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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte XIAOMO JIANG, WILLIAM THEADORE FISHER,
CRAIG JOSEPH FOSTER, DIFEI WANG,
and MICHAEL WESLEY YARNOLD

Appeal 2017-009944
Application 13/354,431
Technology Center 2800

Before JEFFREY T. SMITH, RAE LYNN P. GUEST, and
MERRELL C. CASHION, JR., *Administrative Patent Judges*.

CASHION, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants¹ appeal under 35 U.S.C. § 134(a) from the Examiner's decision finally rejecting claims 1–5, 7–15, and 17–20. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ The real party in interest is identified as the General Electric Company. App. Br. 2.

STATEMENT OF THE CASE

Claim 1 is illustrative of the subject matter on appeal and is reproduced below:²

1. A system for monitoring and performing diagnostics and prognostics of a power plant, the system comprising:

one or more measurement devices configured to measure one or more parameters of the power plant;

a central continuous monitoring system (CMS), remote to the power plant, comprising at least one first processor configured to provide remote continuous monitoring of the power plant, facilitated by the one or more parameters; and

a validation tool, located in the power plant, comprising at least one second processor configured to:

simulate one or more models, operations, or both of the central CMS using the one or more parameters, resulting in a simulation output;

validate the one or more parameters, by identifying invalid values from the one or more parameters and substituting a valid value for each of the invalid values of the one or more parameters,

determine an output of the power plant based on the one or more parameters following validation,

check the CMS by performing a comparison that compares the simulation output of the one or more models, operations, or both with an output of the CMS;

² Independent claim 1 and its dependent claims are “system” claims. We interpret the system claims as directed to an apparatus, i.e. a structure which can be termed a machine or manufacture under 35 U.S.C. § 101.

identify anomalies in the power plant based upon the comparison; and

present an output based upon the anomalies, the check, the invalid values, or a combination thereof to a user, the output being useful to attribute a root cause of an unexpected result to: the power plant, the CMS, the measurement device, or any combination thereof.

Independent claims 13 (method for monitoring, diagnostics, and prognostics of a power plant) and 20 (non-transitory computer-readable medium) also require performing/executing to monitor data, diagnostics, and prognostics as detailed in the system of independent claim 1.

REJECTION UNDER 35 U.S.C. § 101 (*Ineligible Subject Matter*)

Appellants request review of the Examiner's rejection of claims 1–5, 7–15, and 17–20 under 35 U.S.C. § 101 as directed to patent ineligible subject matter. App. Br. 5; Final Act. 2. In general, Appellants do not argue any claim separate from the other. *See generally* Appeal and Reply Briefs. Accordingly, we select claim 1 as representative of the subject matter before us for review on appeal with the understanding that our discussion also applies to all claims under appeal.

ANALYSIS

Claim 1

This rejection is based on the Examiner's determination that the subject matter of claim 1 is directed to ineligible subject matter because it involves mathematical concepts and mental processes, both of which being abstract ideas falling under the judicial exceptions under 35 U.S.C. § 101. Final Act. 2–3. Ans. 2–4.

According to the Examiner, the claim is directed to manipulation of data held as patent-ineligible abstract ideas by our reviewing court in the decisions of *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016), *Content Extraction and Transmission, LLC v. Wells Fargo Bank*, 776 F.3d 1343 (Fed. Cir. 2014), and *Digitech Image Tech., LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014). Ans. 2–4. The Examiner also determines that claim 1 does not include additional elements that are sufficient to amount to significantly more than the judicial exception. Final Act. 3; Ans. 4.

In *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014), the Supreme Court reiterated the following two-step analysis (previously set forth in *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 566 U.S. 66, 82–84 (2012)) for distinguishing patents that claim patent-ineligible laws of nature, natural phenomenon, and abstract ideas from those that claim patent-eligible applications of those concepts:

First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, [w]hat else is there in the claims before us? . . . We have described step two of this analysis as a search for an “inventive concept”—*i.e.*, an element or combination of elements that is “sufficient to ensure that the patent in practice amounts to

significantly more than a patent upon the ineligible concept itself.”

Alice, 134 S. Ct. at 2355 (citations omitted).

The Supreme Court in *Alice* reiterated the framework set out in *Mayo* for “distinguishing patents that claim . . . abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice*, 134 S. Ct. at 2355.

The first step in the analysis is to determine if the claim is directed toward a patent-ineligible concept and, if so, the second step is to determine whether there are additional elements that transform the nature of the claim into a patent-eligible application. *Alice*, 134 S. Ct. at 2355 (citing *Mayo*, 566 U.S. at 77–80). The second step searches for an inventive concept that is sufficient to ensure that the patent amounts to significantly more than a patent on the patent-ineligible concept. *Alice*, 134 S. Ct. at 2355 (citing *Mayo*, 566 U.S. at 71–73).

