations directed to the actual user interface displayed and how it functions. *See Core Wireless* at 1363. The court found the subject claims were directed to an *improved user interface* and not the abstract concept of an index as the claim "limitations disclose[d] a specific manner of displaying a limited set of information to the user, rather than using conventional user interface methods to display a generic index on a computer." *Id.*

We emphasize that Appellant's representative claim 1 does not recite a user interface, but rather is a "method for calculating computing resource use charges for a data center consumer entity." Further, Appellant has not

shown, nor do we find, that the claims presented here recite any specific manner of displaying the information, such as was the case in *Core Wireless*. Accordingly, we do not find representative claim 1 is sufficiently analogous to those claims held patent eligible in *Core Wireless*.

Enfish

We are also not persuaded by Appellant’s contention that the claims provide an improvement over existing technology, as was the case in *Enfish*. See Appeal Br. 15–16. Appellant specifically argues:

Appellant notes that the present claims are not rejected under sections § 102 or § 103. This tends to support Appellant’s assertion that the claims are directed to a “specific implementation of a solution to a problem in the software arts,” much like the claims in *Enfish*.

Id.

However, any analysis based upon anticipation or obviousness is not relevant to our analysis for patent eligibility under 35 U.S.C. § 101. See *Return Mail, Inc. v. U.S. Postal Service*, 868 F.3d 1350, 1370 (Fed. Cir. 2017). Although the second step in the *Alice/Mayo* test is a search for an “inventive concept,” the analysis is not directed to novelty or nonobviousness, but rather searches for elements sufficient to ensure that the claimed invention is directed to more than a patent ineligible concept, such as an abstract idea. See *Alice*, 573 U.S. at 217–18. “Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.” *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 591 (2013); see also *Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981) (“The ‘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.”); *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1263 n.3 (Fed. Cir. 2016) (noting that an eligibility finding does not turn on the novelty of using a user-downloadable application for the particular purpose recited in the claims). Moreover, an improved abstract idea is still an abstract idea. *See Mayo*, 566 U.S. at 90 (holding that a novel and nonobvious claim directed to a purely abstract idea is, nonetheless patent-ineligible).

Appellant additionally contends:

The present claims, when viewed in light of the specification, are directed towards an **improved technological process** for flexible billing of a virtualized infrastructure using costs obtained from hardware computing resources. Even if certain elements of the claims could at some level be considered generic, such as being performed by generic computer components, the subject matter of the claims “perform[s] functions that are not merely generic.” *See* May 2016 Update at 4. For example, the claims achieve **improvement** through a specific process that involves at least collecting usage from the data center, mapping an organizational hierarchy to a data center hierarchy that includes physical hosts and virtual machines, and calculating a charge for using a virtual resource of the data center based on usage of computing resources of a physical host of the data center. Existing technologies do not involve this **improved technological process**.

Appeal Br. 17 (emphasis added).

As set forth in MPEP § 2106.05(a):

To show that the involvement of a computer assists in *improving the technology*, the claims *must recite the details regarding how a computer aids the method, the extent to which the computer aids the method, or the significance of a computer to the performance of the method*. Merely adding generic computer components to perform the method is not sufficient.

Thus, the claim must include more than mere instructions to perform the method on a generic component or machinery to qualify as an improvement to an existing technology.

(Emphasis added).

Here, Appellant has not provided sufficient details regarding how the claimed: “plurality of computing resources [which] include[] at least one of a CPU, a disk, a Network Interface Card (NIC), and a memory,” the “computer,” the “database,” the “computer server” and the “physical host” include more than mere instructions to perform the recited steps to qualify as an improvement to an existing technology. As discussed above, we conclude Appellant’s generic computer implementation performs mathematical operations that can be performed alternatively as mental processes. *See* independent claim 1. *See also Trading Techs. Int’l, Inc. v. IBG LLC*, 921 F.3d 1378, 1384 (Fed. Cir. 2019) (The “‘mere automation of manual processes using generic computers’ . . . ‘does not constitute a patentable improvement in computer technology.’” Quoting *Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1055 (Fed. Cir. 2017)).

Accordingly, on this record, we conclude independent claims 1, 11, and 14 do not recite an improvement to the functionality of a computer or other technology or technical field. *See* MPEP § 2106.05(a).

