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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SHUGUANG SONG, WILLIAM E. KRECHEL,
JAMES L. POBLETE and BRENT PATRICK LEBLANC

Appeal 2020-002529
Application 14/874,365
Technology Center 3600

Before KARA L. SZPONDOWSKI, SCOTT B. HOWARD, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

SZPONDOWSKI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1, 2, 4–8, 10–12, 14, 16–19, 21–24, and 26–29, which constitute all of the claims pending in this application. 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. Appellant identifies the real party in interest as The Boeing Company. Appeal Br. 2.

STATEMENT OF THE CASE

Appellant's invention relates "generally to an improved manufacturing system for products and, in particular, to a method and apparatus for manufacturing an aircraft." Spec. ¶ 1. Claim 1, reproduced below, is representative of the claimed subject matter:

1. A method for manufacturing a product, the method comprising:

identifying, by a computer system, a predicted parts shortage for parts based on historical parts shortage data and current parts shortage data;

identifying, by the computer system, a group of parts for which a shortage is predicted and suppliers that supply the group of parts;

identifying, by the computer system, a predicted supplier reaction time to resolve the predicted parts shortage;

identifying, by the computer system, ranked suppliers from suppliers having a fastest predicted supplier reaction time;

generating, by the computer system, an output of ranked suppliers with the fastest predicted supplier reaction time;

scheduling, by the computer system, a production of the group of parts, wherein the predicted supplier reaction time is used to create a schedule of when the group of parts is to be produced; and

initiating, by the computer system, the production of the group of parts by one or more of the ranked suppliers based on the ranked suppliers with the fastest predicted supplier reaction time by electronically sending an order to the ranked suppliers at a predicted lead time in accordance with the schedule; and

managing, by the computer system, manufacture of the product using the group of parts produced by the ranked suppliers.

REJECTION

Claims 1, 2, 4–8, 10–12, 14, 16–19, 21–24, and 26–29 stand rejected under 35 U.S.C. § 101 as directed to patent-ineligible subject matter. Final Act. 2.

ANALYSIS

Section 101 Rejection

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 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).

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*. *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 at 611);

mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (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 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

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 (internal 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 PTO has published guidance on the application of § 101. USPTO’s January 7, 2019 Memorandum, 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“2019 Guidance”); October 2019 Update: Subject Matter Eligibility, 84 Fed. Reg. 55,942 (available at the USPTO’s website) (“October 2019 PEG Update”). Under the 2019 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* Manual of Patent Examining Procedure (MPEP) § 2106.05(a)–(c), (e)–(h) (9th ed. rev. 08.2017 Jan. 2018)).

See 2019 Guidance, 84 Fed. Reg. at 52, 55–56. 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 id. at 56.

2019 Guidance, Step 2A, Prong 1

Under the first step of the *Alice/Mayo* framework, the Examiner finds that the claimed invention is directed to certain methods of organizing human activity and/or a mental process. Final Act. 4–5. The Examiner finds the claims are directed to:

a process for optimizing a production plan by predicting shortages for parts based on historical data, identifying the suppliers of the parts that are predicted to incur a shortage, ranking suppliers of the parts based on their predicted reaction time to the shortage, and then scheduling and initiating the production of the parts based on the ranking of suppliers

which is “a method for organizing human activity.” *Id.* at 5. Specifically, the Examiner finds that the claims “may be categorized as a method for organizing human activity because they are directed to managing production planning” in that “the claims are directed to managing relationships between suppliers of parts and a manufacture[r] that uses those parts, by enabling the identification of parts shortages and subsequently scheduling production of those parts to minimize the impact of the shortage.” *Id.*; *see also* Ans. 4. The Examiner also finds that the “identifying,” “scheduling a production,” and “initiating the production” steps “are mental steps that could be performed entirely in the human mind, for example, by a production manager.” Final Act. 5. According to the Examiner, the “recited steps merely require acts that could be performed by a human to make business decisions related to foreseeing a parts shortage and responding by ordering the parts from a dependable supplier.” Ans. 4–5.

Appellant does not persuasively rebut the Examiner’s determination that the claims are directed to certain methods for organizing human activity and/or mental processes under Step 2A, Prong 1. Appellant argues that the claims “do not fall under any of these categories,” and “recite limitations related to technical elements of supply chain management rather than the economic, legal, or personal aspects of supply chains.” Appeal Br. 9; *see also* Reply Br. 3.

We agree with the Examiner’s determination that the claims recite certain methods of organizing human activity and/or mental processes. *See* Final Act. 4–5; Ans. 4–5; 84 Fed. Reg. at 52.

Appellant’s Specification describes certain problems that may arise during the manufacture of an aircraft, including parts shortages and parts

that do not meet the required quality standard. Spec. ¶¶ 2–9. According to the Specification, it is “desirable to have a method and apparatus that overcome a technical problem with reducing parts shortages caused by suppliers currently supplying parts for manufacturing a product, such as an aircraft.” *Id.* ¶ 10. To solve this problem, the Specification describes “a method and apparatus for managing manufacturing of a product” by “using one or more of the ranked suppliers, based on the ranked suppliers identified, thereby enabling a reduction for a risk of a shortage for the group of the parts.” *Id.* ¶¶ 30, 32. Claim 1 recites a method that performs the following steps:

identifying, by a computer system, a predicted parts shortage for parts based on historical parts shortage data and current parts shortage data;

identifying, by the computer system, a group of parts for which a shortage is predicted and suppliers that supply the group of parts;

identifying, by the computer system, a predicted supplier reaction time to resolve the predicted parts shortage;

identifying, by the computer system, ranked suppliers from suppliers having a fastest predicted supplier reaction time;

generating, by the computer system, an output of ranked suppliers with the fastest predicted supplier reaction time;

scheduling, by the computer system, a production of the group of parts, wherein the predicted supplier reaction time is used to create a schedule of when the group of parts is to be produced; and

initiating, by the computer system, the production of the group of parts by one or more of the ranked suppliers based on the ranked suppliers with the fastest predicted supplier reaction time by electronically sending an order to the ranked suppliers at a predicted lead time in accordance with the schedule; and

managing, by the computer system, manufacture of the product using the group of parts produced by the ranked suppliers.

Appeal Br. 10 (Claims App.) (emphasis added).

Appellant has not persuasively argued why the italicized claim limitations above do not recite “certain methods of organizing human activity”—specifically, “managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions).” *See* 2019 Guidance, 84 Fed. Reg. at 52. For example, the Specification describes that the “predicted supplier reaction time” (e.g., identification of how long each of the suppliers takes to resolve a shortage when one occurs) is identified using “techniques for ordered events,” which include “release production order, ship items from supplier, deliver items to the manufacturer, identify part shortage, resolve parts shortage, or other suitable events.” Spec. ¶¶ 75–76. The suppliers may be ranked, and production of parts may be scheduled, based on predicted supplier reaction time. *Id.* ¶¶ 80–84. Based upon this disclosure, we agree with the Examiner that the claims recite certain methods of organizing human activity, and more particularly, managing interactions between manufacturer and suppliers.

Appellant also has not persuasively argued why the same italicized steps in claim 1, do not recite “mental processes”—specifically, “concepts performed in the human mind (including an observation, evaluation, judgment, opinion).” *See* 2019 Guidance, 84 Fed. Reg. at 52. For example, the Specification describes employing “statistical techniques . . . to analyze historical data” to “generate predictions of shortage.” Spec. ¶ 61. The Specification also describes identifying “statistical correlations . . . from

historical manufacturing information.” *Id.* ¶ 69. The Specification also describes looking at “historical identification of performance by suppliers” and “ordered events” to predict “supplier reaction time.” *Id.* ¶¶ 74–77. A “visualization of ranked suppliers” is created, showing “a list of suppliers . . . placed in order based on predicted supplier reaction time.” *Id.* ¶ 81. The Specification describes “creating schedules or modifying schedules for tasks.” *Id.* ¶ 79. Production is initiated “by placing an order for the group of parts” and doing so “at an earlier time that reduces a risk of shortage of the group of parts.” *Id.* ¶ 80. These are all steps that can be practically performed by a human being.

Appellant also argues that “the sheer number of parts involved in manufacturing complex products, in combination with managing multiple supply chains from different suppliers and tight manufacturing schedules cannot be managed by human mental means alone and are simply not feasible without heavy reliance on computerized data processing.” Appeal Br. 8; *see also* Reply Br. 2, 4.

Appellant’s argument is not persuasive because the claims are not limited in this manner. For example, the claims do not specify the number of “parts” and, therefore, encompass a minimal number of “parts” that a human may manage mentally. Moreover, Appellant’s Specification describes one benefit of the system as “increasing the speed at which product 102 may be manufactured.” Spec. ¶ 53. We agree with the Examiner that the “addition of the machine” (i.e., “computer system”) in the claims “function[s] solely as an obvious mechanism for permitting a solution to be achieved more quickly, i.e., through the utilization of a computer for performing calculations.” Ans. 6 (citing *Dealertrack, Inc. v.*

Huber, 674 F.3d 1315, 1333 (Fed. Cir. 2012)). Relying on a computer to perform routine tasks more quickly or more accurately is insufficient to render a claim patent eligible. *See Alice*, 573 U.S. at 224 (“use of a computer to create electronic records, track multiple transactions, and issue simultaneous instructions” is insufficient for patent eligibility); *Bancorp Servs., L.L.C. v. Sun Life Assurance Co.*, 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”). Moreover, the “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).

Accordingly, we conclude claim 1 recites certain methods of organizing human activity and/or mental processes as identified in the 2019 Guidance, and thus an abstract idea.

2019 Guidance, Step 2A, Prong 2

In determining whether the claims are “directed to” the identified abstract idea, we next consider whether the claims recite additional elements that integrate the judicial exception into a practical application. For the reasons set forth below, we discern no additional element (or combination of elements) recited in the claims that integrate the judicial exception into a practical application. *See* 2019 Guidance, 84 Fed. Reg. at 54–55.

Appellant argues that the “claimed invention does more than merely manage relations between suppliers of parts and a manufacturer but rather improves the manufacturing process itself including optimizing prediction of supply chain response and the timing of communication with part suppliers within the supply chain.” Appeal Br. 8; *see also* Appeal Br. 9–10; Reply

Br. 2, 4. In support of its arguments, Appellant cites to paragraphs 53, 54, and 58 of the Specification. Appeal Br. 9.

We are not persuaded by Appellant’s arguments and agree with the Examiner’s findings and conclusions. *See* Final Act. 6; Ans. 6–7. Appellant has not sufficiently shown that the claims are directed to an improvement to the computer system or technological process. Rather, we agree with the Examiner’s conclusion that “the use of the computer system does not improve the functioning of the computer.” Final Act. 6. As the Examiner properly reasons, “the purported improvements are not improvements to technology, as they do not relate to computer technology or technology for actual manufacturing of a product,” and instead “are abstract ideas for optimizing a production plan that are only generically tied to a computer environment.” Ans. 5; *see also* Ans. 6–7. Furthermore, Appellant has not shown that the alleged improvement to the manufacturing process changes the manner in which the computer operates or changes the functionality of the computer itself. Instead, Appellant’s identified alleged improvement is directed to the abstract idea.

Here, the claimed invention merely uses generic computer components to collect, analyze, and display data (i.e., the steps are carried out “by a computer system,” and the orders are sent “electronically”; the system comprises “a bus system,” “a storage device,” and “a number of processors,” and “a device that . . . initiates the production of the group of parts”). *See, e.g.*, Spec ¶¶ 40, 50; *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167–68 (Fed. Cir. 2018). Although the Specification describes that the “part manager . . . transforms computer system . . . into a special purpose computer system,” it also states that the “part manager . . . may be a module

that is executed or implemented in computer system,” which “is a hardware system and includes one or more data processing systems.” Spec. ¶¶ 40, 54. These “data processing systems may be selected from at least one of a computer, a server computer, a tablet, a mobile phone, or some other suitable data processing system.” *Id.* Therefore, the claimed computer components used to perform the limitations in the claim, such as the “computer system,” are generic computer components (i.e., a computer system including a computer that executes a part manager module). Simply implementing an abstract idea using conventional machines or devices adds nothing of substance. *See Alice*, 573 U.S. at 223 (“Stating an abstract idea ‘while adding the words ‘apply it’ is not enough for patent eligibility.”); *Mayo*, 566 U.S. at 84–85 (explaining that “simply implementing a mathematical principle on a physical machine” does not suffice for patent eligibility (citing *Gottschalk*, 409 U.S. at 64–65, 71)).

Appellant also argues that the claimed invention is “directed to solving a challenge where the ‘claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.’” Appeal Br. 8 (citing *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014)).

We are not persuaded by Appellant’s argument. Rather, we agree with the Examiner that the invention is “related to managing a supply chain of parts,” and solves the problem of “a shortage of parts for a manufacturing process” that “predates the use of computers.” Ans. 7. In *DDR Holdings*, the Federal Circuit determined that certain claims satisfied § 101 under *Mayo/Alice* step two because “the claimed solution amount[ed] to an inventive concept for resolving [a] particular Internet-centric problem,” i.e.,

a challenge unique to the Internet. *DDR Holdings*, 773 F.3d at 1257–59. The Federal Circuit explained that the claims specified “how interactions with the Internet are manipulated to yield a desired result . . . that overrides the routine and conventional sequence of events ordinarily triggered by the click of a hyperlink.” *Id.* at 1258. The claims, therefore, recited a technological solution “necessarily rooted in computer technology” that addressed a “problem specifically arising in the realm of computer networks.” *Id.* at 1257. However, “*DDR Holdings* does not apply when . . . the asserted claims do not ‘attempt to solve a challenge particular to the Internet.’” *Smart Sys. Innovations, LLC v. Chi. Transit Auth.*, 873 F.3d 1364, 1375 (Fed. Cir. 2017) (quoting *In re TLI Commc’ns LLC Patent Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016)). Unlike the patent-eligible claims in *DDR Holdings*, the claims here do not attempt to solve a challenge particular to the Internet. *See* Appeal Br. 12, 14–17; *see also* Final Act. 6–9; Ans. 5–7.

Accordingly, for the foregoing reasons, the claims fail to integrate the abstract idea into a practical application.

2019 Guidance, Step 2B

Turning to step 2 of the *Alice/Mayo* framework, we look to whether the claims (a) add a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field, or (b) simply append well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. 2019 Guidance, 84 Fed. Reg. at 56.

We agree with the Examiner that the claimed “computer elements” are merely “generic computer component[s]” that perform well-understood, routine, and conventional functions. Final Act. 8–9. As discussed above,

the Specification describes the claimed computer components generically and evidences their conventional nature. *See, e.g.*, Spec. ¶ 40. For example, the Specification explains that the “part manager . . . may be a module that is executed or implemented in computer system,” which “includes one or more data processing systems” that “may be selected from at least one of a computer, a server computer, a tablet, a mobile phone, or some other suitable data processing system.” *Id.* Appellant does not direct our attention to anything in the Specification that indicates the claimed computer components perform anything other than the well-understood, routine, and conventional function of manipulating or analyzing data. *See, e.g., Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016) (“Nothing in the claims, understood in light of the specification, requires anything other than off-the-shelf, conventional computer, network, and display technology for gathering, sending, and presenting the desired information.”); *Alice*, 573 U.S. at 225–26 (receiving, storing, sending information over networks insufficient to add an inventive concept).

When viewed as a whole, nothing in the claims adds significantly more (i.e., an inventive concept) to the abstract idea. The claimed “computer system,” “processors,” and “device[s]” amount to no more than mere instructions to apply the abstract idea using generic computer components, which is insufficient to provide an inventive concept. Furthermore, we are unable discern anything in the claims, even when the recitations are considered in combination, that represents something more than the performance of routine, conventional functions of a generic computer. That is, the claims at issue do not require any nonconventional computer components, or even a “non-conventional and non-generic

arrangement of known, conventional pieces,” but merely call for performance of the method “on a set of generic computer components.” *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed. Cir. 2016).

Appellant further argues that the claimed invention is a “novel method of manufacturing a product” that is a “new and useful process.” Appeal Br. 7; *see* Appeal Br. 9–10. However, Appellant’s argument is not persuasive because it improperly conflates the requirements for eligible subject matter (§ 101) with the independent requirements of novelty (§ 102) and nonobviousness (§ 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 nonobviousness. *Alice*, 573 U.S. at 217–18. A novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent ineligible. *See Mayo*, 566 U.S. 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, 1376 (Fed. Cir. 2016).

Appellant’s preemption arguments are likewise unpersuasive. *See* Appeal Br. 7, 10. Although preemption is a consideration, the absence of complete preemption is not dispositive. *See, e.g., Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (“While preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.”). Therefore, even if the

claims do not preempt the abstract idea, that alone is not enough to render the claims patent eligible.

Given the claimed generic computer components performing generic computer functions, we conclude that the combination of limitations in each independent claim does not supply an “inventive concept” that renders the claim “significantly more” than an abstract idea. Thus, the claims do not satisfy § 101 under *Mayo/Alice* step two.

For at least the above reasons, we sustain the Examiner’s rejection of independent claims 1, 11, and 17 as being directed to patent-ineligible subject matter, as well as dependent claims 2, 4–8, 10, 12, 14, 16, 18, 19, 21–24, 26–29, which were not separately argued.

CONCLUSION

We affirm the Examiner’s rejection of claims 1, 2, 4–8, 10–12, 14, 16–19, 21–24, and 26–29 under 35 U.S.C. § 101.

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1, 2, 4–8, 10–12, 14, 16–19, 21–24, 26–29	101	Eligibility	1, 2, 4–8, 10– 12, 14, 16–19, 21–24, 26–29	

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)(1)(iv). *See* 37 C.F.R. § 41.50(f).

Appeal 2020-002529
Application 14/874,365

AFFIRMED