In addressing the first step set forth in *Alice*, Appellants argue independent claim 1 is not a patent-ineligible abstract idea (mathematical process) because, when taken as a whole, it transform outputs from existing systems into more useful outputs for attributing the root cause of an unexpected result in the plant. App. Br. 7–8. Citing to *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014), Appellants also assert that the present claim is directed to computer technology (e.g., diagnosing unexpected or abnormal results to particular computers/devices) and, thus, is related to overcoming a problem necessarily rooted in computer technologies. App. Br. 8; Spec. 3. Appellants further contend that claim 1 is similar to the claims in *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016) and in *McRO, Inc. v. Bandai Namco Games America, Inc.* 837

F.3d 1299 (Fed. Cir. 2016) in that all sets of claims focus on an improvement to computer functionality itself. App. Br. 10–12. Appellants also argue that the subject matter of claim 1 is not directed to a mental step because each of the recited steps cannot be performed as mental processes. *Id.* at 8–9. Thus, according to Appellants, claim 1 provides a specific comparison using CMS data and simulation model data with measured parameters from one or more measurement devices, features not directed to a mental process or mathematical operations. *Id.* at 11.

We have considered Appellants’ arguments that claim 1 is similar to those of *Enfish* and *McRO* but find them unavailing. Therefore, we agree with the Examiner that Appellants have not adequately explained why the subject matter of independent claim 1 is not an abstract idea for the reasons presented in the Answer.

As noted by the Examiner, the subject matter of independent claim 1 enumerates a number of steps involving the data gathering where an output is generated that attributes a root cause of an unexpected result to a power plant, a CMS, a measurement device, or any combination thereof. Ans. 2–4.

The subject matter of *Enfish* is directed to “a specific type of data structure designed to improve the way a computer stores and retrieves data in memory.” *Enfish*, 822 F.3d at 1339. The Federal Circuit concluded that the claims in *Enfish* were not directed to an abstract idea because “the plain focus of the claims is on an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity.” *Id.* at 1336. In *McRO*, “the claims [were] limited to rules with specific characteristics” and “the structure of the limited rules reflects a specific implementation not demonstrated as that which ‘any [animator]

engaged in the search for [an automation process] would likely have utilized.” *McRO* 837 F.3d. at 1313, 1316 (alterations to second quotation in original) (quoting *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S.Ct. 2107, 2119–20 (2013)).

In this case, Appellants direct attention to paragraph 15 of the Specification to assert a disclosure that claim 1, like *Enfish*, is plainly focused on an improvement to computer functionality itself (App. Br. 10–11) or is directed to a combined order of specific rules, akin to *McRO*, for monitoring and performing diagnostics and prognostics of a power plant (*id.* at 12). However, we agree with the Examiner that the portion of the Specification relied upon to assert an improvement to computer functionality does not mention such an improvement. Ans. 7. We further agree that the claims in *Electric Power Group*, in addition to the other cited cases, are most comparable to Appellants’ claim 1. Ans. 2–4. For example, the claims in *Electric Power Group* are directed to collecting data from multiple data sources, analyzing the data, and displaying the results; “[t]he advance they purport to make is a process of gathering and analyzing information of a specified content, then displaying the results, and not any particular assertedly inventive technology for performing those functions.” *See Electric Power Group*, 830 F.3d at 1354.

Moreover, the Federal Circuit has held claims ineligible under § 101 when directed to a process of measuring parameters indicative of a condition to determine, using an algorithm, whether the condition is abnormal (or, as argued, an unexpected result). *See In re Grams*, 888 F.2d 835, 836–37 (Fed. Cir. 1989); *see also Elec. Power Grp. LLC*, 830 F.3d at 1353–54 (claims reciting the combination of the abstract-idea processes of gathering and

analyzing information of a specified content and then displaying the results, without any particular assertedly inventive technology for performing those functions, are directed to an abstract idea); *id.* at 1354 (treating “analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, as essentially mental processes within the abstract-idea category”); *In re Grams*, 888 F.2d at 840 (“[data-gathering] steps ‘cannot make an otherwise nonstatutory claim statutory’”) (quoting *In re Meyer*, 688 F.2d 789, 794 (CCPA 1982)).

Thus, Appellants have not pointed to error in the Examiner’s determination that the claimed invention is directed to patent ineligible subject matter.

Concerning Appellants’ argument that the claimed steps cannot be performed as mental processes (App. Br. 8–9), it appears that all of these processes could be performed by a human with the requisite data in hand. Therefore, we agree with the Examiner’s determination that the claimed steps are mental steps or mental process. Ans. 3–4.

