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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KATRINA SIMON[1]

Appeal 2017-009569
Application 13/720,457
Technology Center 3600

Before CARL W. WHITEHEAD JR., JASON V. MORGAN, and AARON W. MOORE, *Administrative Patent Judges*.

MORGAN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Introduction

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–10, 16, and 18–27. Claims 11–15 and 17 are canceled. Appeal Br. 32–33. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] Appellant identifies SOFTWARE AG as the real party in interest. Appeal Br. 3.

Summary of the disclosure

The Specification discloses the analysis of "functions of a business process model for possible exposure as service capabilities in a service-oriented business process system." Abstract.

Representative claims (*key limitations emphasized*)

1. A method of analyzing functions of a business process model for possible exposure as service capabilities in a service-oriented business process system, the method comprising:

receiving a business process model defined by a plurality of objects, each said object having metadata attributes associated therewith;

programmatically obtaining, by using at least one hardware processor, *design time business process analysis intelligence for each one of the plurality of objects that are part of the business process model*;

programmatically obtaining, by using at least one hardware processor, *run time process performance intelligence for each one of the plurality of objects that are part of the business process model*;

storing, for at least those objects in the model that correspond to process functions, indicators corresponding to the gathered design time intelligence, the gathered run time intelligence, and the metadata attributes;

calculating, via at least one processor of the service-oriented business process system, a total service eligibility value for each process function in the model based on the corresponding stored indicators of the gathered design time intelligence, the gathered run time intelligence, and the metadata attributes; and

exposing a given process function as a service capability if the total service eligibility value for that process function exceeds a predetermined threshold value,

wherein the indicators include process indicators, data indicators, organizational indicators, and goal and event indicators, and

wherein each total service eligibility value is a weighted combination of the associated indicators.

6. The method of claim 1, further comprising:

gathering the design time business process analysis intelligence via scripted macros or reports; and

gathering the run time process performance intelligence via an interface to a process monitoring tool.

21. The method of claim 1, further comprising:

gathering the design time business process analysis intelligence via scripted macros or reports;

gathering the run time process performance intelligence via an interface to a process monitoring tool;

generating a first graphical display of a representation of at least a portion of the business process model, the portion including a plurality of the objects in the business process model;

in response to a user request, generating a second graphical display including metadata attributes of a user-selected object in the business process model, wherein indicators corresponding to gathered business process analysis intelligence and/or gathered process performance intelligence for the user-selected object are included in the second graphical display, together with the metadata attributes, in a matrix format;

receiving a request for a service from a user; and

generating, as a result of the request for the service, a third display including at least one service candidate.

The Examiner's rejections and cited references

The Examiner rejects claims 1–10, 16, and 18–27 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. Final Act. 7–10.

The Examiner rejects claims 1–10, 16, and 18–20 under 35 U.S.C. § 103(a) as being unpatentable over Allam et al. (US 2011/0191745 A1; published Aug. 4, 2011) ("Allam") and McGuire et al. (US 2010/0251264 A1; published Sept. 30, 2010) ("McGuire"). Final Act. 10–23.

The Examiner rejects claims 21–26 under 35 U.S.C. § 103(a) as being unpatentable over Allam, McGuire, and Lakhotia et al. (US 2007/0061283 A1; published Mar. 15, 2007) ("Lakhotia"). Final Act. 24–30.

35 U.S.C. § 101

Principles of law

To be statutorily patentable, the subject matter of an invention must be a "new and useful process, machine, manufacture, or composition of matter, or [a] new and useful improvement thereof." 35 U.S.C. § 101. There are implicit exceptions to the categories of patentable subject matter identified in § 101, including: (1) laws of nature; (2) natural phenomena; and (3) abstract ideas. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). The Supreme Court has set forth a framework for distinguishing patents with claims directed to these implicit exceptions "from those that claim patent-eligible applications of those concepts." *Id.* at 217 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012)). The evaluation follows a two-part analysis: (1) determine whether the claim is *directed to* a patent-ineligible concept, e.g., an abstract idea; and (2) if so, then determine whether any element, or combination of elements, in the

claim is sufficient to ensure that the claim amounts to *significantly more* than the patent-ineligible concept itself. *See id.* at 217–18.

"[A]ll 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. We "'must be careful to avoid oversimplifying the claims' by looking at them generally and failing to account for the specific requirements of the claims." *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016) (quoting *In re TLI Commc'ns LLC Pat. Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016)).

The U.S. Patent and Trademark Office (USPTO) recently published revised guidance on the application of the two-part analysis. USPTO, *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (January 7, 2019) ("Memorandum"). Under that 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) (*see id.* at 54 (step 2A, prong one)); and
>
> (2) additional elements that integrate the judicial exception into a practical application (*see id.* at 54–55 (step 2A, prong two); MPEP §§ 2106.05(a)–(c), (e)–(h)).

See Memorandum, 84 Fed. Reg. at 52–55.

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 Memorandum, 84 Fed. Reg. at 56.

Memorandum step 2A, prong one

In rejecting claim 1, the Examiner finds the claims recite "mathematical relationships/formulas" (i.e., mathematical concepts). Final Act. 8. Appellant acknowledges this characterization of the claim recitations. Appeal Br. 12. Appellant does not, however, dispute the Examiner's determination with particularity or persuasiveness.

Appellant "respectfully disagrees" with the Examiner's characterization of the claim 1 recitations (*id.*), but does not address with particularity whether claim 1 recites *mathematical concepts* (*id.* at 13–15). The closest Appellant comes to contesting the Examiner's characterization of claim 1 as reciting mathematical concepts is to argue that claim 1 is distinguishable from the patent-ineligible subject matter in *Digitech*[2]—"a process of organizing information through mathematical correlations" (*Digitech*, 758 F.3d at 1350)—because "[n]one of the claims in Digitech, unlike the instant case, related to how that data was analyzed or processed" (Reply Br. 5). Appellant's argument, however, falls short of actually disputing that claim 1 recites mathematical concepts.

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[2] *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1349 (Fed. Cir. 2014).

Furthermore, a broad but reasonable interpretation of *calculating, via at least one processor of the service-oriented business process system, a total service eligibility value for each process function in the model based on the corresponding stored indicators of the gathered design time intelligence, the gathered run time intelligence, and the metadata attributes*, when read in light of the Specification, encompasses mathematical concepts. Specifically, the *calculating* recitation encompasses use of the following formula for determining "the eligibility of a function to be exposed as a service capability" (Spec. ¶ 73):

$$ServiceEligibility(F_i)= BusinessRelevance(F_i)[Reuse(F_i,t)-DataCoupling(F_i)+DataCohesion(F_i)+ Outttasking(F_i)+Visibility(F_i)-maxOrgOcc(F_i)-maxAppOcc(F_i)]$$

Spec. ¶ 72 (cited in Appeal Br. 4).

Because the *calculating* recitation encompasses a mathematical formula, we agree with the Examiner's determination that claim 1 recites mathematical concepts, and, thus, that claim 1 recites an abstract idea. *See* Memorandum, 84 Fed. Reg. at 52.

Memorandum step 2A, prong two

The Examiner determines that additional recitations of claim 1 represent "details directed to gathering and evaluating data." Final Act. 8; *see also* Ans. 26–28, 31. Appellant contends the Examiner over-generalizes the recitations. *See* Appeal Br. 15. In particular, Appellant argues that, like the claimed invention of *McRO*, claim 1 sets "forth specific technical features that improve upon an existing technical process of determining what functions are to be exposed as a service candidate (e.g., similar for determining how *McRO* determined how facial expresses were to be animated using rules)." Appeal Br. 16–17; *see also* Reply Br. 2–4.