MPEP § 2106.05(b) and (c)
The Bilski Machine-or-Transformation Test (“MoT”)

We note the Supreme Court cautions that the *MoT* test is not the sole test, but may provide a useful clue:

This Court’s precedents establish that the machine-or-transformation test is a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101. The machine-or-

transformation test **is not the sole test** for deciding whether an invention is a patent-eligible “**process.**”

Bilski, 561 U.S. at 604 (emphasis added).

Here, Appellant advances no arguments that any of method claims 1–10 and 25–27 are tied to a particular machine, or transform an article to a different state or thing. *See* MPEP § 2106.05(c).

*MPEP § 2106.05(e) — Meaningful Claim Limitations*¹⁴

The Examiner finds:

Further, no element or combination of elements in the claims is sufficient to ensure that the claims amounts to “significantly more” than the abstract idea itself, as directed by *Alice Corp. v. CLS Bank Int’l*, by including: improvements to another technology or another technical field; improvements to the functioning of the computer itself, or; **meaningful limitations** beyond generally linking the use of an abstract idea to a particular technological environment.

Final Act. 6 (emphasis added).

However, Appellant does not advance substantive, persuasive arguments as to any particular “meaningful” claim limitations, such as those of the types addressed under MPEP § 2106.05(e), *that impose meaningful limits on the judicial exception.*

¹⁴ *See 2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 55, citing MPEP § 2106.05(e): “[A]pply[ing] or us[ing] the judicial exception in some other *meaningful* way beyond generally linking the use of the judicial exception to a particular technological environment, such that the claim as a whole is more than a drafting effort designed to monopolize the exception.” (Emphasis added).

As discussed above, we conclude the recited *italicized* method steps shown in TABLE 1 could also be performed alternatively as a mental process. *See* 2019 Revised Guidance, 84 Fed. Reg. at 52. As discussed above, we see nothing in Appellant’s claims that specifically improves the efficiency of the plurality of computing resources, the database, CPU, disk, NIC, or memory, or another technology or technical field, as addressed above under MPEP § 2106.05(a).

Accordingly, on this record, we conclude representative independent claim 1 has no other argued meaningful limitations, as considered under section 2106.05(e) of the MPEP, pursuant to the 2019 Revised Guidance.

MPEP § 2106.05(f)
Merely Including Instructions to Implement
an Abstract Idea on a Computer, or
Merely Using a Computer as a Tool
to Perform an Abstract Idea

We conclude Appellant’s claimed invention merely implements the abstract idea using *instructions* executed on generic computer components, as depicted in **bold** type in TABLE 1, and as supported in our reproduction of the Specification, paragraphs 33 and 36, *supra*. Thus, we conclude Appellant’s claims merely use a computer/processor as a tool to perform an abstract idea.

MPEP § 2106.05(g)
Adding Insignificant Extra-Solution Activity
to the Judicial Exception

The Supreme Court guides that the “prohibition against patenting abstract ideas ‘cannot be circumvented’ [by] adding ‘insignificant

postsolution activity.’” *Bilski*, 561 U.S. at 610–11 (quoting *Diehr*, 450 U.S. at 191–92).

As mapped in the right-hand column of TABLE 1, *supra*, we conclude that representative independent claim 1 recites extra or post-solution activities that courts have determined to be insufficient to transform judicially excepted subject matter into a patent-eligible application. *See* MPEP § 2106.05(g); 84 Fed. Reg. at 55 n.31. Data gathering, as performed by the steps or functions in Appellant’s claims, is a classic example of insignificant extra-solution activity. *See, e.g., In re Bilski*, 545 F.3d 943, 963 (Fed. Cir. 2008) (en banc), *aff’d sub nom, Bilski v. Kappos*, 561 U.S. 593 (2010).

We also determine step [i] “waiving a usage charge” limitation in claim 1 recites insignificant *post*-solution activity. *See* Claim 1.

MPEP § 2106.05(h)
*Generally Linking the use of the Judicial Exception to a Particular
Technological Environment or Field of Use*

The Supreme Court guides: “the prohibition against patenting abstract ideas ‘cannot be circumvented by attempting to limit the use of the formula to a particular technological environment’ or [by] adding ‘insignificant postsolution activity.’” *Bilski*, 561 U.S. at 611–12, (quoting *Diehr*, 450 U.S. at 191–92).