With respect to Appellants’ argument that claim 1 addresses the technological problem specifically arising in the realm of computing performance (App. Br. 8, 10–11), a patent-ineligible abstract idea of a mathematical formula is not transformed into a patent-eligible invention by “limiting the use of an abstract idea ‘to a particular technological environment.’” *Alice*, 134 S. Ct. at 2358, quoting *Bilski v. Kappos*, 561 U.S. 593, 610–11 (2010). While Appellants contend that claim 1 is analogous to the claims in *Enfish*, *Enfish* is not controlling because claim 1 is not directed to data structures. Nor do Appellants adequately explain how the claim improves the way a computer stores data in memory. Further, as noted by

the Examiner, the Specification does not mention an improvement to computer functionality of the claimed invention over prior art as argued by Appellants. Ans. 7; App. Br. 10. Thus, claim 1 does not improve an existing technological process and does not improve the functioning of the computer itself, but rather, as noted by Appellants, improves the results of data (provides “more useful outputs for attributing the root cause of an unexpected result in the plant” based on measurements and comparison of values (App. Br. 7–8)).

We now turn to the second step under *Alice* to consider if there is an inventive concept that is sufficient to ensure that the patent amounts to significantly more than a patent on the patent-ineligible concept. *Alice*, 134 S. Ct. at 2355 (citing *Mayo*, 566 U.S. at 71–73).

Appellants argue the combination of features recited by the present claims amounts to significantly more than the alleged abstract ideas themselves because the present claims clearly provide improvements in the field of the operation of power plant diagnostics systems by providing an “output useful to attribute a root cause of an unexpected result to: the power plant, the CMS, the measurement device, or any combination thereof.” App. Br. 13. According to Appellants, the present claims include meaningful limitations beyond generally linking the use of an abstract idea to a particular technological environment, by reciting particular ordered steps for presenting the output. App. Br. 14.

We have considered Appellants’ arguments but are unpersuaded by them. Appellants do not direct us to “an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Alice*,

134 S. Ct. at 2355. As noted above, Appellants acknowledge that claim 1 provides a useful output (provides “more useful outputs for attributing the root cause of an unexpected result in the plant” based on measurements and comparison of values (App. Br. 7–8)). Claim 1 does not disclose any application or further use after generating the output. Therefore, the claims do not disclose using the output generated by the validation tool for any improvement or application beyond its calculation. Thus, Appellants do not adequately identify nor adequately explain how the alleged additional features amount to significantly more than a patent upon the ineligible concept itself. While Appellants argue that the claim does not preempt the general practice of diagnosing an abnormal condition and comparing information (App. Br. 14), Appellants do not explain why this is so. Thus, Appellants’ arguments are insufficient to support a finding of patent-eligible subject matter.

With respect to the inconsistency regarding the Examiner’s determinations over the prior art and the patent-ineligible subject matter (App. Br. 8, 13), the manner with which and the type of data the system gathers, analyzes, calculates and outputs may be unconventional. But a novel or nonobvious way of analyzing data would not normally render patent-eligible a claim directed to a conventional computer functioning as it is always expected to. This is so because a finding of novelty or nonobviousness does not necessarily lead to the conclusion that subject matter is patentable eligible. “Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.” *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2117 (2013). The question in step two of the *Alice* framework is not whether

an additional feature [i.e., the calculation] is novel but whether the implementation of the abstract idea involves “more than performance of ‘well-understood, routine, [and] conventional activities previously known to the industry.’” *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat. Ass’n*, 776 F.3d 1343, 1347–48 (Fed. Cir. 2014) (quoting *Alice*, 134 S. Ct. at 2359). This will depend on whether or not the “computing system” is simply acting as a conduit for the data-manipulating abstract idea, as novel/nonobvious as that might be. *Cf. In re TLI Communications LLC Patent Litigation*, 823 F.3d 607, 612 (Fed. Cir. 2016)(citations omitted).

Put differently, the telephone unit itself is merely a conduit for the abstract idea of classifying an image and storing the image based on its classification. Indeed, the specification notes that it “is known” that “cellular telephones may be utilized for image transmission,” *id.* at col. 1 ll. 31–34, and existing telephone systems could transmit pictures, audio, and motion pictures and also had “graphical annotation capability,” *id.* at col. 1 ll. 52–59.

Here, the specification/claims support more strongly the view that the “computing system” is a conduit. “Taking the claim elements separately, the function performed by the computer at each step of the process is ‘[p]urely conventional.’” *Alice*, 134 S. Ct. at 2359 (citing *Mayo*, 566 U.S. at 79). *Cf. Alice*, 134 S. Ct. at 2359 (“Considered ‘as an ordered combination,’ the computer components of petitioner’s method ‘ad[d] nothing . . . that is not already present when the steps are considered separately.’”)

Thus, Appellants have not established error in the Examiner’s determination that the subject matter of representative claim 1 lacks

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additional elements that transforms the subject matter of the claim into a patent-eligible application under the second step of *Alice*.

Accordingly, we affirm the Examiner's rejection of claims 1–5, 7–15, and 17–20 under 35 U.S.C. § 101 for the reasons presented by the Examiner and given above.

ORDER

The Examiner's rejection under 35 U.S.C. § 101 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). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED