



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 14/076,195  | 11/09/2013  | Tianyu Luwang        | 2058.909US1         | 8860             |
| 50400   | 7590        | 06/03/2019           | EXAMINER            |                  |
| SCHWEGMAN LUNDBERG & WOESSNER/SAP<br>P.O. BOX 2938<br>MINNEAPOLIS, MN 55402 |             |                      | ERB, NATHAN         |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 3628                |                  |
|   |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|   |             |                      | 06/03/2019          | ELECTRONIC       |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@slwip.com  
SLW@blackhillsip.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* TIANYU LUWANG, MENGJIAO WANG,  
and WEN-SYAN LI

---

Appeal 2018-003760  
Application 14/076,195  
Technology Center 3600

---

Before JOHN A. EVANS, JAMES W. DEJMEK and  
MICHAEL M. BARRY, *Administrative Patent Judges*.

EVANS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants<sup>1</sup> seek our review under 35 U.S.C. § 134(a) of the Examiner's Final rejection of claims 1–20. App. Br. 2. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.<sup>2</sup>

---

<sup>1</sup> Appellants state the real party in interest is SAP SE. App. Br. 3.

<sup>2</sup> Rather than reiterate the arguments of Appellants and the Examiner, we refer to the Appeal Brief filed August 16, 2017 (“App. Br.”); the Reply Brief filed February 23, 2018 (“Reply Br.”); the Examiner's Answer mailed December 26, 2017 (“Ans.”); the Advisory Action mailed May 26, 2017 (“Adv. Act.”); the Final Action mailed March 13, 2017 (“Final Act.”); and

## STATEMENT OF THE CASE

The claims relate to a method for managing package delivery by constructing and using a tree data structure of feasible delivery routes. Spec. ¶¶ 19, 41–46, and Fig. 7.

### *Invention*

Claims 1, 10, and 19 are independent. An understanding of the invention can be derived from a reading of claim 1, which is reproduced below:

1. A computerized method for managing package delivery, the method comprising:

establishing, using at least one hardware processor, a root node in a tree data structure representing a home base and comprising a capacity of a corresponding delivery vehicle;

setting, using the at least one hardware processor, an index to an initial value, the index representing a level of the tree data structure;

adding, using the at least one hardware processor, one or more unassigned delivery points as a child node of the root node in the tree data structure if a path to the corresponding unassigned delivery point is feasible;

setting, using the at least one hardware processor, the index to the initial value plus one;

adding, using the at least one hardware processor, a next level delivery point as a child node of a node in the tree data structure in a tree level<sub>index</sub> if the delivery point is unassigned and a path to the next level delivery point is feasible, the adding step being repeated for each

---

the Specification filed November 9, 2013 (“Spec.”) for their respective details.

combination of unassigned delivery point and node in the tree level<sub>index</sub>;

incrementing, using the at least one hardware processor, the index; and

repeating, using the at least one hardware processor, the adding a next level delivery point and the incrementing until the index is greater than a count of delivery points.

### *Rejection*

Claims 1–20 stand rejected under 35 U.S.C. § 101 as directed to patent-ineligible subject matter without significantly more. Final Act. 5–6.

### ANALYSIS

We have reviewed the rejections of Claims 1–20 in light of Appellants’ arguments that the Examiner erred. We have considered in this decision only those arguments Appellants actually raised in the Briefs. Any other arguments which Appellants could have made but chose not to make in the Briefs are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2016). We are not persuaded that Appellants identify reversible error. Upon consideration of the arguments presented in the Appeal Brief and Reply Brief, we agree with the Examiner that all the pending claims are unpatentable. We adopt as our own the determinations and reasons set forth in the rejection from which this appeal is taken and in the Examiner’s Answer, to the extent consistent with our analysis below. We provide the following explanation to highlight and address specific arguments and determinations primarily for emphasis. We consider Appellants’ arguments *seriatim*, as they are presented in the Appeal Brief pages 8–27, and Reply

Brief pages 2–12.

