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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* KEVIN ANDREW DEIBLER

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Appeal 2017-010071<sup>1</sup>  
Application 14/817,875<sup>2</sup>  
Technology Center 3600

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Before BRUCE T. WIEDER, TARA L. HUTCHINGS, and  
ROBERT J. SILVERMAN, *Administrative Patent Judges*.

HUTCHINGS, *Administrative Patent Judge*.

DECISION ON APPEAL  
STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner’s final rejection of claims 1, 3–9, 11–13, and 16–22, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> Our Decision references Appellant’s Appeal Brief (“App. Br.,” filed Jan 12, 2017) and Reply Brief (“Reply Br.,” filed July 24, 2017), and the Examiner’s Answer (“Ans.,” mailed May 24, 2017) and Final Office Action (“Final Act.,” mailed June 29, 2016).

<sup>2</sup> Appellant identifies the inventor as the real party in interest. App. Br. 2.

### CLAIMED INVENTION

Claims 1, 12, and 16 are the independent claims on appeal. Claim 1, reproduced below with bracketed notations added, is illustrative of the claimed subject matter:

1. A non-transitory computer-readable medium for replicating and assessing personnel hierarchy, comprising instructions stored thereon, that when executed on a processor, perform the steps of:

[(a)] mapping personnel attribute data to logically coded nodes within a logically coded unified hierarchy wherein each node comprises at least one associated variable encapsulating data relevant to that node;

[(b)] mapping environmental data, including physical environment data, to the logically coded unified hierarchy;

[(c)] performing a function corresponding to a rule or rule set corresponding to a business strategy or objective;

[(d)] data mining a node within the logically coded unified hierarchy to measure performance of the function;

[(e)] aggregating performance data of all nodes relevant to a rule or rule set;

[(f)] comparing the performance of each node against the aggregated performance of the remaining relevant nodes and the node itself; and

[(g)] modifying or reassigning nodes within the hierarchy, as needed, based on performance.

### REJECTIONS

Claims 1, 3–9, 11–13, and 16–22 are rejected under 35 U.S.C. § 101 as directed to a judicial exception without significantly more.

Claims 1, 3–5, 9, 12, 13, and 16–22 are rejected under 35 U.S.C. § 103 as unpatentable over April (US 2011/0015958 A1, pub. Jan. 20, 2011) and Cases (US 2009/0030927 A1, pub. Jan. 29, 2009).<sup>3</sup>

Claims 6–8 are rejected under 35 U.S.C. § 103 as unpatentable over April, Cases, and Brennan (US 2008/0281651 A1, pub. Nov. 13, 2008).

Claim 11 is rejected under 35 U.S.C. § 103 as unpatentable over April, Cases, Brennan, and McLean (US 8,078,486, iss. Dec. 13, 2011).

## ANALYSIS

### *Patent-Ineligible Subject Matter*

Appellant argues the pending claims as a group. App. Br. 6–12. We select independent claim 1 as representative. The remaining claims stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Under 35 U.S.C. § 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. The Supreme Court, however, has long interpreted § 101 to include an implicit exception: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

The Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012), “for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible

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<sup>3</sup> We treat the Examiner’s identification in the rejection heading of claims 10 and 11 among the claims subject to rejection as inadvertent. *See* Final Act. 5.

applications of those concepts.” *Alice Corp.*, 573 U.S. at 217. The first step in that analysis is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Id.* (citation omitted). If the claims are not directed to a patent-ineligible concept, e.g., an abstract idea, the inquiry ends. Otherwise, the inquiry proceeds to the second step where the elements of the claims are considered “individually and ‘as an ordered combination’” to determine whether there are additional elements that “‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (quoting *Mayo*, 566 U.S. at 79, 78). This is “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 217–18 (alteration in original).

The USPTO recently published revised guidance on the application of § 101. 2019 REVISED PATENT SUBJECT MATTER ELIGIBILITY GUIDANCE, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Revised Guidance”).<sup>4</sup> That guidance revised the USPTO’s examination procedure with respect to the first step of the *Mayo/Alice* framework such that a claim will generally be considered directed to an abstract idea if (1) the claim recites subject matter falling within one of the following groupings of abstract ideas: (a) mathematical concepts; (b) certain methods of organizing human activity, e.g., a fundamental economic principle or practice, a commercial or legal interaction; and (c) mental processes (“Step 2A, Prong One”), and (2) the claim does not integrate the abstract idea into a practical application, *i.e.*,

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<sup>4</sup> The Revised Guidance is effective as of January 7, 2019, and applies to all applications, and to all patents resulting from applications, filed before, on, or after January 7, 2019.

apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception (“Step 2A, Prong Two”). *See* Revised Guidance 54–55. The Revised Guidance references MANUAL OF PATENT EXAMINING PROCEDURE (“MPEP”) §§ 2106.05(a)–(c) and (e)–(h) in describing the considerations that are indicative that an additional element or combination of elements integrates the judicial exception, e.g., the abstract idea, into a practical application. *Id.* at 55. If the recited judicial exception is integrated into a practical application, as determined under one or more of these MPEP sections, the claim is not “directed to” the judicial exception.

Only if the 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 “[a]dds a specific limitation or combination of limitations” that is not “well-understood, routine, conventional activity in the field” or simply “appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception” (“Step 2B”). *Id.* at 56.

*Judicial Exception: Step One of the Mayo/Alice Framework; Step 2A, Prong 1 of the 2019 Revised Guidance*

Appellant’s Specification describes that business enterprises use tools to assess and improve their businesses, such as tools for assessing resource management and production of various assets. Spec. ¶ 2. However, these tools “lack[] an ability to map, assess, and optimize the allocation of personnel within a business enterprise.” *Id.*

Appellant’s claim 1 recites a computer-readable medium for replicating and assessing personnel hierarchy that includes the following

instructions stored thereon: “mapping personnel attribute data to . . . nodes within a . . . hierarchy wherein each node comprises at least one associated variable encapsulating data relevant to that node” (step (a)); “mapping environmental data, including physical environment data, to the . . . hierarchy” (step (b)); “performing a function corresponding to a rule or rule set corresponding to a business strategy or objective” (step (c)); “data mining a node within the . . . hierarchy to measure performance of the function” (step (d)); “aggregating performance data of all nodes relevant to a rule or rule set” (step (e)); “comparing the performance of each node against the aggregated performance of the remaining relevant nodes and the node itself” (step (f)); and “modifying or reassigning nodes within the hierarchy, as needed, based on performance” (step (g)).

When given their broadest reasonable interpretation, limitations (a)–(g) recite a set of steps for modifying or reassigning nodes within a personnel hierarchy, i.e., managing relationships or interactions between people, which is a certain method of organizing human activity, and, therefore, an abstract idea. *See* 2019 Revised Guidance 52. Accordingly, we are not persuaded of Examiner error at Step 2A, Prong 1 of the 2019 Revised Guidance.

*Practical Application: Step One of the Mayo/Alice Framework; Step 2A, Prong 2 of the 2019 Revised Guidance*

Having concluded that claim 1 recites a judicial exception, i.e., an abstract idea, we next consider whether the claim recites additional elements, considered individually and in combination, that integrate the judicial exception into a practical application. *See* Revised Guidance 54–55. Here, the additional elements recited in claim 1, beyond the abstract idea, include a “non-transitory computer-readable medium” (preamble), a

“processor” (preamble), “logically coded” nodes (e.g., limitation (a)), and a “logically coded unified” hierarchy (e.g., limitations (a), (b), and (d)). These elements are described in the Specification at a high level of generality, i.e., as an assembly of generic computer components. *See, e.g.*, Spec. ¶¶ 13, 15, 16. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014) (“[A]fter *Alice*, there can remain no doubt: recitation of generic computer limitations does not make an otherwise ineligible claim patent-eligible.”).

Appellant disputes that claim 1 “requires just ‘a generic computer system (e.g. generic processor)’ due to its cost prohibitive and technologically inferior implementation.” App. Br. 8. Instead, Appellant contends that the claim 1 is “better suited for implementation using an Application-specific integrated circuit such as Google’s Tensor Processing Unit or another custom circuit, such as one that is capable of quantum computing.” App. Br. 8 (citing Spec. ¶¶ 13, 18). Appellant’s argument is unpersuasive.

Here, claim 1 simply recites “a processor” in the preamble of claim 1. Appellant’s Specification at paragraph 13 describes that the invention “[could] be performed by specific circuits (e.g.,] application specific integrated circuits (ASICs).” However, the Specification further provides that the invention “may be embodied in a number of different forms, all of which have been contemplated to be within the scope of the claimed subject matter.” Spec. ¶ 13. Further, claim 1 recites “mapping” data to logically coded nodes within a logically coded unified hierarchy and “modifying or reassigning nodes within the hierarchy, as needed,” but claim 1 does not recite any particular manner for mapping or modifying. To the contrary, the

Specification at paragraph 18 identifies a variety of known, but non-limiting, data processing techniques for mapping and/or modeling (e.g., recursion, polymorphism, encapsulation, inheritance, string theory, quantum mechanics, stochastics, dynamic modeling, and time series analysis including Fourier/wavelet transforms). Appellant fails to persuade us that claim 1 invokes any specialized computer hardware or special programming (i.e., a particular machine).

Seeking to analogize claim 1 to the claims in *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016), Appellant argues that claim 1 recites a “dynamic, self-learning, and evolving model within a computer system,” and self-learning models “inherently [rely] upon the self-referential capabilities that were upheld [in *Enfish*] as patent eligible.” App. Br. 7. However, contrary to Appellant’s suggestion, *Enfish* does not stand for the proposition that any claim requiring a data structure to have self-referential capabilities is patent eligible. Instead, the Federal Circuit instructed that “the first step in the *Alice* inquiry in this case asks whether the focus of the claims is on the specific asserted improvement in computer capabilities (i.e., the self-referential table for a computer database) or, instead, on a process that qualifies as an ‘abstract idea for which computers are invoked merely as a tool.’” *Id.* at 1335–36.

In *Enfish*, the Federal Circuit described shortcomings with traditional relational database and object-oriented databases that the claimed data structure overcame. *See id.* at 1337 (citation omitted). Specifically, the court pointed out that the specification described that the existing database technology required a programmer to preconfigure a structure to which a

user had to adapt data entry, and the claimed invention eliminated this requirement by using a self-referential table. *Id.* (citation omitted).

The court concluded that the focus of the claims was on the asserted improvement in computer capabilities — namely, the self-referential table. *Id.* at 1336. For example, a representative claim recited a data storage and retrieval system for a computer memory having a means for configuring a memory according to a logical table that included rows, columns, and a means for indexing data. *Id.* at 1336. The means for configuring required a four-step algorithm, and the third step of that algorithm (i.e., “[f]or each column, store information about the column in one or more rows”), rendered the table self-referential. *Id.* The court noted that the specification identified additional benefits conferred by the self-referential table (e.g., increased flexibility, faster search times, and smaller memory requirements), which further supported the court’s conclusion that the claims were directed to an improvement of an existing technology. *Id.* at 1337 (citation omitted).

Here, in contrast, Appellant does not purport to have invented a logically coded unified hierarchy or other data structure analogous to *Enfish*’s self-referential table. Instead, claim 1 focuses on an improvement to the abstract idea itself (i.e., method of organizing human activity) that is achieved by application in a particular technological environment (e.g., a logically coded unified hierarchy having logically coded nodes).

Appellant asserts that the claimed invention can “analyz[e] dozens, hundreds, or millions of scenarios simultaneously and in real-time.” App. Br. 9; *see also id.* (“[T]o reach an end state with a static process, as outlined by the cited art, is merely a business process; however, the present invention incorporates multiple instantiations . . . that are simultaneously executing

pre-defined rules and rule sets . . . to reach a defined end state(s)”). But relying on a computer to perform routine tasks more quickly or accurately is insufficient to render a claim patent eligible. *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015).

Appellant argues that claim 1 recites an ordered combination that results in an improvement in the technical field of self-learning, artificial intelligence models. App. Br. 9; *see also* Reply Br. 5–7. However, we are not persuaded that claim 1 recites an improvement in artificial intelligence technology, as opposed to an improvement to an abstract idea that is achieved by applying the abstract idea in a particular technological environment. Here, claim 1 recites results-based limitations (a) through (g), without providing sufficient technological details for how to achieve the desired results. *See Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1342 (Fed. Cir. 2017) (explaining that “[o]ur law demands more” than claim language that “provides only a result-oriented solution, with insufficient detail for how a computer accomplishes it”).

Appellant’s Specification also does not specify a particular manner for performing the recited steps of “mapping,” “performing a function,” “data mining,” “aggregating,” “comparing” and “modifying that would indicate any improvement in the technical field of artificial intelligence technology. *See, e.g.*, Spec. ¶¶ 3, 16, 19, and 32–38. For example, the Specification at paragraphs 13 and 18 suggests that any known data processing techniques may be used in conjunction with any known software and/or hardware to achieve the recited functionality.

We conclude, for the reasons outlined above, that claim 1 recites a method of organizing human activity, i.e., an abstract idea. We are not

persuaded that the additional elements are more than generic computer components used to implement the abstract idea, and generally link the abstract idea to a particular technological environment or field of use. For example, we find no indication that one or more additional elements reflects an improvement in the functioning of a computer, or an improvement to other technology or technical field; requires any specialized computer hardware, i.e., a particular machine; or effects a transformation or reduction of a particular article to a different state or thing. Therefore, we are not persuaded that the Examiner erred at Step 2A, Prong 2 in determining that the additional elements do not integrate the recited abstract idea into a practical application (Step 2A, Prong Two of the 2019 Revised Guidance).

*Inventive Concept: Step Two of the Mayo/Alice Framework (Step 2A, Prong 1 of the 2019 Revised Guidance)*

Having determined under step one of the *Mayo/Alice* framework that claim 1 is directed to an abstract idea, we next consider under Step 2B of the 2019 Revised Guidance, the second step of the *Mayo/Alice* framework — whether claim 1 recites additional elements that provide an inventive concept (i.e., whether the additional elements amount to significantly more than the judicial exception itself).