Appellant advances no *lack of preemption* argument in the Appeal Brief. Nor do claims 1–17 and 25–27 on appeal present any other issues as set forth in the 2019 Revised Guidance regarding a determination of whether the additional generic elements integrate the judicial exception into a practical application. *See* 2019 Revised Guidance, 84 Fed. Reg. at 55.

Thus, under *Step 2A, Prong Two* (MPEP § 2106.05(a)–(c) and (e)–(h)), we conclude claims 1–17 and 25–27 **do not integrate the judicial exception into a practical application**. Therefore, we proceed to *Step 2B, The Inventive Concept*.

The Inventive Concept — Step 2B

Under the 2019 Revised Guidance, only if a claim: (1) recites a judicial exception, and (2) does not integrate that exception into a practical application, do we then look to whether the claim adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); **or**, simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

For *Step 2B* we must “look with more specificity at what the claim elements add, in order to determine ‘whether they identify an “inventive concept” in the application of the ineligible subject matter’ to which the claim is directed.” *Affinity Labs*, 838 F.3d at 1258 (quoting *Elec. Power Grp.*, 830 F.3d at 1353).

We note *Berkheimer v. HP Inc.*, (881 F.3d 1360 (Fed. Cir. 2018)) was decided by the Federal Circuit on February 8, 2018. On April 19, 2018, the PTO issued the Memorandum titled: “Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (*Berkheimer v. HP, Inc.*)” (hereinafter “*Berkheimer* Memorandum”). Because the Appeal Brief was filed on November 7, 2018 and the Reply Brief was filed on April 24, 2019, Appellant had constructive notice of both the *Berkheimer* Federal Circuit decision and the USPTO *Berkheimer* Memorandum.

In reviewing the Briefs, we note Appellant advances no arguments based upon the intervening change in the law effected by *Berkheimer*. Arguments not made are waived. *See* 37 C.F.R. § 41.37(c)(1)(iv).

With respect to the *Step 2B* analysis, we conclude, similar to *Alice*, the recitation of a generic “server,” “CPU,” “disk,” “NIC” (Network Interface Card) and “memory” (claim 1) is simply not enough to transform the patent-ineligible abstract idea here into a patent-eligible invention under *Step 2B*. *See Alice*, 573 U.S. at 221 (“[C]laims, which merely require generic computer implementation, fail to transform [an] abstract idea into a patent-eligible invention.”).

Our reviewing court provides additional guidance: *See FairWarning*, 839 F.3d at 1096 (“[T]he use of generic computer elements like a microprocessor or user interface do not alone transform an otherwise abstract idea into patent-eligible subject matter.”); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015) (claims reciting, *inter alia*, sending messages over a network, gathering statistics, using a computerized system to automatically determine an estimated outcome, and presenting offers to potential customers found to merely recite “‘well-understood, routine conventional activit[ies],’ either by requiring conventional computer activities or routine data-gathering steps” (alteration in original)).

This reasoning is applicable here. Therefore, on the record before us, Appellant has not shown that the claims on appeal add a specific limitation beyond the judicial exception that is not well-understood, routine, and conventional, when the claim limitations are considered both individually and as an ordered combination. *See* MPEP § 2106.05(d).

In light of the foregoing, we conclude, under the 2019 Revised Guidance, that each of Appellant’s claims 1–17 and 25–27, considered as a whole, is *directed to a patent-ineligible abstract idea that is not integrated into a practical application, and does not include an inventive concept*.

Accordingly, for the reasons discussed above, we sustain the Examiner’s rejection under 35 U.S.C. § 101 of claims 1–17 and 25–27.

CONCLUSION

Under our 2019 Revised Guidance, as governed by relevant case law, we conclude claims 1–17 and 25–27, rejected under 35 U.S.C. § 101, are directed to patent-ineligible subject matter.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)Basis	Affirmed	Reversed
1–17, 25–27	101	Eligibility	1–7, 25–27	

FINALITY AND RESPONSE

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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED