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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* DHARMA SHUKLA, ORI AMIGA,  
VIJ VASU, and JUNFENG ZHANG

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Appeal 2018-006768  
Application 12/057,000  
Technology Center 2100

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Before JASON V. MORGAN, LINZY T. McCARTNEY, and  
MATTHEW J. McNEILL, *Administrative Patent Judges*.

McNEILL, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1–3, 6–13, 15–19, and 21–24, which are all the claims pending in this application. Claims 4, 5, 14, and 20 are canceled. *See* Appeal Br. 46–48. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Microsoft Technology Licensing, LLC. Appeal Br. 3.

## STATEMENT OF THE CASE

### *Introduction*

Appellant's application relates to an object system that represents all objects comprising a computer system in a single hierarchy and according to a common grammar. Spec. ¶ 6. Claim 1 is illustrative of the appealed subject matter and reads as follows:

1. A method of representing a computing environment, the method comprising:

generating an object hierarchy comprising objects respectively representing an aspect of the computing environment, respective objects represented according to a recursible base representation format, at least one object represented as an unexpanded node, the object hierarchy comprising:

a first object representing an application binary of at least one application;

a second object representing an application setting for at least one application;

a third object representing a user account for at least one user of the computing environment;

a fourth object representing a security identifier authenticating an identity of the at least one user; and

a fifth object representing a hardware component accessible within the computing environment; and

upon receiving a request to expand an unexpanded node, providing at least one object within the unexpanded node.

*The Examiner's Rejection<sup>2</sup>*

Claims 1–3, 6–13, 15–19, and 21–24<sup>3</sup> stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. Non-Final Act. 2–12.

ANALYSIS

*Principles of Law – Section 101*

An invention is patent eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. However, the U.S. Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *E.g., Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).

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<sup>2</sup> The Examiner rejected claims 1–3, 6–13, and 15–24 under 35 U.S.C. § 103 as unpatentable over a combination of three prior art references in the December 29, 2016 Non-Final Office Action from which this appeal is taken. *See* Non-Final Act. 7–13. However, the Examiner withdrew this rejection in the Answer. *See* Ans. 4. Accordingly, this rejection is not before us.

<sup>3</sup> The claim listing in the Non-Final Action differs in two respects. First, claim 20 is listed as rejected under § 101 in the Non-Final Action. *See* Non-Final Act. 6. However, Appellant has indicated claim 20 is canceled. *See* Appeal Br. 48. Accordingly, this claim is not before us. Second, claim 24 is not included in the claim listing for the § 101 rejection in the Non-Final Action. *See* Non-Final Act. 2. However, the Examiner elsewhere indicates that claim 24 is commensurate in scope with claim 1 and is rejected for the same reasons as claim 1. *See* Non-Final Act. 12. Also, Appellant treats this claim as rejected for the same rationale as claim 1. *See* Reply Br. 5, 15. Thus, the exclusion of claim 24 in the § 101 rejection in the Non-Final Action is a typographical error, and we treat claim 24 as rejected under the same rationale as claim 1.

In determining whether a claim falls within an excluded category, we are guided by the Court’s two-part framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). 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” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “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 Court held that “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 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.”).

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 (quotation marks 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.*

*Principles of Law – USPTO Section 101 Guidance*

In January 2019, the U.S. Patent and Trademark Office (USPTO) published revised guidance on the application of § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“2019 Revised Guidance”).<sup>4</sup> “All USPTO personnel are, as a matter of

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<sup>4</sup> In response to received public comments, the Office issued further guidance on October 17, 2019, clarifying the 2019 Revised Guidance. USPTO, *October 2019 Update: Subject Matter Eligibility* (the “October

internal agency management, expected to follow the guidance.” *Id.* at 51; *see also* October 2019 Update at 1.