As set forth above, the only additional elements that are not part of the abstract idea itself are described as generic computer components (e.g., computer-readable medium, processor, logically coded unified hierarchy, logically coded nodes). Therefore, we are not persuaded that the Examiner erred in determining that the additional elements recited in claim 1, considered alone and as an ordered combination, do not amount to significantly more than the abstract idea.

Appellant additionally asserts that “Example 3<sup>[5]</sup> concerning Digital Image Processing [] can be inherent within the present invention, specifically highlighted in the claim limitation to include ‘physical environment data’. In effect, the disclosed invention does include additional elements that represent an improvement to computer technology.” App. Br. 10; *see also* Reply Br. 13 (asserting that the claimed physical environment covers virtual replication and instantiation, and USPTO Example 3 held claims directed to digital image processing to be patent eligible). Yet, we are not persuaded that any elements recited in claim 1, considered alone or in combination, reflect an improvement in digital image processing techniques. For example, claim 1 does not recite any particular manner for “mapping . . . physical environment data” to indicate an innovation in digital image processing.

We are not persuaded of error in the Examiner’s rejection of claim 1 under 35 U.S.C. § 101. Therefore, we sustain the Examiner’s rejection of claim 1, and claims 3–9, 11–13, and 16–22, which fall with claim 1.

#### *Obviousness*

We are persuaded by Appellant’s argument that the Examiner erred in rejecting independent claims 1, 12, and 18 under 35 U.S.C. § 103 because April does not teach or suggest limitation (b), i.e. “mapping environmental data, including physical environment data, to the logically coded unified hierarchy,” as recited in claim 1, and similarly recited in claims 12 and 18.

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<sup>5</sup> *Examples: Abstract Ideas* (Jan. 27, 2015) (available at [https://www.uspto.gov/sites/default/files/documents/abstract\\_idea\\_examples.pdf](https://www.uspto.gov/sites/default/files/documents/abstract_idea_examples.pdf)).

App. Br. 16; *see also* Reply Br. 11–13, 17. The Examiner relies on Figure 9 and paragraphs 52 and 83 of April for the argued limitations. Final Act. 6.

However, we find nothing in the cited portions of April that teaches or suggests anything about mapping physical environment data, as required by claim 1, and similarly required by claims 11, 18, and 21. Instead, April describes that socio-economic variables, such as economic outlook or forecasts, unemployment rate, talent availability and demand, are among the parameters defined to govern a simulation. *See* April ¶¶ 52, 83.

The Examiner takes the position that April’s use of “talent availability” in the simulation “can be considered a physical environment data that relates to material things (i.e., available employees).” Ans. 35. Appellant argues that the Examiner’s interpretation of physical environment data as incorporating socio-economic variables is beyond the broadest reasonable interpretation, because the term “physical environment data” requires data about the physical environment. App. Br. 16–17; *see also* Reply Br. 12–13, 17. We agree.

“During examination, ‘claims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art.’” *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (quoting *In re Bond*, 910 F.2d 831, 833 (Fed. Cir. 1990)). The term “physical environment” is generally understood to mean “the part of the human environment that includes pure physical factors (as soil, climate, water supply).” Merriam-Webster, <https://www.merriam-webster.com/dictionary/physical%20environment> (last visited Sept. 24, 2019)). Consistent with this general understanding,

Appellant's Specification describes "physical environment data" as data concerning the physical environment. For example, paragraph 19 of the Specification describes that physical environment data could be used to model a military physical environment, such that "errors of fielding a particular tank" could be detected at a tactical level. Likewise, at paragraph 39, the Specification describes physical environment data and personnel attribute data as distinct types of data that may impact one another. Here, the Examiner's interpretation of April's talent attribute data as physical environment data goes beyond the broadest reasonable interpretation. Talent availability, as described by April, at best, relates to personnel attribute data (claim 1, limitation (a)), not physical environment data (claim 1, limitation (b)), under a broad, but reasonable interpretation.

For at least this reason, we do not sustain the Examiner's rejection of independent claims 1, 12, and 16, and dependent claims 3–5, 9, 13, and 17–22 under 35 U.S.C. § 103.

The Examiner's rejections of dependent claims 6–8 and 11 under 35 U.S.C. § 103 does not cure the deficiencies in the rejection of independent claim 1. *See* Final Act. 18–21. Therefore, we do not sustain the rejection of claims 6–8 and 11 for the same reasons provided above with respect to independent claim 1.

#### DECISION

The Examiner's rejection of claims 1, 3–9, 11–13, and 16–22 under 35 U.S.C. § 101 is affirmed.

The Examiner's rejections of claims 1, 3–9, 11–13, and 16–22 under 35 U.S.C. § 103(a) are reversed.

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Application 14/817,875

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).

AFFIRMED