UNITED STATES PATENT AND TRADEMARK OFFICE

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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 HYUNG JIN KIM, SAMIR M. SHAH, and
MITUL TIWARI

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Appeal 2019-000194
Application 14/565,112
Technology Center 2100

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Before CARL W. WHITEHEAD JR., JEREMY J. CURCURI, and
JOSEPH P. LENTIVECH, *Administrative Patent Judges*.

CURCURI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] appeals under 35 U.S.C. § 134(a) from the Examiner's
rejection of claims 1–20. Final Act. 1. We have jurisdiction under 35 U.S.C.
§ 6(b).

Claims 1–20 are rejected under 35 U.S.C. § 101 as directed to a
judicial exception without significantly more. Final Act. 4–8.

Claims 11–20 are rejected under 35 U.S.C. § 101 as directed to non-
statutory subject matter. Ans. 6.

We affirm.

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[1] 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. App. Br. 2.

STATEMENT OF THE CASE

Appellant's invention relates to "utilizing a multi-objective optimization for new members of a social network." Spec. ¶ 2. Claim 1 is illustrative and reproduced below:

1.   A method, comprising:

obtaining, with a processor, an optimization criterion based on at least two constraints related to interaction of members of a social network, the members including new members who have been members of the social network less than a predetermined time and established members who have been members of the social network greater than the predetermined time;

determining, with the processor, a plurality of proposed interaction values based on data stored in an electronic database, the data being indicative of at least some of profile data of members of a social network, a social graph indicative of connections between the members, and of activities of the members in the social network, each individual one of the plurality of proposed interaction values corresponding to between one of a plurality of pairs of members, the plurality of proposed interaction values including a new member proposed interaction value between at least one established member and at least one new member;

modifying, with the processor, the new member proposed interaction value based on an adjustment factor related to the optimization criterion; and

providing, with the processor, to at least some of the user devices via the network interface, proposed interactions based on the new member proposed interaction value as modified and the plurality of proposed interaction values.

PRINCIPLES OF LAW

We review the appealed rejections for error based upon the issues identified by Appellant, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential).

ANALYSIS

THE JUDICIAL EXCEPTION REJECTION

The Examiner determines claims 1–20 are directed to a judicial exception without significantly more. Final Act. 4–8. The Examiner determines:

> Independent claims 1 and 11 recite, in part, steps for determining the strength of potential connections between pairs of users of a social network, adjusting the strength of potential connections involving a new member, and proposing new connections to users based on the strengths of the proposed connections. These steps describe the concept of suggesting interactions to users of a social network, which corresponds to concepts identified as abstract ideas by the courts.

Final Act. 5; *see also* Final Act. 6–8 (citing Spec. ¶¶ 12–14, 48–51) (determining the claims do not recite significantly more than the abstract idea); Ans. 6–8.

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) (citation omitted).

In determining whether a claim falls within an excluded category, we are guided by the Court's two-step 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 Supreme 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 176; *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.* (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 (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.* (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.*

The USPTO recently published revised guidance on the application of § 101. USPTO's 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) ("Memorandum"). Under that 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); and

> (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h) (9th ed. 2018)).

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.

See Memorandum 84 Fed. Reg. at 56.

Are the claims at issue directed
to a patent-ineligible concept?

Step One

Claim 1 is a method claim, which falls within the "process" category of 35 U.S.C. § 101. Claim 11 is a computer-readable medium claim. For our analysis of the judicial exception rejection, we treat claim 11 as falling within the "manufacture" category of 35 U.S.C. § 101.

Although these claims fall within the statutory categories, we still must determine whether the claim is directed to a judicial exception, namely an abstract idea. *See Alice*, 573 U.S. at 217–18. Thus, we must determine whether the claim recites a judicial exception, and fails to integrate the exception into a practical application. *See* Memorandum 84 Fed. Reg. at 54–55. If both elements are satisfied, the claim is directed to a judicial exception under the first step of the *Alice/Mayo* test. *See id.*

Step 2A, Prong One

Independent claim 1 is a method claim, and recites the following
limitations:

> [i] obtaining . . . an optimization criterion based on at least
> two constraints related to interaction of members of a social
> network, the members including new members who have been
> members of the social network less than a predetermined time
> and established members who have been members of the social
> network greater than the predetermined time;

> [ii] determining . . . a plurality of proposed interaction
> values based on data stored in an electronic database, the data
> being indicative of at least some of profile data of members of a
> social network, a social graph indicative of connections between
> the members, and of activities of the members in the social
> network, each individual one of the plurality of proposed
> interaction values corresponding to between one of a plurality of
> pairs of members, the plurality of proposed interaction values
> including a new member proposed interaction value between at
> least one established member and at least one new member;

> [iii] modifying . . . the new member proposed interaction
> value based on an adjustment factor related to the optimization
> criterion; and

> [iv] providing . . . to at least some of the user devices via
> the network interface, proposed interactions based on the new
> member proposed interaction value as modified and the plurality
> of proposed interaction values.

The overall process of steps [i]–[iv] describes "social activities" as described
by Appellant's Specification:

> [N]ew members of the social network may be made more likely
> to be presented to existing members of the social network as
> people that the existing members may know. Upon being
> presented to existing members as someone who the existing
> members may know, the existing members may be more likely
> than may otherwise be the case to invite the new member to
> connect in the social network.

Spec. ¶ 14. These "social activities" are the same steps that humans perform. *See* Ans. 7 ("[I]f I'm at a meeting of a social organization of which I'm a member, such as a house of worship, and I notice someone new in attendance, I may go out of my way to get other members to introduce themselves to the new person in the hopes that the new person will keep coming around."). Such activities are an example of "managing personal behavior or relationships or interactions between people." Memorandum 84 Fed. Reg. at 52. These recitations are thus the abstract concept of "[c]ertain methods of organizing human activity." *Id*.

In addition, when considering each of steps [i]–[iv] individually, these steps each recite the abstract concept of "[m]ental processes."

For example,

> [i] obtaining . . . an optimization criterion based on at least two constraints related to interaction of members of a social network, the members including new members who have been members of the social network less than a predetermined time and established members who have been members of the social network greater than the predetermined time

covers a human in a social organization considering the importance of encouraging interactions with new members, which is one or more of "observation, evaluation, judgment, opinion," which are examples of "concepts performed in the human mind." Memorandum 84 Fed. Reg. at 52. This recitation is thus the abstract concept of "[m]ental processes." *Id*.

For example,

> [ii] determining . . . a plurality of proposed interaction values based on data stored in an electronic database, the data being indicative of at least some of profile data of members of a social network, a social graph indicative of connections between the members, and of activities of the members in the social network, each individual one of the plurality of proposed

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> interaction values corresponding to between one of a plurality of pairs of members, the plurality of proposed interaction values including a new member proposed interaction value between at least one established member and at least one new member;

> [iii] modifying . . . the new member proposed interaction value based on an adjustment factor related to the optimization criterion

covers a human in a social organization considering interactions between specific pairs of members, and further considering interactions between an established member and a new member, which are one or more of "observation, evaluation, judgment, opinion," which are examples of "concepts performed in the human mind." Memorandum 84 Fed. Reg. at 52. These recitations are thus the abstract concept of "[m]ental processes." *Id.*

> For example,

> [iv] providing . . . to at least some of the user devices via the network interface, proposed interactions based on the new member proposed interaction value as modified and the plurality of proposed interaction values

covers a human in a social organization who, after considering the importance of encouraging interactions with new members, considering interactions between specific pairs of members, and further considering interactions between an established member and a new member, decides on interactions to propose among the established and new members. Such decision making is one or more of "observation, evaluation, judgment, opinion," which are examples of "concepts performed in the human mind." Memorandum 84 Fed. Reg. at 52. This recitation is thus the abstract concept of "[m]ental processes." *Id.*

> Independent claim 11 recites limitations that correspond to the limitations of claim 1 discussed above. For the same reasons discussed

above, we determine the recitations of claim 11 are the abstract concepts of "[c]ertain methods of organizing human activity" and "[m]ental processes." *Id.*

Step 2A, Prong Two

Because claims 1 and 11 recite a judicial exception, we next determine if the claims recite additional elements that integrate the judicial exception into a practical application. In addition to the limitations of claim 1 discussed above that recite abstract concepts, claim 1 further recites various computer-related hardware items. For example, claim 1 recites a "processor," an "electronic database," "user devices," and a "network interface."