Under the 2019 Revised Guidance and the October 2019 Update, we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) (“Step 2A, Prong One”); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 08.2017, Jan. 2018)) (“Step 2A, Prong Two”).<sup>5</sup>

2019 Revised Guidance, 84 Fed. Reg. at 52–55.

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

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

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2019 Update”) (available at [https://www.uspto.gov/sites/default/files/documents/peg\\_oct\\_2019\\_update.pdf](https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf)).

<sup>5</sup> This evaluation is performed by (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception, and (b) evaluating those additional elements individually and in combination to determine whether the claim as a whole integrates the exception into a practical application. *See* 2019 Revised Guidance – Section III(A)(2), 84 Fed. Reg. 54–55.

(4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

2019 Revised Guidance, 84 Fed. Reg. at 52–56.

*Revised Guidance Step 1*

Step 1 of the Revised Guidance asks whether the claimed subject matter falls within the four statutory categories of patentable subject matter identified by 35 U.S.C. § 101: process, machine, manufacture, or composition of matter. *See* 2019 Revised Guidance. Claim 1 recites “[a] method of representing a computing environment.” Appellant does not argue the Examiner erred in concluding claim 1 falls within the four statutory categories of patentable subject matter. We agree with the Examiner’s conclusion because claim 1 falls within the process category.

*Revised Guidance Step 2A, Prong 1*

Under Step 2A, Prong 1 of the Revised Guidance, we determine whether the claims recite 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). *See* 2019 Revised Guidance.

The Examiner concludes claim 1 is directed to the abstract idea of object creation or representation within a computing environment. Non-Final Act. 4. The Examiner equates this to the abstract idea of collecting, displaying, and manipulating data. *See* Ans. 6–7.

Appellant argues the Examiner erred because the Examiner did not identify any abstract idea and did not compare the claims to abstract ideas identified by courts. *See* Appeal Br. 24–26. Appellant also argues the

Examiner overgeneralized the claims into a gist that does not resemble the claimed techniques. *See* Reply Br. 4–11. Appellant argues the Examiner refused to acknowledge the technical significance of the claimed subject matter as discussed in Appellant’s Specification. *See id.* at 5–6.

Claim 1 recites “[a] method of representing a computing environment.” This method includes “generating an object hierarchy comprising objects respectively representing an aspect of the computing environment, respective objects represented according to a recursible base representation format, at least one object represented as an unexpanded node,” wherein the “object hierarchy” comprises five objects representing various aspects of the computing environment and the user. The method further includes “upon receiving a request to expand an unexpanded node, providing at least one object within the unexpanded node.”

Under the broadest reasonable interpretation, claim 1 recites generating and presenting a recursible object hierarchy that represents aspects of a computing environment. We agree with the Examiner that at a high level, these steps collectively recite object creation or representation with in a computing environment, which is an example of collecting, displaying, and manipulating data. *See* Non-Final Act. 4; Ans. 6–7. In particular, “generating an object hierarchy comprising objects respectively representing an aspect of the computing environment” constitutes collecting data and evaluating or analyzing that data. The claim further defines what is represented by the data and providing the data upon request. This collecting, displaying, and manipulating data may be performed mentally or with the aid of pen and paper. Our reviewing court has concluded that classifying and storing data in an organized manner is a well-established “basic concept”

sufficient to fall under *Alice* step 1. *In re TLI Commc 'ns LLC*, 823 F.3d 607, 613 (Fed. Cir. 2016).

We conclude that claim 1, therefore, recites concepts performed in the human mind, which fall within the mental processes category of abstract ideas identified in the Revised Guidance.

*Revised Guidance Step 2A, Prong 2*

Under Step 2A, Prong 2 of the Revised Guidance, we next determine whether the claims recite additional elements that integrate the judicial exception into a practical application (*see* MPEP §§ 2106.05(a)–(c), (e)–(h)).

The “additional elements” recited in claim 1 include “a computing environment,” which does not constitute “additional elements that integrate the exception into a practical application.” *See id.*

To integrate the exception into a practical application, the additional claim elements must, for example, improve the functioning of a computer or any other technology or technical field (*see* MPEP § 2106.05(a)), apply the judicial exception with a particular machine (*see* MPEP § 2106.05(b)), affect a transformation or reduction of a particular article to a different state or thing (*see* MPEP § 2106.05(c)), or apply or use the judicial exception in some other meaningful way beyond generally linking the use of the judicial exception to a particular technological environment (*see* MPEP § 2106.05(e)). *See also* 2019 Revised Guidance.

Appellant argues the Examiner has failed to acknowledge the technical significance of the claimed subject matter. *See* Appeal Br. 24–26; Reply Br. 4–11. Appellant argues the claimed subject matter represents a technical solution to a technical problem and improves the functioning of a computer. *See id.*

Appellant has not persuaded us of Examiner error. In cases involving software innovations, such as here, the inquiry as to whether the claims are directed to an abstract idea “often turns on whether the claims focus on ‘the specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.’” *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1303 (Fed. Cir. 2018) (quoting *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016)). The nature of claim 1 as a whole is not to define a specific technological improvement; instead, claim 1 merely recites the steps necessary to perform the abstract idea itself. Our reviewing court has “made clear that mere automation of manual processes using generic computers does not constitute a patentable improvement in computer technology.” *Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1055 (Fed. Cir. 2017). Like the claims in *Credit Acceptance*, the focus of claim 1 is on the abstract idea itself “and the recited generic computer elements ‘are invoked merely as a tool.’” *Id.* (citing *Enfish*, 822 F.3d 1327); *see also Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1334 (Fed. Cir. 2015) (collecting cases).

The Office Guidance also explains that “mental processes” include acts that people can perform in their minds or using pen and paper, even if the claim recites that a generic computer component performs the acts. *See* 2019 Revised Guidance, 84 Fed. Reg. at 52 n.14 (“If a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the mental processes category unless the claim cannot practically be performed in the mind.”); *see also Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d

1307, 1318 (Fed. Cir. 2016) (“[W]ith the exception of generic computer-implemented steps, there is nothing in the claims themselves that foreclose them from being performed by a human, mentally or with pen and paper.”).

Appellant’s argument that claim 1 improves the functioning of a computer is unpersuasive because it is not commensurate with the scope of the claims. That is, claim 1 recites a method of generating an object hierarchy that represents a computing environment. This object hierarchy is provided upon receiving a request to expand an unexpanded node. However, this object hierarchy is not used for any practical application or any other manner that may be said to improve the functioning of a computer. Thus, the claim “does no more than generally link the use of a judicial exception to a particular technological environment or field of use.” *See* 2019 Revised Guidance, 84 Fed. Reg. at 55. That is, the claim recites a method for generating and providing data that is related to computers. Although the Specification describes ways in which this data may be used to improve the functioning of a computer, such as backup and synchronization services (*see* Spec. ¶ 32), claim 1 merely recites the generation of data, not any use of that data, and this generation may be achieved solely within the human mind. Mental processes remain unpatentable even when automated to reduce the burden on the user of what once could have been done with pen and paper. *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1375 (Fed. Cir. 2011) (“That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*[, 409 U.S. 63, 67 (1972)].”). The law is clear that programming a computer to perform what would otherwise be an abstract idea is not sufficient to impart patent eligibility. *See Alice*, 573 U.S. at 224.

Notably, the only additional element recited in claim 1 is the “computing environment,” which is merely used to achieve the claimed results and is not focused on “a specific means or method that improves the relevant technology.” *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016). Appellant’s Specification confirms the generic, conventional nature of the claimed computing environment. *See, e.g.*, Spec. ¶¶ 25–26.

For these reasons, Appellant has not persuaded us of Examiner error with respect to Step 2A, Prong 2 of the Revised Guidance. We, therefore, conclude the judicial exception is not integrated into a practical application under the Revised Guidance.

#### *Revised Guidance Step 2B*

Under Step 2B of the Revised Guidance, we next determine whether the claims recite an “inventive concept” that “must be significantly more than the abstract idea itself, and cannot simply be an instruction to implement or apply the abstract idea on a computer.” *BASCOM Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349 (Fed. Cir. 2016). There must be more than “computer functions [that] are ‘well-understood, routine, conventional activit[ies]’ previously known to the industry.” *Alice*, 573 U.S. at 225 (second alteration in original) (quoting *Mayo*, 566 U.S. at 73).

Appellant argues claim 1 recites significantly more than merely describing and applying the abstract idea and the Examiner did not consider whether the claims amount to significantly more than an abstract idea. *See* Appeal Br. 27–29; Reply Br. 12–14. Appellant argues the Examiner does not identify any additional elements or identify any evidence to support a factual

finding that the additional elements are well-understood, routine, and conventional activity. *See* Reply Br. 12–14.

Appellant has not persuaded us of Examiner error. The Examiner finds the claimed “computing environment” is a generic computer. Non-Final Act. 3. The Examiner further finds that all of the limitations of claim 1 are directed to the abstract idea and, therefore, none are additional elements to be considered under Step 2B. *See* Ans. 11.

As noted above, the claimed “computing environment” is the only additional element in claim 1. We agree with the Examiner that the claimed “computing environment” is a generic computer that does not amount to significantly more than the claimed abstract idea. As discussed above, the Specification confirms the generic nature of the claimed computer environment. *See, e.g.*, Spec. ¶¶ 25–26. Appellant has not persuasively identified any additional elements recited in claim 1 that amount to significantly more than the claimed abstract idea.

Because representative claim 1 is directed to a judicial exception, without significantly more, we sustain the Examiner’s § 101 rejection of independent claim 1. We also sustain the rejection of independent claims 13 and 24, for which Appellant offers the same arguments. *See* Reply Br. 4–15.

*Dependent Claims 2, 3, 6–12, 15–19, and 21–23*

Appellant argues the Examiner erred by failing to provide any significant evaluation of the dependent claims. *See* Appeal Br. 30–31; Reply Br. 14. In particular, Appellant argues the Examiner relies on boilerplate rationale for the dependent claims, failing to consider whether the limitations recited in the dependent claims recite significantly more than an abstract idea. *See id.* Appellant argues the Examiner’s rejection is conclusory and

fails to identify sufficient evidence to support a finding that the additional elements are well-understood, routine, and conventional activity. *See id.*

Appellant has not persuaded us of Examiner error. The Examiner finds the dependent claims “all further define what is collected, what is displayed[,] or how the user can manipulate the data displayed on the screen.” Ans. 12. We agree.

For example, dependent claim 2 recites “the recursible base representation format compris[es] a recursible sequence of records of atoms.” Thus, claim 2 further defines the data that is collected, in particular the format of the data that is collected. Dependent claim 7 recites “the computing environment represented to a device, and the representation adjusted according to capabilities of the device.” Thus, claim 7 further defines how data is displayed. Dependent claim 9 recites “the computing environment represented for a user, and the representation adjusted according to the user.” Thus, claim 9 recites how the user can manipulate the data displayed to the user.

In other words, each of these exemplary dependent claims represents one of the categories identified by the Examiner. These claims further define the abstract idea rather than reciting something significantly more than the abstract idea. Notably, Appellant has identified no particular limitations recited in these or any other dependent claims that recite significantly more than an abstract idea. *See* Appeal Br. 30–31; Reply Br. 14.

For these reasons, we agree with the Examiner that the dependent claims do not recite an “inventive concept” sufficient to transform the claims from an abstract idea to a patent eligible application. We, therefore, sustain the rejection of dependent claims 2, 3, 6–12, 15–19, and 21–23.

DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1-3, 6-13, 15-19, 21-24	101	Eligibility	1-3, 6-13, 15-19, 21-24	

TIME PERIOD FOR 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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED