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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte VICTOR AARRE and EDO HOEKSTRA

Appeal 2018-004380
Application 14/674,585¹
Technology Center 2100

Before TERRENCE W. McMILLIN, KARA L. SZPONDOWSKI, and
SCOTT B. HOWARD, *Administrative Patent Judges*.

HOWARD, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–21, which constitute all of the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

¹ Appellant identifies itself, Schlumberger Technology Corporation as the real party in interest. App. Br. 3.

THE INVENTION

The disclosed and claimed invention is directed to “decomposing a signal.” Spec. ¶ 6.²

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method, comprising:

receiving seismic data obtained by a sensor in response to a sound vibration generated by a source that reflects off of horizons in a subterranean formation;

building a wavelet in a time domain using the seismic data, wherein the wavelet includes a number of oscillations per sampling unit, and wherein a length of the wavelet corresponds to the number of oscillations;

time-shifting the wavelet;

scaling the wavelet after time-shifting the wavelet such that an amplitude of the wavelet proximate to one or both ends of the wavelet decay toward zero;

transforming the wavelet from the time domain into a frequency domain; and

scaling the wavelet after transforming the wavelet into the frequency domain such that a peak amplitude of the wavelet, when transformed into the frequency domain, is substantially unity.

² We refer to the Specification filed Mar. 31, 2015 (“Spec.”); Final Office Action mailed Apr. 10, 2017 (“Final Act.”); Appeal Brief filed Dec. 5, 2017 (“App. Br.”); Examiner’s Answer mailed Feb. 2, 2018 (“Ans.”); and Reply Brief filed Mar. 21, 2018 (“Reply Br.”).

REJECTION

Claims 1–21 stand rejected under 35 U.S.C. § 101 as being directed to a judicial exception without significantly more. Final Act. 2.

ANALYSIS

Section 101 Rejection

The Alice/Mayo Framework Governing Patent-Eligible Subject Matter

Patent-eligible subject matter is defined in 35 U.S.C. § 101 of the Patent Act, which recites: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”

There are, however, three judicially created exceptions to the broad categories of patent-eligible subject matter in 35 U.S.C. § 101: laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70–71 (2012). Although an abstract idea, itself, is patent-ineligible, an application of the abstract idea may be patent-eligible. *Alice*, 134 S. Ct. at 2355. Thus, we must consider “the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (citing *Mayo*, 566 U.S. at 79). The claim must contain elements or a combination of elements that are “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract idea] itself.” *Id.* (citing *Mayo*, 566 U.S. at 79).

The Supreme Court set forth a two-part “framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Id.* at 2355.

First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. [*Mayo*,] 132 S. Ct., at 1296–1297. If so, we then ask, “[w]hat else is there in the claims before us?” *Id.*, at —, 132 S. Ct., at 1297. To answer that question, we consider the elements of each claim both individually and “as an ordered combination” to determine whether the additional elements “transform the nature of the claim” into a patent-eligible application. *Id.*, at —, 132 S. Ct., at 1298, 1297. 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.” *Id.*, at —, 132 S. Ct., at 1294.

Id.

“The ‘abstract idea’ step of the inquiry calls upon us to look at the ‘focus of the claimed advance over the prior art’ to determine if the claim’s ‘character as a whole’ is directed to excluded subject matter.” *Affinity Labs of Tex. v. DirectTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (quoting *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016)); *see also Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). There is no definitive rule to determine what constitutes an “abstract idea.” Rather, the Federal Circuit has explained that “both [it] and the Supreme Court have found it sufficient to compare claims at issue to those claims already found to be directed to an abstract idea in previous cases.” *Enfish*, 822 F.3d at 1334; *see also Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (explaining that, in

determining whether claims are patent eligible under 35 U.S.C. § 101, “the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen—what prior cases were about, and which way they were decided”).

Under the second step of the *Alice/Mayo* framework, we examine the claim limitations “more microscopically,” *Electric Power*, 830 F.3d at 1354, to determine whether they contain “additional features” sufficient to “transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355, 2357 (quoting *Mayo*, 566 U.S. at 78). “Mere recitation of concrete, tangible components is insufficient to confer patent eligibility to an otherwise abstract idea. Rather, the components must involve more than performance of well-understood, routine, conventional activit[ies] previously known to the industry.” *In re TLI Commc’ns LLC Patent Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016) (citing *Alice*, 134 S. Ct. at 2359).

Claims 1–9 and 11–21

Abstract Idea

The Examiner concludes claim 1 is directed to “the abstract idea of transforming sampled data to a wavelet, which is defined by mathematical relationships.” Final Act. 2. Specifically, the Examiner finds the claimed “receiving seismic data” is a data gathering step, and the remaining claimed steps “merely call for transforming the sampled data to a wavelet,” which “define how the mathematical defined algorithm are to be [sic] performed” and are mathematical concepts. Final Act. 2–3; *see also* Ans. 5.

Appellant argues that the claimed invention is not “merely a mathematical equation with a general-purpose computer added after-the-

fact,” and is instead “directed to a specific implementation of a solution to a problem found in spectral decomposition of a signal.” App. Br. 9 (citing *Enfish*).

We are not persuaded by Appellant’s arguments that the Examiner erred. The Examiner identifies the abstract idea of using mathematical relationships. Final Act. 2–3; *see also* Ans. 4–5. The steps in claim 1 can be identified as gathering data (i.e., receiving seismic data), and using mathematical formulas and correlations to organize the information (i.e., building a wavelet, time-shifting the wavelet, scaling the wavelet, transforming the wavelet, and scaling the wavelet). *See Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (“claims an abstract idea because it describes a process of organizing information through mathematical correlations”). Unlike in *Enfish*, we agree with the Examiner’s finding that the alleged improvements are all “in the mathematical algorithm that performs the transformation and not in the functioning of the computer itself.” Ans. 4.

Accordingly, we agree with the Examiner that the claim 1 is directed to an abstract idea.

Significantly More

The Examiner determines the claim 1 “does not include additional elements that are sufficient to amount to significantly more than the judicial exception.” Final Act. 2; *see also id.* at 3; Ans. 3–5. Specifically, the Examiner finds the “use of generic computer components to transform sampled data to a wavelet does not impose any meaningful limit on the computer implementation of the abstract idea.” Final Act. 3. According to the Examiner, the combined claim elements do not improve the “functioning

of a computer” or “any other technology,” and “merely provide a conventional computer implementation.” *Id.*

Appellant argues claim 1 recites “more than simply calculating data on a computer,” but rather recites “concrete process steps to process real-world data (e.g., captured by a sensor) with a physical goal in mind.” App. Br. 11 (citing *Research Corp Techs. Inc. v. Microsoft Corp.*, 627 F.3d 859 (Fed. Cir. 2010)). Appellant further contends that the claimed combination of elements “impose meaningful limits in that the mathematical operations are applied to improve an existing technology [(filtering/decomposing seismic data)].” App. Br. 12. According to Appellant, the claimed “receiving seismic data” step recites a sensor that “acts in concert with a processor to enable the processor to filter/decompose the seismic data.” App. Br. 12 (citing Spec. ¶¶ 40–41). Appellant argues the claimed invention “solves the technological problem of filtering/decomposing seismic data to determine a likelihood that hydrocarbons are present in the subterranean formation,” which is a process that “can be difficult to efficiently solve” but the “claimed invention provides an unconventional technological solution.” App. Br. 13 (citing *Amdocs (Israel) Ltd. V. Openet Telecom., Inc.*, 841 F.3d 1288 (Fed. Cir. 2016)).

We are not persuaded by Appellant’s arguments that the Examiner erred. Although Appellant cites to the Specification to present an application possible in the field of computer technology (App. Br. 13 (citing Spec. ¶ 78)), the present claims merely gather data (i.e., receiving seismic data) and perform mathematical calculations (i.e., building a wavelet, time-shifting the wavelet, scaling the wavelet, transforming the wavelet, and scaling the wavelet). Unlike in *Research Corp.*, the present claims are

directed to building a scaled wavelet with a specific peak amplitude, but do not otherwise “present[] functional and palpable applications in the field of computer technology.” *See Research Corp.*, 627 F.3d at 868. We agree with the Examiner’s finding that the alleged improvements are all “in the mathematical algorithm that performs the transformation and not in the functioning of the computer itself.” Ans. 4. We further agree with the Examiner’s finding that, in contrast to *Amdocs*, the present claims only add a sensor, processors, memory system, and non-transitory computer-readable medium, and that these additional elements are recited as performing generic computer functions routinely used in computer applications. Ans. 5; *see also* Final Act. 3.

Furthermore, Appellant’s argument that the pending claims are patent eligible because they are recite an “inventive concept” and are otherwise novel and non-obvious (*see* Reply Br. 2 (citing *Finjan Inc. v. Blue Coat Sys. Inc.*, 879 F.3d 1299 (Fed. Cir. 2018)); *see also* Reply Br. 3 (citing *Trading Technologies International, Inc. v. CQG, Inc.*, 675 F. App’x 1001 (Fed. Cir. 2017))) is likewise not persuasive because it improperly conflates the requirements for eligible subject matter (35 U.S.C. § 101) with the independent requirements of novelty (35 U.S.C. § 102) and obviousness (35 U.S.C. § 103). Although the second step in the *Alice* framework is termed a search for an “inventive concept,” the analysis is not an evaluation of novelty or non-obviousness. *Alice*, 134 S. Ct. at 2355. A novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent-ineligible. *See Mayo*, 566 U.S. 66 at 78–79. Further, “under the *Mayo/Alice* framework, a claim directed to a newly discovered law of nature (or natural phenomenon or abstract idea) cannot rely on the novelty of that discovery

for the inventive concept necessary for patent eligibility.” *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369 (Fed. Cir. 2016).

Accordingly, we sustain the Examiner’s rejection of claim 1 as being directed to patent-ineligible subject matter, as well as commensurate independent claims 11 and 20, and dependent claims 2–9, 12–19, and 21, not separately argued.

Claim 10

Claim 10 recites “*drilling a wellbore into a subterranean formation in response to the wavelet indicating a likelihood of hydrocarbons in the subterranean formation.*” App. Br. 19, Claims App. (emphasis added).

The Examiner concludes claim 10 is directed to an abstract idea. Ans. 4–5. According to the Examiner, the claimed additional step of “drilling a wellbore” is an “insignificant post-solution activity.” Ans. 4–5 (citing *Alice*).

Appellant argues the Examiner erred in concluding claim 10 is directed to an abstract idea. App. Br. 14; *see also* Reply Br. 3. Specifically, Appellant argues drilling a wellbore in response to a wavelet indication, as required by claim 10, is a “physical, real-world action that occurs in response to (and based on) the wavelet that is produced in claim 1.” App. Br. 14. According to Appellant, claim 10 is “highly similar to the claims considered by the Supreme Court in *Diamond v. Diehr*, 450 U.S. 175 (1981), in that a physical machine/process is being controlled by a technique that employs mathematical principles.” *Id.*

Based on the current record, we are persuaded by Appellant’s arguments that the Examiner erred. Pursuant to *Diehr*, we must consider

whether the “claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect.” *Diehr*, 450 U.S. at 192. In *Diehr*, the claim satisfied the requirements of 35 U.S.C. § 101 because they were not “an attempt to patent a mathematical formula, but rather . . . drawn to an industrial process for the molding of rubber products.” *Id.* at 192–193.

We agree with Appellant that claim 10 is “not directed to performing mathematical operations on a computer alone,” but rather “impose[s] meaningful limits in that the mathematical operations are used to improve an existing technology (drilling a wellbore to find hydrocarbons).” App. Br. 14. Similar to the claims in *Diehr*, claim 10 applies the mathematical formula (i.e., the wavelet produced from the received seismic data, time-shifted, transformed, and scaled) in a process (i.e., drilling a wellbore), and drawn to a process of locating hydrocarbons in the subterranean formation. The Examiner has not responded to Appellant’s arguments comparing claim 10 to the claims in *Diehr*. The Examiner has not shown sufficiently that claim 10, when the claim elements are considered individually and as an ordered combination, is directed to an abstract idea.

As a result of our conclusion that the Examiner has not sufficiently identified an abstract idea for claim 10, we do not need to consider the additional elements of the claim limitations under the second step of the *Alice/Mayo* framework.

Accordingly, we do not sustain the Examiner’s rejection that claim 10 is directed to patent-ineligible subject matter.

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DECISION

The Examiner's rejection of claims 1–9 and 11–21 under 35 U.S.C. § 101 is affirmed.

The Examiner's rejection of claim 10 under 35 U.S.C. § 101 is reversed.

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-IN-PART