APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/885,870	09/20/2010	Karthikeyan Ponnalagu	IN920100110US1 (790.082)	9551

89885 7590 06/29/2018	EXAMINER
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ART UNIT	PAPER NUMBER
3629	

MAIL DATE	DELIVERY MODE
06/29/2018	PAPER

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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 KARTHIKEYAN PONNALAGU, RENUKA
SINDHGATTA RAJAN, and BIKRAM SENGUPTA

_____

Appeal 2016-003140
Application 12/885,870[1]
Technology Center 3600

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Before DEBRA K. STEPHENS, KARA L. SZPONDOWSKI, and
MICHAEL J. ENGLE, *Administrative Patent Judges*.

STEPHENS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a final rejection of
claims 1–3, 5–16, and 18–27, which are all of the claims pending in the
application. We have jurisdiction under 35 U.S.C. § 6(b). Claims 4 and 17
have been cancelled.

We AFFIRM.

CLAIMED SUBJECT MATTER

According to Appellants, the claims are directed to automatically
generating a service oriented architecture design from business process maps

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[1] According to Appellants, the real party in interest is International Business
Machines Corporation (App. Br. 3).

based on specified quality goals (Abstract). Claim 1, reproduced below, is representative of the claimed subject matter:

> 1.   A method comprising:
>
> utilizing a processor to execute computer code configured to perform the steps of:
>
> assimilating a business process map;
>
> assimilating predetermined quality constraints;
>
> producing at least one semantic business process map, wherein the at least one semantic business process map is tagged with at least one concept and a frequency of occurrence of the at least one concept occurring within the at least one semantic business process map;
>
> searching among service oriented architecture design models via employing at least one search heuristic and at least one search constraint, wherein the at least one search constraint limits a search space;
>
> obtaining at least one initial design model via applying the at least one search heuristic and the at least one search constraint; and
>
> automatically yielding a service oriented architecture design model satisfying the predetermined quality definitions, via iteration of the at least one initial design model, the iteration being guided by the at least one search heuristic.

REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Bonabeau	US 2001/0053991 A1	Dec. 20, 2001
Abu el Ata	US 2006/0241931 A1	Oct. 26, 2006
Wilcock	US 2010/0115490 A1	May 6, 2010

REJECTIONS

Claims 1–3, 5–16, and 18–27 stand rejected under 35 U.S.C. § 101 for being directed to non-statutory subject matter (Final Act. 2–3); and

Claims 1–3, 5–16, and 18–27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Abu el Ata, Wilcock, and Bonabeau (*id.* at 3–13).

ISSUES

Issue 1: Has the Examiner erred in concluding the invention as recited in claims 1–3, 5–16, and 18–27, is directed to non-statutory subject matter?

Issue 2: Has the Examiner shown the combination of Abu el Ata, Wilcock, and Bonabeau teaches or suggests "producing at least one semantic business process map, wherein the at least one semantic business process map is tagged with at least one concept and a frequency of occurrence of the at least one concept occurring within the at least one semantic business process map," as recited in independent claim 1 and as commensurately recited in independent claims 14 and 15?

ANALYSIS

35 U.S.C. § 101: Claims 1–3, 5–16, and 18–27

Section 101 defines patentable subject matter: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title" (35 U.S.C. § 101). The Supreme Court, however, has "long held that this provision contains an important implicit exception" that "'[l]aws of

nature, natural phenomena, and abstract ideas' are not patentable" (*Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70 (2012) (citation omitted)). To determine patentable subject matter, the Supreme Court has set forth a two-part test.

"First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts" of "laws of nature, natural phenomena, and abstract ideas" (*Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014)). "The inquiry often is whether the claims are directed to 'a specific means or method' for improving technology or whether they are simply directed to an abstract end-result" (*RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1326 (Fed. Cir. 2017) (citation omitted)). A court must be cognizant that "all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas" (*Mayo*, 566 U.S. at 71), and "describing the claims at . . . a high level of abstraction and untethered from the language of the claims all but ensures that the exceptions to § 101 swallow the rule" (*Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1337 (Fed. Cir. 2016)). Instead, "the claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject matter" (*Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)).

In the second step, we "consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application" (*Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 566 U.S. at 79, 78)). The Supreme Court has "described step two of this analysis as a search for an 'inventive concept'—*i.e.,* an element or combination of elements that is

'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself'" (*id.* (brackets and citation omitted)). For computer-related technology, the Federal Circuit has held that a claim may pass the second step if "the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer [technology]" (*DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014) (e.g., "a challenge particular to the Internet")).

"Eligibility under 35 U.S.C. § 101 is a question of law, based on underlying facts" (*SAP Am., Inc. v. InvestPic, LLC*, 890 F.3d 1016, 1020 (Fed. Cir. 2018)).

Appellants contend that the "claims are not directed to a fundamental economic practice but are rather directed to techniques for automatically yielding a service oriented architecture model based upon assimilated business process maps and assimilated predetermined quality definitions" (App. Br. 15). The Examiner responds that the "claim(s) is/are directed to the abstract idea of determining an optimal model from among multiple models" (Ans. 3). According to Appellants,

> the current application does not merely determine an optimal model from among multiple models, but rather employs iterative search techniques to arrive at a "service oriented architecture design model satisfying the predetermined quality definitions, via iteration of the at least one initial design model, the iteration being guided by the at least one search heuristic."