The Specification does not provide additional details about the computer-related hardware items that would distinguish their implementation from a generic implementation. *See* Spec. ¶¶ 20, 25, 48–59.

We do not find the recited computer-related limitations are sufficient to integrate the judicial exception into a practical application. For example, the "processor," "electronic database," "user devices," and "network interface" are not improved in their functioning, but, instead, merely perform the abstract idea. In this case, we do not see any particular machine or manufacture that is integral to the claim; nor do we see any transformation. We do not see any recited elements applying or using the judicial exception in any meaningful way beyond generally linking the judicial exception to the recited elements.

Accordingly, we determine that claim 1 is directed to a judicial exception because it does not recite additional elements that integrate the recited judicial exception into a practical application. Claim 11 recites

similar computer-related hardware devices, and is, therefore, also directed to a judicial exception.

*Is there something else in the claims
that ensures that they are directed to significantly
more than a patent ineligible concept?*

Step 2B

Because claims 1 and 11 are directed to a judicial exception, we next determine, according to *Alice*, whether these claims recite an element, or combination of elements, that is enough to ensure that the claim is directed to significantly more than a judicial exception. The various computer-related hardware items recited by claims 1 and 11 include, for example, a "processor," an "electronic database," "user devices," and a "network interface."

Memorandum, Section III (B) (footnote 36) states:

> In accordance with existing guidance, an examiner's conclusion that an additional element (or combination of elements) is well understood, routine, conventional activity must be supported with a factual determination. For more information concerning evaluation of well-understood, routine, conventional activity, see MPEP 2106.05(d), as modified by the USPTO *Berkheimer* Memorandum.

The *Berkheimer* Memorandum, Section III (A)(1) states:

> A specification demonstrates the well-understood, routine, conventional nature of additional elements when it describes the additional elements as well-understood or routine or conventional (or an equivalent term), as a commercially available product, or in a manner that indicates that the additional elements are sufficiently well-known that the specification does not need to describe the particulars of such additional elements to satisfy 35 U.S.C. § 112(a). A finding that an element is well-understood, routine, or conventional cannot be based only on the

fact that the specification is silent with respect to describing such element.

Regarding the "processor," the Specification describes "[f]or example, a hardware module may include software encompassed within a *general-purpose processor* or other programmable processor." Spec. ¶ 54 (emphasis added); *see also* Final Act. 6–7 ("The specification states that the system requires no more than a generic computer to perform generic functions that are well-understood, routine, and conventional activities previously known in the industry."). Thus, the Specification describes the "processor" as "general-purpose," which supports the finding that the "processor" is well-understood or routine or conventional.

Regarding the "electronic database," "user devices," and "network interface," these elements are not positively recited as part of the claims. *See* Claims 1 and 11 ("determining, with the processor, a plurality of proposed interaction values *based on data stored in an electronic database*," (emphasis added) and "providing, with the processor, *to at least some of the user devices via the network interface*" (emphasis added)). Further, these elements are reasonably described in a manner that indicates that these elements are sufficiently well-known that the Specification does not need to describe the particulars of such additional elements to satisfy 35 U.S.C. § 112(a). *See* Spec. ¶¶ 20 ("the data layer 105 includes, but is not necessarily limited to, several databases 110, 112, 114, such as a database 110"), 25 ("a user device associated with a member of the social network 100"), 48 ("The machine 600 may be... any machine capable of executing the instructions"), 49 ("The machine 600 includes... a network interface device 620"); *see also* Final Act. 6–7 ("The specification states that the system requires no more than a generic computer to perform generic functions that are well-

understood, routine, and conventional activities previously known in the industry.").

In view of Appellant's Specification, the claimed hardware components, including the "processor," "electronic database," "user devices," and "network interface" reasonably may be determined to be generic, purely conventional computer elements. Thus, the claims do no more than require generic computer elements to perform generic computer functions, rather than improve computer capabilities.

Accordingly, we determine that claims 1 and 11 are not directed to significantly more than a patent ineligible concept.

Appellant's principal arguments

Appellant argues the Examiner does not address the subject matter as claimed, and does not analyze the substance of the claims. *See* App. Br. 12–14. Appellant further argues the claims are not abstract because "[c]laim 1 specifies specific operations that do not broadly preempt a particular effect." App. Br. 14; *see also* App. Br. 16 ("[T]he instant claims, which obtain at least three types of data and perform[] at least two operations on the data, [are] readily within the scope of the operations of *McRO*."); Reply Br. 2–4.

These arguments do not show any error because, as we explain above, the elements of claims 1 and 11 are the abstract concepts of "[c]ertain methods of organizing human activity" and "[m]ental processes." Memorandum 84 Fed. Reg. at 52. As also explained above, the remaining claim limitations fail to integrate the abstract idea into a practical application.

Although we do not dispute that the various hardware components include specific logic for performing the recited steps, Appellant does not persuasively explain why the claimed steps improve *technology* as a whole. *See* MPEP § 2106.05(a). Rather, the claims merely adapt the method of "social activities" that humans perform to an execution of steps performed by generic computing devices linked together in a network. *See Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1055 (Fed. Cir. 2017) ("Our prior cases have made clear that mere automation of manual processes using generic computers does not constitute a patentable improvement in computer technology."); *see also Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Canada (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (A computer "employed only for its most basic function . . . does not impose meaningful limits on the scope of those claims."). Further, Appellant's identified improvements are improvements to the abstract idea, not improvements to a technology or computer functionality. Thus, on the record before us, the cited claim limitations do not improve the functionality of the various hardware components, nor do they achieve an improved technological result in conventional industry practice. *McRO, Inc. v. Bandai Namco Games Am., Inc.*, 837 F.3d 1299, 1316 (Fed. Cir. 2016).

Appellant further argues "[t]he Examiner offers no citation to any authority to show that the claimed subject matter is well-understood, conventional, or routine." App. Br. 17; *see also* Reply Br. 4–5.

This argument does not show any error because, as we explain above, the elements of claims 1 and 11 beyond the abstract idea may be determined to be generic, purely conventional computer elements. Thus, the claims do

no more than require generic computer elements to perform generic computer functions, rather than improve computer capabilities. *See* Spec. ¶¶ 20, 25, 48–59.

Finally, Appellant further argues:

The problem, as noted in the instant specification and herein, stems from the need to address the technical issues detailed, e.g[.], in paragraph [0013] of the specification, including the inefficient consumption of social network resources. The claims are specifically directed to a social networking system, with which traditional media do not share data nor the ability to customize content placements. Such an online environment has no relevance or comparison to conventional media.

App. Br. 18; *see also* Reply Br. 5.

Appellant's Specification describes:

Thus, the technical activities performed by the social network to increase membership and activity may produce inefficiencies in the operations and goals of the social network. Such activities may consume both the active resources of the social network, in that superfluous or unproductive invitations may be generated and transmitted to potential new members. Further, the storage resources of the social network may be inefficiently utilized in storing the necessary information related to the maintenance of member profiles and content of members who do not ultimately become productive members of the social network.

Spec. ¶ 13.

Contrary to Appellant's argument, as we explain above, the claims merely adapt the method of "social activities" that humans perform to an execution of steps performed by generic computing devices linked together in a network. Put another way, we do not see a technological improvement, as further explained above.

We, therefore, sustain the Examiner's rejection of claims 1–20.

THE NON-STATUTORY SUBJECT MATTER REJECTION

The Examiner determines claims 11–20 are directed to non-statutory subject matter. Ans. 6. The Examiner determines "[t]he claim(s) does/do not fall within at least one of the four categories of patent eligible subject matter because the claimed medium, not being explicitly limited from being a transitory signal, is directed to an unpatentable subject matter. *See In re Nuijten*, 500 F.3d 1346 (Fed. Cir. 2007). Ans. 6.

Appellant argues "the broadest reasonable interpretation of 'computer readable medium' consistent with the specification does not include transitory signals." Reply Br. 6.

Appellant's Specification describes "[t]he term 'machine-readable medium' shall accordingly be taken to include, *but not be limited to*, one or more data repositories in the form of a solid-state memory, an optical medium, a magnetic medium, or any suitable combination thereof." Spec. ¶ 51 (emphasis added).

Because of the open-ended language in the Specification, we conclude that the broadest reasonable interpretation of the recited "computer readable medium" includes transitory media.

We, therefore, sustain the Examiner's rejection of claims 11–20.

ORDER

The Examiner's decision rejecting claims 1–20 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).

AFFIRMED