CLAIMS 1–20: INELIGIBLE SUBJECT MATTER

Appellants argue all claims as a group in view of the limitations of Claim 1 and the commensurate limitations of claims 10 and 19. *See* App. Br. 8–27; *see also* Reply Br. 2–12. Therefore, we decide the appeal of the section 101 rejections with reference to claim 1, and refer to the rejected claims collectively herein as “the claims.” *See* 37 C.F.R. § 41.37(c)(1)(iv); *see also In re King*, 801 F.2d 1324, 1325 (Fed. Cir. 1986).

*Prima Facie Case / Application of Examination Guidelines.*

Appellants contend the Examiner did not clearly and specifically explain why all claims are “directed to” the alleged abstract idea of “generating a delivery route,” as required for a prima facie eligibility rejection. App. Br. 9–10.

We conclude the Examiner did initially set forth a prima facie case of patent-ineligibility, i.e., the Examiner’s reasons are sufficient to set forth the basis for the rejection so as to put the patent applicant on notice of the reasons why the applicant is not entitled to a patent. *Cf. In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). For example, in rejecting claims 1–20 as directed to the abstract idea of “generating a delivery route,” the Examiner explains that “the steps of establishing a root node, setting an index to an initial value, adding one or more unassigned delivery points, setting the index to the initial value plus one, adding a next level delivery point, incrementing the index, and repeating the adding and the incrementing . . . describe the concept of ‘generating a delivery route.’” Final Act. 5.

Here, the Examiner explains the recited step of adding unassigned delivery points to a tree is equivalent to setting forth a series of delivery stops on a route. *Id.* at 2. Moreover, the Examiner specifies that the additional limitations of the claims—i.e., a computer, hardware processor, processor, memory, instructions, non-transitory machine-readable storage medium, and machine—do not amount to significantly more than the abstract idea because, for example, they are recited at a high level of generality and perform merely generic computer functions routinely used in computer applications. *Id.* at 5. The Examiner further explains that the additional limitations recited in dependent claims 2–20

do not add significantly more to the abstract idea because they either: (1) add additional abstract ideas (see the mathematical expressions of claim 2, for example); and/or (2) add steps to the abstract idea (*see* claim 5 for example; a step that is part of an abstract idea cannot also be significantly more than that same abstract idea); and/or (3) adds further details to the previously mentioned abstract idea (*see* claim 20 for example which adds detail regarding an unvisited delivery point a detail that is part of an abstract idea cannot also be significantly more than that same abstract idea).

*Id.* at 6.

In view of the foregoing, we are unpersuaded by Appellants’ argument. For similar reasons, we are unpersuaded that the Examiner erred by using a short-hand summary statement in concluding the claims are directed to the abstract idea of “generating a delivery route.” App. Br. 10–12. As the Examiner explains, “the short-hand summary statement of ‘generating a delivery route’ is not intended to define every detail of the abstract idea; rather, those details are set forth by the underlying functional steps which perform the abstract

idea, with all of their corresponding details.” Ans. 5. Further, the Examiner’s approach is consistent with those of the Federal Circuit and Supreme Court, which routinely characterize recited claim steps that constitute an abstract idea as a term or phrase. *See, e.g., Bilski*, 561 U.S. at 611 (“Claims 1 and 4 in [P]etitioners’ application explain the basic concept of hedging, or protecting against risk. . . . The concept of hedging, described in claim 1 and reduced to a mathematical formula in claim 4, is an unpatentable abstract idea, just like the algorithms at issue in *Benson and Flook*.”).

To the extent Appellants argue the Examiner has applied various USPTO examination guidance documents improperly (*see, e.g.,* App. Br. 8, 9–10, 13–15, and 17–18), such alleged procedural errors by the Examiner may not be addressed through appeal, but instead by petitioning the Director of the United States Patent and Trademark Office for supervisory review. *See* 37 C.F.R. § 1.181. The Director has not delegated this supervisory authority to the Board.

*Preemption.*

Appellants contend the claims do not seek to tie up any judicial exception so that others cannot practice it. App. Br. 24. Although preemption may denote patent ineligibility, its absence does not demonstrate patent eligibility. *See FairWarning, IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1098 (Fed. Cir. 2016). For claims covering a patent-ineligible concept, preemption concerns “are fully addressed and made moot” by an analysis under the *Mayo/Alice* framework. *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015). We conduct such an

analysis below. In response to Supreme Court and Federal Circuit opinions, the USPTO has issued updated guidance. We review this appeal within the framework of the Revised Guidance, which specifies and particularizes the *Mayo/Alice* framework.

*35 U.S.C. § 101*

Section 101 provides that a patent may be obtained for “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” 35 U.S.C. § 101. The Supreme Court has long recognized, however, that 35 U.S.C. § 101 implicitly excludes “[l]aws of nature, natural phenomena, and abstract ideas” from the realm of patent-eligible subject matter, as monopolization of these “basic tools of scientific and technological work” would stifle the very innovation that the patent system aims to promote. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (quoting *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)); see also *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 72–78 (2012); *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

Under the mandatory 2019 Revised Guidance,<sup>3</sup> we reconsider whether Appellants’ claims recite:

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

---

<sup>3</sup> The USPTO, 2019 Revised Patent Subject Matter Eligibility Guidance, 84(4) Fed. Reg. 50–57 (January 7, 2019) (“Revised Guidance,” and/or “Rev. Guid.”).

- processes), and
2. **additional elements** that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

Only if a claim: (1) recites a judicial exception; and (2) does not integrate that exception into a practical application, do we then reach the issue of 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 simply appends well-understood, routine, conventional activities previously known to the industry, **specified at a high level of generality**, to the judicial exception.

*A. Judicial Exceptions.*

The Revised Guidance extracts and synthesizes key concepts identified by the courts as abstract ideas to explain that the abstract idea exception includes the following groupings of subject matter, when recited as such in a claim limitation(s) (that is, when recited on their own or *per se*): (a) mathematical concepts,<sup>4</sup> i.e., mathematical relationships, mathematical

---

<sup>4</sup> *Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“The concept of hedging . . . reduced . . . to a mathematical formula . . . is an unpatentable abstract idea.”).

formulas, equations,<sup>5</sup> and mathematical calculations;<sup>6</sup> (b) certain methods of organizing human activity—fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions);<sup>7</sup> and (c) mental processes<sup>8</sup>—concepts performed in the human mind (including observation, evaluation, judgment, opinion).<sup>9</sup>

---

<sup>5</sup> *Diehr*, 450 U.S. at 191 (“A mathematical formula as such is not accorded the protection of our patent laws.”); *Parker v. Flook*, 437 U.S. 584, 594 (1978) (“[T]he discovery of [a mathematical formula] cannot support a patent unless there is some other inventive concept in its application.”).

<sup>6</sup> *SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1163 (Fed. Cir. 2018) (holding that claims to a “series of mathematical calculations based on selected information” are directed to abstract ideas).

<sup>7</sup> *Alice*, 573 U.S. at 219–20 (Concluding that use of a third party to mediate settlement risk is a “fundamental economic practice” and thus an abstract idea.); *see also* Rev. Guid. 52 n.13 (For a more extensive listing of “certain methods of organizing human activity” that have been found to be abstract ideas.).

<sup>8</sup> If a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the mental processes category unless the claim cannot practically be performed in the mind. *See* Rev. Guid. 52 n.14; *see also Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1318 (Fed. Cir. 2016) (“[W]ith the exception of generic computer-implemented steps, there is nothing in the claims themselves that foreclose them from being performed by a human, mentally or with pen and paper.”).

<sup>9</sup> *Mayo*, 566 U.S. at 71 (“[M]ental processes[ ] and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and

The limitations of claim 1 are analyzed in Table I as they correspond to abstract ideas as set forth in the Revised Guidance:

**Table I**

| Claim 1   | Revised Guidance  |
|---|---|
| [a] <sup>10</sup> A . . . method for managing package delivery, the method comprising:  | (b) Certain methods of organizing human activity—e.g., managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions). Rev. Guid. 52, 52 n.13. |
| [b] establishing . . . a root node in a tree data structure representing a home base and comprising a capacity of a corresponding delivery vehicle;                                       | (a) Mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations. <i>Id.</i> at 52, 52 n.12  |
| [c] Setting . . . an index to an initial value, the index representing a level of the tree data structure;  | (a) Mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations. <i>Id.</i>   |
| [d] Adding . . . one or more unassigned delivery points as a child node of the root node in the tree data structure if a path to the corresponding unassigned delivery point is feasible; | (a) Mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations. <i>Id.</i>   |
| [e] Setting . . . the index to the initial value plus one;  | (a) Mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations. Rev. Guid. 52, 52 n.12.  |
| [f] Adding . . . a next level delivery point as a child node of a node in the tree data   | (a) Mathematical concepts—mathematical relationships,   |

technological work.”) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

<sup>10</sup> Indicia, e.g., “[a],” added to facilitate discussion.

|  |  |
|--|--|
| <p>structure in a tree level<sub>index</sub> if the delivery point is unassigned and a path to the next level delivery point is feasible;</p>      | <p>mathematical formulas or equations, mathematical calculations. <i>Id.</i></p>   |
| <p>[g] the adding step being repeated for each combination of unassigned delivery point and node in the tree level<sub>index</sub>;</p>            | <p>This limitation may narrow the scope of the abstract idea, but it does not amount to an “inventive concept” that transforms the claim into a patent-eligible application of the otherwise ineligible abstract idea. <i>Id.</i> at 52 n.12, 54, 54 n.22, 56.</p> |
| <p>[i] incrementing . . . the index; and</p>   | <p>(a) Mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations. <i>Id.</i> at 52, 52 n.12</p>  |
| <p>[j] Repeating . . . the adding a next level delivery point and the incrementing until the index is greater than a count of delivery points.</p> | <p>This limitation may narrow the scope of the abstract idea, but it does not amount to an “inventive concept” that transforms the claim into a patent-eligible application of the otherwise ineligible abstract idea. Rev. Guid. 52 n.12, 54, 54 n.22, 56.</p>    |

Under their broadest reasonable interpretation, limitations [a]–[j] of claim 1 (as recited in Table I above) recite a method of organizing human activity (managing package delivery) by implementing a mathematical concept (constructing and using a tree data structure)—akin to solving the traveling salesman problem by using a branch-and-bound search method. Like Appellants’ claim 1, a branch-and-bound search method can be employed to determine a minimum cost route among a plurality of route options by implementing a tree of nodes having levels of nodes and cost edges (or branches), such that the tree of nodes represents possible paths between a root node and various destination (child, grandchild, etc.) nodes.

See, e.g., Robert M. Stark and Robert L. Nicholls, *Mathematical Foundations for Design — Civil Engineering Systems — 7.2 Traveling-Salesman Problem* 238–44 (Dover Publ. 2005). Similarly, Appellants’ invention constructs and uses a tree data structure including a root node and a plurality of child nodes (unassigned, feasible delivery points) to determine optimal delivery routes based on objectives such as maximizing revenue, maximizing profit, minimizing travel and/or delivery time, and minimizing travel distance. See e.g., Spec. ¶¶ 14, 35 (see claim 1), Fig. 5 (showing an exemplary tree data structure).

Contrary to Appellants’ arguments, we are unpersuaded the Examiner erred in citing the *Maucorps*<sup>11</sup> decision to support its conclusion that Appellants’ claims recite an abstract idea. See Ans. 7–8; see also App. Br. 13–15. In *Maucorps*, the claimed invention related to determining the optimum number of times a sales representative for a business should visit each customer over a period of time. *Maucorps*, 609 F.2d at 482–83. Even if the specific purpose and mathematical operations of the claims were to differ from those in *Maucorps*, both use mathematical concepts to make optimal business determinations and, thus, recite patent-ineligible abstract ideas, viz., mathematical concepts and methods of organizing human activity. See *id.* at 485–86. As the Examiner points out, there is no requirement that the claims recite limitations identical to those of another claim previously held to be a patent-ineligible abstract idea by the courts. See Ans. 8.

---

<sup>11</sup> *Application of Maucorps*, 609 F.2d 481 (CCPA 1979).