(Reply Br. 16). Appellants argue the present claims are distinguishable from prior cases holding claims ineligible under § 101 and instead analogizes to *DDR Holdings*, arguing that the present claims are eligible because they are

"necessarily rooted in computer technology" (App. Br. 19) and "involve[]
re-programming of the computer to permit a system in which quality goals
mapped to a semantic business process map are used to yield a service
oriented architecture design model" (Reply Br. 19).

We are not persuaded of error, however, because neither the claims as
presently written nor the abstract idea that the claims are directed to are as
narrow as Appellants assert. "In addressing the first step of the section 101
inquiry, as applied to a computer-implemented invention, it is often helpful
to ask whether the claims are directed to 'an improvement in the functioning
of a computer,' or merely 'adding conventional computer components to
well-known business practices'" (*Affinity Labs of Texas, LLC v.
Amazon.com Inc.*, 838 F.3d 1266, 1270 (Fed. Cir. 2016) (quoting *Enfish*,
822 F.3d at 1338)). Here, the identified abstract idea of determining an
optimal model from among multiple models (Ans. 3) parallels "generating
tasks [based on] rules . . . to be completed upon the occurrence of an event"
(*Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d
1336, 1344 (Fed. Cir. 2013) (alteration in original)). Further, "with the
exception of generic computer-implemented steps, there is nothing in the
claims themselves that foreclose [the steps] from being performed by a
human, mentally or with pen and paper" (*Intellectual Ventures I LLC v.
Symantec Corp.*, 838 F.3d 1307, 1318 (Fed. Cir. 2016)).

Appellants further argue "there is clearly no risk that the claims will
'tie up' the subject matter of 'determining an optimal model from among
multiple models', or pre-empt others from 'determining an optimal model
from among multiple models'" (App. Br. 16 (citation omitted)). "But we
have consistently held that claims that are otherwise directed to patent-

ineligible subject matter cannot be saved by arguing the absence of complete preemption" (*Return Mail, Inc. v. U.S. Postal Service*, 868 F.3d 1350, 1370 (Fed. Cir. 2017)). "While preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility" (*Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015)). "Where a patent's claims are deemed only to disclose patent ineligible subject matter under the *Mayo* framework, as they are in this case, preemption concerns are fully addressed and made moot" (*id.*).

Appellants contend "the recited claims add specific limitations other than what is well-understood, routine and conventional in the field [and i]n particular, [that the Examiner] has mischaracterized the field, as evidenced by the art-based rejections" (App. Br. 19–20). Appellants argue the present claims "are not conventional steps in this field, and [Appellants'] claims are confined to a particular useful application, thus meeting the requirement of adding 'significantly more' to any alleged abstract idea" (*id.* at 20).

The Examiner responds that "[t]he limitations of searching among SOA design based on search constraint and automatically yielding a SOA model satisfying the predetermined quality definitions is similar to comparing new and stored information and using rules to identify options, and therefore an abstract idea" (Ans. 4). According to Appellants, "the present claims specifically recite additional, novel, and non-obvious functionality that improves the operation of the computer itself in connection with automatically yielding a service oriented architecture design model" and therefore, they cannot be said to be well-understood, routine, and conventional (Reply Br. 21).

7

2016-003140

Step two of the *Alice/Mayo* framework, however, is not an evaluation of novelty or non-obviousness, and instead requires that the inventive concept be significantly more than the abstract idea itself (*Alice*, 134 S. Ct. at 2355). Thus, "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)). A novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent-ineligible (*see Mayo*, 132 S. Ct. at 1304).

Moreover, "[t]he Supreme Court and [the Federal Circuit] have repeatedly made clear that merely limiting the field of use of the abstract idea to a particular existing technological environment does not render the claims any less abstract" (*Affinity Labs of Texas, LLC v. DirecTV, LLC*, 838 F.3d 1253, 1259 (Fed. Cir. 2016)). As discussed above, here the invention as recited parallels the abstract idea identified in *Accenture*, limited to a service oriented architecture design context.

The claims recite a processor, i.e., a generic computer component. Appellants have not directed our attention to anything in the Specification that shows any specialized computer hardware is required (e.g., Spec. ¶ 17 ("[e]xamples of well-known computing systems, environments, and/or configurations that may be suitable for use with computer system/server 12 include"); ¶ 25 ("the processes, arrangements and products . . . can be carried out on or in accordance with essentially any suitable computer system or set of computer systems"); ¶ 25 ("most if not all of the process steps, components and outputs . . . can be performed or utilized by way of a

processing unit or units")). In addition, other than being implemented on a generic "processor," Appellants have not explained sufficiently why the claims could not be performed mentally.