Appellant's arguments are unpersuasive because the purported improvement of "determining what functions are to be exposed as a service candidate" (Final Act. 8) is only found in the recitation of (1) *exposing a given process function as a service capability* (2) *if the total service eligibility value for that process function exceeds a predetermined threshold value*. Part one of the recitation represents a conditional step that is not performed in the scenario of the total service eligibility value for the process function being less than or equal to (i.e., *not* exceeding) the predetermined threshold value. *See Ex parte Schulhauser*, Appeal No. 2013-007847, 2016 WL 6277792, at *5 (PTAB 2016) (precedential) (the broadest reasonable interpretation of a claim to a method excludes conditional steps that need not be performed). Moreover, although part two of the recitation describes the condition in which the first part is performed, no steps for testing for the condition are recited. Because the purported improvement of "determining what functions are to be exposed as a service candidate" (Final Act. 8) is based on a conditional recitation, it need not be considered in ascertaining whether claim 1 is directed to patent-eligible subject matter (*cf. Mentor Graphics Corp. v. EVE-USA, Inc.*, 851 F.3d 1275, 1295 (Fed. Cir. 2017) (citing MPEP § 2106 (9th ed. Mar. 2014)) ("a claim [that] covers 'both statutory and non-statutory embodiments,' . . . is not eligible for patenting")).

Without the conditional step, the remaining recitations—aside from the *calculating* recitation—generally recite steps for *receiving a business process model*, *programmatically obtaining design business process*, *programmatically obtaining run time process performance intelligence*, and *storing indicators*. In accordance with the Examiner's determinations, these

recitations represent data gathering (e.g., receiving, obtaining, or storing) steps that fail to make claim 1 patent-eligible. *See* Final Act. 8.

For these reasons, the additional recitations of claim 1 do not integrate the recited mathematical concepts into a practical application. Therefore, claim 1 is directed to mathematical concepts, and thus to an abstract idea. *See* Memorandum, 84 Fed. Reg. at 54–55.

Memorandum step 2B

The Examiner determines that the additional elements of claim 1 do not make claim 1 significantly more than the underlying abstract idea because claim 1 does not:

> (1) include improvements to another technology or technical field; (2) include improvements to the functioning of a claimed computer itself; (3) apply the judicial exception with, or by use of, a particular machine; (4) effect a transformation or reduction of a particular article to a different state or thing; (5) add a specific limitation other than what is well-understood, routine and conventional in the field, or add unconventional steps that confine the claims to a particular useful application; or (6) present other meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment.

Final Act. 10.

Appellant contends the Examiner erred by failing to consider:

> 1) the programmatic acquisition of design time data; 2) the programmatic acquisition of run time data; 3) the fact that the run and design time area are with respect to the same object(s) of the business process model; and 4) the determination of whether or not to expose a given process function based on these different pieces of data.

Appeal Br. 19.

With respect to contentions 1) and 2), the Specification does not disclose or define "programmatically obtaining" (i.e., programmatic acquisition) of data (whether design time or run time) in any detail beyond simple labeled boxes (*see* Spec. Figs. 6, 9) and simple descriptions such as "business process analysis" and business or process "performance intelligence" (*id.* ¶¶ 88, 95). *See also* Appeal Br. 4. Such high-level descriptions in support of the "programmatically obtaining" recitations serve as evidence that these recitations relate to processes that an artisan of ordinary skill would have considered to be well understood, routine, and conventional. If the inventor had believed these processes were not well understood, routine, and conventional, then the inventor would have likely provided more details to ensure that the Specification's description both enabled and provided proper written description support for these recitations.

With respect to contention 3) ("the fact that the run and design time area are with respect to the same object(s) of the business process model"), we agree with the Examiner's determinations that "the fact that the gathered data is 'design time' data and 'run time' data refers only to the content of the gathered data" and that the business process model being "defined by a plurality of objects (each object having associated metadata attributes) . . . amounts to generic data structures." Ans. 28.

Finally, with respect to contention 4) ("the determination of whether or not to expose a given process function based on these different pieces of data"), we note that, as discussed above, claim 1 does not recite testing for the conditional step's condition.

Furthermore, the additional recitations such as a "hardware processor" are, at best, disclosed in broad, generic terms. *See, e.g.*, Spec. ¶ 96.

For these reasons, we agree with the Examiner that the additional recitations of claim 1 do not make claim 1 significantly more than the underlying abstract idea. *See* Final Act. 10. Accordingly, we sustain the Examiner's 35 U.S.C. § 101 rejection of claim 1, and claims 2–10, 16, and 18–26, which Appellant does not argue separately.