Therefore, we conclude claim 1 recites a method of organizing human activity by implementing a mathematical concept, which is a combination of concepts the Revised Guidance identifies as abstract ideas. Here, we note that merely combining abstract ideas does not render the combination any less abstract. *RecogniCorp, LLC v. Nintendo Co., Ltd.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (“Adding one abstract idea (math) to another abstract idea . . . does not render the claim non-abstract.”); *see also FairWarning*, 839 F.3d at 1093–94 (determining the pending claims were directed to a combination of abstract ideas).<sup>12</sup>

*B. Integration of the judicial exception into a practical application.*

Where, as here, we determine the claim recites a judicial exception, we look to determine the presence of additional elements that integrate the judicial exception into a practical application. The Revised Guidance is “designed to more accurately and consistently identify claims that recite a practical application of a judicial exception[] and thus are not ‘directed to’ a judicial exception.” Rev. Guid. 53. The Revised Guidance identifies several exemplary considerations for when a claim may recite an additional element

---

<sup>12</sup> Claim 1 expressly recites the construction of a tree graph. *See e.g.*, limitations [b], [c], [d], [f], and [g]. The Board recently held similar tree-graph claims to be directed to non-statutory subject matter. *Ex Parte Paul Morinville*, No. 2016-008102, 2018 WL 1029147 (PTAB. Feb. 22, 2018) (“The subject matter of claim 1, as reasonably broadly construed, is drawn to a business administration concept for management of a business; that is, claim 1 is focused on a methodology of creating a functional organizational structure from a hierarchical operational structure and controlling access to business processes based on the created functional structure.”) (affirmed *In re Paul Morinville*, 2018 WL 1029147, 2018-1895 (Fed. Cir. 2019).

(or combination of elements) such that the judicial exception has been integrated into a practical application, which we address below. *See id.* at 55.

Appellants contend “the claims simply aren’t directed to an abstract idea, but rather recite an improvement in information processing by using a novel mapping to assign delivery points to nodes in the tree data structure which improves not only the functioning of the computer itself, but also another area of technology.” App. Br. 18. More specifically, Appellants assert that like the claims in *Enfish*, the claims recite “an improvement to the area of *information processing*, which is an improvement to the functioning of the computer itself.” *Id.* at 16–17 (citing *Enfish, LLC v. Microsoft Corporation*, 822 F.3d 1327 (Fed. Cir. 2016)). Additionally, Appellants assert the claims “can also be used . . . for the efficient delivery of multicast messages in a network environment where a packet may traverse from one recipient in the network to another recipient” (*id.* at 18), “is suitable for a variety of data storage systems and applications, such as routing applications” (*id.* at 19), and “enable[s] the computer to manage the package delivery and, like the rules of *McRO*, constitute an improvement in technology.” App. Br. 19 (citing *McRO, Inc. v. Bandai Namco Games Am.*, 837 F.3d 1299 (Fed. Cir. 2016)).

Appellants further contend the claims “constitute a non-conventional and non-generic arrangement of elements,” “recite a combination of operations and elements that constitute a particular, practical application of

[an] abstract idea,” and “like the claims in *BASCOM*, . . . carve out a particular way to manage package delivery.”<sup>13</sup> App. Br. 23, 26.

For the reasons that follow, we conclude that Appellants’ claims do not integrate the judicial exception into **a practical application**. See MPEP §§ 2106.05(a)–(c) and (e)–(h). We have considered the additional elements both individually and “as an ordered combination,” and determine that “the computer components . . . ‘ad[d] nothing . . . that is not already present when the steps are considered separately’” and simply recite a method of organizing human activity by implementing a mathematical concept on a generic computer. *Alice*, 573 U.S. at 225 (quoting *Mayo*, 566 U.S. at 79). We address the relevant “practical application” MPEP sections below:

MPEP § 2106.05(a) “Improvements to the Functioning of a Computer or To Any Other Technology or Technical Field.” & MPEP § 2106.05(f) “Mere Instructions To Apply An Exception.”

“In determining patent eligibility, [E]xaminers should consider whether the claim ‘purport(s) to improve the functioning of the computer itself’” or “any other technology or technical field.” MPEP § 2106.05(a).

Although the claims recite various computing elements, Appellants present no persuasive evidence that practicing the claims results in an improvement to the functioning of the computer. The claim is silent regarding specific limitations directed to an improved machine, apparatus, computer, hardware processor, memory, non-transitory machine readable storage medium, network, database, Internet, etc.

---

<sup>13</sup> See *BASCOM Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1352 (Fed. Cir. 2016).