Appellants contend "[t]here is no evidence of long and prevalent use in the economy of [Appellants'] specially claimed system and method. Indeed, the present systems are necessarily computerized" (Reply Br. 22). We are not persuaded. "[T]he fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter" (*Bancorp Servs., L.L.C. v. Sun Life Assurance Co.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012); *see also FairWarning, IP, LLC v. Iatric Sys.*, Inc., 839 F.3d 1089, 1098 (Fed. Cir. 2016) ("the inability for the human mind to perform each claim step does not alone confer patentability")). Contrary to Appellants' argument, neither the problem nor the solution here are rooted in computer technology. Appellants' Specification does not describe any new or unique computer hardware or software, and the law is clear that simply programming a computer to perform what would otherwise be an abstract idea or mental process is not sufficient to impart patent eligibility (*see Alice*, 134 S. Ct. at 2359).

Accordingly, we sustain the Examiner's rejection under § 101 of claim 1, and claims 2, 3, 5–16, and 18–27, which Appellants do not argue separately.[2] *See* App. Br. 14–24; 37 C.F.R. § 41.37(c)(1)(iv).

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[2] With respect to claim 15 being amended to recite "non-transitory" (App. Br. 24–25), the Examiner does not maintain this portion of the rejection under 35 U.S.C. § 101, on appeal (Ans. 6). We therefore do not address it here.

35 U.S.C. § 103: Claims 1–3, 5–16, and 18–27

Claim 1 recites "producing at least one semantic business process map, wherein the at least one semantic business process map is tagged with at least one concept and a frequency of occurrence of the at least one concept occurring within the at least one semantic business process map." Independent claims 14 and 15 recite commensurate limitations.

Appellants contend that Wilcock fails to disclose "wherein the at least one semantic business process map is tagged with at least one concept and a frequency of occurrence of the at least one concept occurring within the at least one semantic business process map" (App. Br. 26). The Examiner relies on Wilcock for teaching or suggesting this limitation. Final Act. 5–6. Wilcock teaches "[a] service model state manager is arranged to cause the service model to be developed to another of its states of development according to the transition model" (Wilcock ¶ 12). In particular, Wilcock discloses:

> [Change Requests (CRs)] can read and write the [Service Lifecycle Model (SLM)], analyse the model, and cause actions in the real world. In particular, CRs create and modify the [System Template Model (STM)] and SM, and carry out deployment operations. The action performed by the CRs can be parameterised by information held in the invocation entry for the CRs in the [Model State Transition (MST)]. A typical invocation pattern for a CR is that a parameter refers to a supplemental model containing a declarative description of a set of changes to be applied to the SLM. For example, the Infrastructure Design Template Model is a supplemental model that describes the System Template Model. In addition to the parameters passed from the MST, the action of the CR can be modified by the current state of the information in the SLM. In particular CRs can read and write information as key-value pairs in the State Information store, which acts as a convenient

10

> shared store to pass the results of decisions and actions from one step to the next. The MST behaviour model is structured into semantically meaningful collections of related processing steps (CRs). The MST defines a set of lifecycle states for the service and allowed transitions between those states. The MST also defines the sequence of parameterised CR invocations to transition the lifecycle of the service between each of the defined states. Preconditions can be specified on transitions between states the transition is only allowed if the preconditions are met. Management of the service lifecycle is presented as requests to transition the SLM to a desired state

(Wilcock ¶ 150). Thus, Wilcock discloses writing an SLM, updating it with CRs, and comparing it to the MST, which teaches producing at least one semantic business process map.

The Examiner relies on paragraphs 53, 85–87, and 174 of Wilcock to teach "tagged with . . . a frequency of occurrence of the at least one concept occurring within the at least one semantic business process map" (Ans. 6–7). The Examiner explains that "[p]erformance could include the total and concurrent number of users to be supported (i.e. a frequency of occurrence for business model)" (Ans. 7). However, we find that the claim requires "frequency" to specifically relate to a count "of the at least one concept," and that paragraphs 53, 85–87, 150, and 174 fail to teach a "frequency" as required. Thus, the Examiner has not shown that Wilcock teaches or suggests "tagged with . . . a frequency of occurrence of the at least one concept occurring within the at least one semantic business process map" as recited in claim 1.

Accordingly, we cannot sustain the Examiner's rejections under § 103 of independent claims 1, 14, and 15, and their dependent claims 2, 3, 5–13, 16, and 18–27.

Because we agree with at least one of the arguments advanced by Appellants, we need not reach the merits of Appellants' other arguments. It follows that Appellants have shown that the Examiner erred in finding that the combined teachings of Abu el Ata, Wilcock, and Bonabeau render claims 1–3, 5–16, and 18–27 unpatentable.

DECISION

For the reasons above, we affirm the Examiner's decision rejecting claims 1–3, 5–16, and 18–27 under § 101,[3] but we reverse the Examiner's decision rejecting claims 1–3, 5–16, and 18–27 under § 103.

Because we affirm at least one rejection for every appealed claim, we designate this Decision an affirmance.

TIME TO RESPOND

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

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[3] In the event that prosecution is continued, the Examiner may wish to consider claims 5 and 18 under 35 U.S.C. § 112, fourth paragraph, due to those claims depending from canceled claims.