Claim 27

Appellant argues that "[d]ependent claim 27 sets forth additional specific features related to the process for determining which process functions are to be exposed as a service capability." Appeal Br. 21. Specifically, Appellant reproduces the claim language of claim 27 and contends the recitations represent "additional features [that] further ensure that the claimed subject matter is not a mere 'drafting effort' designed to monopolize the alleged abstract idea." *Id.* The Examiner, however, correctly determines that the limitations of claim 27 merely "further define the details of the abstract ideas." Ans. 32.

Specifically, claim 27 describes elements of the formula found in paragraph 72 of the Specification (discussed above), as detailed in the annotated recitations below:

> obtaining a first value [$Reuse(F_i,t)+DataCohesion(F_i)+Outttasking(F_i)+Visibility(F_i)$] that is based on the expected reusability of the function over a predefined time period [$Reuse(F_i,t)$], the data cohesion of the function [$DataCohesion(F_i)$], or out-tasking [$Outttasking(F_i)$] and visibility [$Visibility(F_i)$] variables respectively indicating the extent to which execution of the function can be out-tasked to stakeholders and can be made visible to stakeholders, and

> obtaining a second value [$Reuse(F_i,t)-DataCoupling(F_i)+DataCohesion(F_i)+Outttasking(F_i)+Visibility(F_i)-maxOrgOcc(F_i)-maxAppOcc(F_i)$] by using: 1) the first value, and 2) a degree of data coupling for the function [$DataCoupling(F_i)$], a maximum number of organizational units involved in the function [$maxOrgOcc(F_i)$], or a maximum number of application systems involved in the function [$maxAppOcc(F_i)$],
>
> wherein calculation of the total service eligibility value for the function [$ServiceEligibility(F_i)$] is based on a combination [(i.e., multiplying)] of the obtained second value and a predefined relevance value for the function [$BusinessRelevance(F_i)$].

Claim 27; Spec. ¶ 72 (cited in Appeal Br. 8–9).

Merely describing parts of a formula is insufficient to transform the mathematical concepts embodied therein into a patent-eligible non-abstract invention.

Accordingly, we sustain the Examiner's 35 U.S.C. § 101 rejection of claim 27.

35 U.S.C. § 103(a)

Claims 1–5, 7–10, 16, and 18–21

In rejecting claim 1 as obvious, the Examiner finds that McGuire's management and monitoring of a business process—which includes design time introspection and runtime listening to business object state changes—teaches or suggests: (1) *programmatically obtaining design time business process analysis intelligence for each one of the plurality of objects that are part of the business process model* and (2) *programmatically obtaining run time process performance intelligence for each one of the plurality of objects that are part of the business process model*. Final Act. 15 (citing McGuire, Abstract, ¶¶ 11, 27–29, 49, 53–58).

Appellant acknowledges that McGuire mentions design-time and run-time processes. Appeal Br. 23. Appellant contends, however, that McGuire merely discusses "performing certain processes during design-time and others during run-time." *Id.*

With respect to the *design-time* recitation, Appellant argues that McGuire "simply determines possible state changes for a specific object type, but does not programmatically obtain design time data for '*each one of the plurality of objects*' that are part of the process model." *Id.* at 24. The Examiner, however, finds that McGuire teaches collection of *all aspects of the business process*, and thus implies that "design-time data and run-time data for each of the objects are ultimately gathered." Ans. 33; *see also, e.g.*, McGuire ¶ 55 (available object types may be listed). Appellant does not dispute this finding, which we find reasonable.

With respect to the *run-time* recitation, Appellant argues that in listening for events, McGuire merely suggests monitoring "that the program is operating as it normally would – not that any 'run time process ***performance***' data is being obtained (e.g., such as the execution time for the process)." Appeal Br. 24; *see also* Reply Br. 6. We agree with the Examiner, however, that McGuire's monitoring that objects are operating represents the tracking of their performance. Ans. 34. We can find nothing in claim 1 or in the Specification limiting or defining the claimed "performance intelligence" to be as narrow as "execution time for the process."

Appellant further argues that "McGuire also fails to provide any teaching or suggestion that links the use of the programmatically obtained design time and run time process performance data regarding the objects of the process model to the determination of what functions are to be exposed

as service candidates." Appeal Br. 24. As discussed above as part of the analysis of the Examiner's 35 U.S.C. § 101 rejection of claim 1, however, claim 1 does not recite *testing* for the conditional step's condition.

Appellant also argues that McGuire does not use run time process performance intelligence "in the calculation of a total service eligibility value in the manner claimed," and that "McGuire's discussion of listening for state changes would [not] have been of any use to Allam's service litmus test." Reply Br. 7. Appellant's arguments are untimely, however, and will not be considered. 37 C.F.R. § 41.41(b)(2).

Accordingly, we sustain the Examiner's 35 U.S.C. § 103(a) rejection of claim 1, and claims 2–5, 7–10, 16, and 18–21, which Appellant does not argue separately with respect to this rejection.

Claims 6

In rejecting claim 6 as obvious, the Examiner finds that McGuire's management and monitoring of a business process also teaches or suggests the particular *gathering of design time business process analysis intelligence and run time process performance intelligence* recited. Final Act. 19 (citing McGuire, Abstract, ¶¶ 11, 13, 27–29, 34, 49, 53–58).

Appellant contends the Examiner erred in relying on the same disclosures of McGuire "for the two *separate* features set forth in dependent claim 6." Appeal Br. 26. We do not agree. The cited eleven paragraphs (plus the Abstract) relate to *both* design-time introspection and runtime listening to business object state changes. *See, e.g.*, McGuire ¶ 11. The Examiner did not err in relying on these portions of McGuire for all that they teach and suggest.

Appellant further contends the Examiner erred because the document data in McGuire "is data that is used by the executing process – not data that is *about* that process" and that "McGuire does not contain any disclosure of using reports or scripted macros to gather design time data." Appeal Br. 27. Appellant does not, however, persuasively rebut the Examiner's finding that "[a]ny monitoring, notification, or presentation of the data is a report of the data." Ans. 35. Therefore, we agree with the Examiner that McGuire's communications of data gathered regarding business objects teaches or suggests the disputed recitations of claim 6.

Accordingly, we sustain the Examiner's 35 U.S.C. § 103(a) rejection of claim 6.

Claims 21

Appellant contends claim 21 is patentable for similar reasons to those given with respect to claim 6. *See* Appeal Br. 28. For similar reasons to those discussed above, we do not find Appellant's arguments persuasive.

Appellant further contends the Examiner erred in rejecting claim 21 by not giving patentable weight to the features of *generating a first graphical display* and, *in response to a user request, generating a second graphical display*. *Id.* The Examiner, however, does not rely solely on the claim features being non-functional descriptive material, but instead presents findings based on the combined teachings of Allam and Lakhotia to teach or suggest modifying McGuire to include the disputed recitations. *See* Final Act. 27–28 (citing Allam, Abstract, Figs. 6, 7; Lakhotia Fig. 4, ¶¶ 36–54). That is, the Examiner's interpretation of the disputed recitations as being non-functional descriptive material forms an *alternative*, non-dispositive basis for rejection rather than the sole basis for rejection. Because, as

detailed below, we agree with the Examiner's findings and conclusions based on the prior art teachings and suggestions, we do not address further whether and to what extent claim 21 recites non-functional descriptive material.

Appellant argues that Allam merely displays service litmus tests for services with "no discussion of displaying the design-time and run-time performance data for a given object of a process model that has been selected." *Id.* at 29. The Examiner, however, relies on McGuire, not Allam, to teach or suggest the design-time and run-time content. *See* Final Act. 25–26; Ans. 36. Appellant's argument attacking Allam individually rather than in combination with McGuire and Lakhotia, is not responsive to the Examiner's rejection and is, therefore, unpersuasive.

Accordingly, we sustain the Examiner's 35 U.S.C. § 103(a) rejection of claim 21, and claims 22–26, which Appellant does not argue separately with respect to this rejection.

DECISION

We affirm the Examiner's decision rejecting claims 1–10, 16, and 18–27 under 35 U.S.C. § 101.

We affirm the Examiner's decision rejecting claims 1–10, 16, and 18–26 under 35 U.S.C. § 103(a).

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