Appellants purport an improvement in information processing and the functioning of a computer by using a novel mapping to assign delivery points to nodes in the tree data structure, but these functions are merely part of an abstract idea, viz., a mathematical concept, which is being applied on a computer. *See* Rev. Guid. 55 n.30 (citing *Benson*, 409 U.S. 63) (holding that merely implementing a mathematical principle on a general-purpose computer is a patent-ineligible abstract idea). In other words, unlike the claims in *Enfish and McRO*, claim 1 is not focused on an improvement to computers or software as tools, but rather uses a computer as a tool to execute the judicial exception. *See* Rev. Guid. 55, 55 n.30; *see also Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1055 (Fed. Cir. 2017). In order to transform a judicial exception into a patent-eligible application, the additional element or combination of elements must do “more than simply stat[e] the [judicial exception] while adding the words ‘apply it.’” *Alice*, 573 U.S. at 221 (quoting *Mayo*, 566 U.S. at 72).

We are also unpersuaded by Appellants’ contention that the claims are directed to an improvement in another technology. Appellants do not present any persuasive evidence in either the claims or the Specification that describes with specificity the purported advances in the package delivery management, networking, data storage, or routing technologies. *See, e.g.*, Final Act. 9 (“Examiner could not find any reference in Appellant’s [S]pecification to the claims being used for network packets.”); *see also* Ans. 8–9 (distinguishing Appellants’ claims from those in *Enfish*, which were directed to improvements in data storage).

MPEP § 2106.05(b) Particular Machine.

At the outset, we note that the *Bilski* machine-or-transformation test is only applicable to the method (process) claims on appeal. This section of the MPEP guides: “When determining whether a claim recites significantly more than a judicial exception, examiners should consider whether the judicial exception is applied with, or by use of, a particular machine.”

MPEP § 2106.05(b); *see also Bilski*, 561 U.S. at 604 (2010) (“[T]he machine-or-transformation test is a useful and important clue, and investigative tool” for determining whether a claim is patent eligible under 35 U.S.C. § 101.).

MPEP § 2106.05(b) provides further guidance regarding what constitutes a particular machine:

[A]s described in MPEP §2106.05(f), additional elements that invoke computers or other machinery merely as a tool to perform an existing process will generally not amount to significantly more than a judicial exception. *See, e.g., Versata Development Group v. SAP America*, 793 F.3d 1306, 1335 (Fed. Cir. 2015) (Explaining that in order for a machine to add significantly more, it must “play a significant part in permitting the claimed method to be performed, rather than function solely as an obvious mechanism for permitting a solution to be achieved more quickly.”).

The claims recite computing elements including a computerized method using at least one hardware processor (claim 1), an apparatus comprising a processor and a memory (claim 10), and a non-transitory machine readable storage medium comprising instructions executed by one or more processors of a machine (claim 19). But the claims are *silent* regarding specific limitations directed to a *particular* machine, nor do Appellants direct our attention to such specific elements in the claims or

Specification. “[T]he mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.” *Alice*, 573 U.S. at 223; *see also* *BASCOM*, 827 F.3d at 1348 (“An abstract idea on ‘an Internet computer network’ or on a generic computer is still an abstract idea.”). Applying this reasoning here, we conclude the claims are not directed to a particular machine, but rather merely implement a combination of abstract ideas using generic computer components. Thus, we conclude the claims fail to satisfy the “tied to a particular machine” prong of the *Bilski* machine-or-transformation test.

MPEP § 2106.05(c) Particular Transformation.

This section of the MPEP guides: “Another consideration when determining whether a claim recites significantly more is whether the claim effects a transformation or reduction of a particular article to a different state or thing.” “[T]ransformation and reduction of an article ‘to a different state or thing’ is the clue to patentability of a process claim that does not include particular machines.” *Bilski*, 561 U.S. at 658 (quoting *Benson*, 409 U.S. at 70).

Claim 1 recites a series of steps for constructing and using a tree data structure of nodes and paths. These data operations are not a transformation or reduction of an article into a different state or thing constituting patent-eligible subject matter. “The mere manipulation or reorganization of data . . . does not satisfy the transformation prong.” *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1375 (Fed. Cir. 2011). Applying this guidance here, we conclude claim 1 fails to satisfy the transformation prong of the *Bilski* machine-or-transformation test.

MPEP § 2106.05(e) Other Meaningful Limitations.

This section of the MPEP guides:

*Diamond v. Diehr* provides an example of a claim that recited meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment. 450 U.S. 175 (1981). In *Diehr*, the claim was directed to the use of the Arrhenius equation (an abstract idea or law of nature) in an automated process for operating a rubber-molding press. 450 U.S. at 177-78. The Court evaluated additional elements such as the steps of installing rubber in a press, closing the mold, constantly measuring the temperature in the mold, and automatically opening the press at the proper time, and found them to be meaningful because they sufficiently limited the use of the mathematical equation to the practical application of molding rubber products. 450 U.S. at 184. In contrast, the claims in *Alice Corp. v. CLS Bank International* did not meaningfully limit the abstract idea of mitigating settlement risk. 573 U.S. \_\_\_, 134 S.Ct. 2347, 110 USPQ2d 1976 (2014). In particular, the Court concluded that the additional elements such as the data processing system and communications controllers recited in the system claims did not meaningfully limit the abstract idea because they merely linked the use of the abstract idea to a particular technological environment (i.e., “implementation via computers”) or were well-understood, routine, conventional activity.

MPEP § 2106.05(e).

“[T]he relevant question is whether the claims here do more than simply instruct the practitioner to implement the abstract idea . . . on a generic computer.” *Alice*, 573 U.S. at 225. Similarly as for *Alice*, we find that “[t]aking the claim elements separately, the function performed by the computer at each step of the process is ‘[p]urely conventional.’” *Id.* “In short, each step does no more than require a generic computer to perform generic computer functions.” *Id.*

We agree with the Examiner’s conclusion that the claims do not add meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment. *See* Final Act. 5–6; *see also* Ans. 10. As the Examiner explains, the additional limitations of claims, 1, 10, and 19 are nothing more than generic computer components, which does not amount to significantly more than an abstract idea. *See* Final Act. 6; *see also* Ans. 10.

Contrary to Appellants’ arguments, the claims are unlike those in *BASCOM*, which “carve[d] out” a specific way of network filtering by “claiming a technology-based solution (not an abstract-idea-based solution implemented with generic technical components in a conventional way) to filter content on the Internet that overcomes existing problems with other Internet filtering systems.” *BASCOM*, 827 F.3d at 1352. Appellants’ claims, by comparison, simply use computer-related technology for its ordinary purposes—the solution provided by the claims arises from the steps that implement a mathematical concept, not from any combination of technology limitations.

Appellants also dispute the Examiner’s determination that the claimed “tree data structure” is part of the alleged abstract idea and thus cannot be determined to be “significantly more” under step two of the *Mayo/Alice* framework. Reply Br. 5–6. To support their position, Appellants point to *BASCOM* as allegedly finding that computer network and Internet components were part of the abstract idea and that their unique arrangement amounted to “something more” than the abstract idea. Reply Br. 5. We are unpersuaded of error. First, as the Examiner points out, the claimed tree

data structure is not a physical component but rather merely an abstract representation of data that is part of the recited abstract idea. *See* Ans. 5–6. Moreover, in *BASCOM*, the Federal Circuit treated the recited network and Internet components not as part of the abstract idea of filtering content, but as additional elements for consideration under step 2 of the *Mayo/Alice* framework as “significantly more” than the abstract idea. *BASCOM*, 827 F.3d at 1348 (“An abstract idea on ‘an Internet computer network’ or on a generic computer is still an abstract idea.”), 1349–1352 (“We agree with the district court that the limitations of the claims, taken individually, recite generic computer, network and Internet components, none of which is inventive by itself” but “the ordered combination of recited steps amounted to a particular application of the abstract idea.”).

Further, Appellants do not persuasively rebut the Examiner’s determination that dependent claims 2–9, 11–18, and 20 do not add significantly more than the abstract idea because they “(1) add additional abstract ideas . . . and/or (2) add steps to the abstract idea . . . and/or (3) adds [sic] further details to the previously mentioned abstract idea.” Final Act. 6.

MPEP § 2106.05(h) Field of Use and Technological Environment.

[T]he Supreme Court has stated that, even if a claim does not wholly pre-empt an abstract idea, it still will not be limited meaningfully if it contains only insignificant or token pre- or post-solution activity—such as identifying a relevant audience, a category of use, field of use, or technological environment.

*Ultramercial, Inc. v. Hulu, LLC*, 722 F.3d 1335, 1346 (Fed. Cir. 2013).

Claim 1’s additional recitation of a computerized method using at least one hardware processor fails to integrate the abstract ideas into a practical application because it does no more than generally link the use of a

judicial exception to a particular technological environment or field of use, that is, a computerized method.<sup>14</sup> *See* Rev. Guid. 55. For similar reasons, claim 10’s recitation of an apparatus comprising a processor and a memory and claim 19’s recitation of a non-transitory machine readable storage medium comprising instructions executed by one or more processors of a machine fail to integrate the abstract ideas into a practical application.

In view of the foregoing, we conclude the claims are “directed to” a judicial exception, namely a combination of abstract ideas.

*C. Well-understood, routine, conventional; specified at a high level of generality.*

Because the claims recite a judicial exception and do not integrate that exception into a practical application, we must then reach the issue of whether the claims add a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field. *Id.* at 56. It is indicative of the absence of an inventive concept where the claims simply append well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. *Id.* “Whether something is well-understood, routine, and conventional to a skilled artisan at the time of the patent is a factual determination.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1369 (Fed. Cir. 2018).

---

<sup>14</sup> Here, we note that even if claim 1’s recitation of a “method for managing package delivery” were characterized as an additional element rather than an abstract idea, it would do no more than generally link the recited mathematical concept to the field of package delivery management.

In the Reply Brief, Appellants present new arguments that rest on the assertion that the Examiner erred by failing to provide sufficient evidence to support the determination that the additional limitations of the claims were “well-understood, routine, and conventional, as required under *Berkheimer*.” Reply Br. 8–11. These arguments are unpersuasive.

The Examiner determined that

[t]he computing system components are recited at a high level of generality and are recited as performing generic computer functions routinely used in computer applications. Generic computer components recited as performing generic computer functions that are well-understood, routine and conventional activities amount to no more than implementing the abstract idea with a computerized system. Thus, taken alone, the additional elements do not amount to significantly more than the above-identified judicial exception (the abstract idea).

Final Act. 5–6; *see also* Ans. 6 (“Examiner believes that Appellants’ claims . . . recit[e] no more than routine steps of data collection and organization using generic computer components and conventional computer data processing activities.”), and 10 (“Examiner see nothing non-conventional about the overall arrangement of computing system components.”). This determination is amply supported by, and fully consistent with the Specification, which describes Appellants’ invention in a manner that requires no more than a general-purpose computer with generic computing elements. Spec. ¶¶ 54–59 (describing possible embodiments of the invention at a high level in terms of well-known, commonplace, and generic computing elements), and Fig. 9 (showing a block diagram of a generic computer processing system with generic components).

Appellants cannot reasonably contend that there is a genuine issue of material fact (and, therefore, a requirement for evidence) regarding the operation of these components as well-understood, routine, or conventional where, as here, there is nothing in the Specification to indicate that the operations recited in the claims require any specialized hardware or inventive computer components, invoke any assuredly inventive programming, or that the claims are implemented using other than generic computer components. Indeed, the Federal Circuit, in accordance with *Alice*, has “repeatedly recognized the absence of a genuine dispute as to eligibility” where claims have been defended as involving an inventive concept based “merely on the idea of using existing computers or the Internet to carry out conventional processes, with no alteration of computer functionality.” *Berkheimer*, 890 F.3d at 1373 (Moore, J., concurring) (citations omitted).

Therefore, we conclude that the claims, viewing its limitations “both individually and as an ordered combination,” do not recite significantly more than the judicial exception to transform the claim into patent-eligible subject matter. *See Alice*, 573 U.S. at 217 (quoting *Mayo*, 566 U.S. at 79).

In view of the foregoing, we sustain the rejection of claims 1–20 under 35 U.S.C. § 101.

Appeal 2018-003760  
Application 14/076,195

DECISION

We affirm the rejection of claims 1–20 under 35 U.S.C. § 101.

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. § 41.50(f).

AFFIRMED