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colabella@bmtpatent.com

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* MARTIN KAUFMANN, NORMAN MAY,  
and DONALD KOSSMAN

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Appeal 2016-003426  
Application 13/656,193<sup>1</sup>  
Technology Center 3600

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Before DEBRA K. STEPHENS, JOSEPH P. LENTIVECH, and DAVID J. CUTITTA II, *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 1–20, which are all of the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

*Technology*

The application relates to “methods and systems for modeling and executing a benchmark” (Spec. ¶ 1).

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<sup>1</sup> Appellants state the real party in interest is SAP SE (App. Br. 2).

*Illustrative Claim*

Claim 1 is illustrative and reproduced below with certain limitations at issue emphasized:

1. A method comprising:

*defining a plurality of benchmark component types, each of the benchmark component types representing a meta model defining a data model benchmark;*

generating one or more instances of the plurality of benchmark component types;

defining parameters associated with the plurality of benchmark component types;

*combining one or more of the generated instances of the plurality of benchmark component types and the defined parameters associated with the plurality of the benchmark component types to form respective one or more benchmarks;*  
and

executing at least one of the respective one or more benchmarks to evaluate a database instance.

*Rejections*

Claims 1–20 stand rejected under 35 U.S.C. § 101 as being directed to ineligible subject matter (Final Act. 5–6).

Claims 1–20 stand rejected under 35 U.S.C. § 102(b) as anticipated by Bromberg et al. (U.S. Patent 5,819,066) (Final Act. 6–22).

ISSUES

1. Did the Examiner err in concluding claims 1–20 are directed to ineligible subject matter under § 101?

2. Did the Examiner err in finding Bromberg teaches or suggests “defining a plurality of benchmark component types, each of the benchmark component types representing a meta model defining a data model

benchmark” and “combining one or more of the generated instances of the plurality of benchmark component types and the defined parameters associated with the plurality of benchmark component types to form respective one or more benchmarks,” as recited in independent claim 1 and commensurately recited in independent claims 9 and 16?

#### ANALYSIS

##### *35 U.S.C. § 101*

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) (quotation 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)). 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)).

The Federal Circuit has identified several abstract ideas related to database technology that are similar to the instant claimed invention. Specifically, the Federal Circuit stated “not every claim that recites concrete, tangible components escapes the reach of the abstract-idea inquiry,” including a finding that “claims reciting an ‘interface,’ ‘network,’ and a ‘database’ are nevertheless directed to an abstract idea” (*In re TLI Commc’n LLC Patent Litigation*, 823 F.3d 607, 611 (Fed. Cir. 2016) (citing *Mortg. Grader, Inc. v. First Choice Loan Serv. Inc.*, 811 F.3d 1314, 1324–25 (Fed. Cir. 2016))). The Federal Circuit found the activity of “organizing and accessing records through the creation of an index-searchable database, includes longstanding conduct that existed well before the advent of computers and the Internet” (*Intellectual Ventures I v. Erie Indem. Co.*, 850 F.3d 1315, 1327). The Federal Circuit has also held, with respect to searching databases, that “merely selecting information, by content or source, for collection, analysis, and display does nothing significant to differentiate a process from ordinary mental processes, whose implicit exclusion from § 101 undergirds the information-based category of abstract ideas” (*Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016)).

In contrast, the Federal Circuit has found claims that “are not simply directed to *any* form of storing tabular data, but instead are specifically directed to a *self-referential* table for a computer database” are “directed to an improvement of an existing technology . . . achiev[ing] other benefits over conventional databases, such as increased flexibility, faster search times, and smaller memory requirements” (*Enfish*, at 1337 (citations omitted)). However, to recite such an improvement, the claimed invention must be focused on the database itself, and *how* the database is altered “in a way that leads to an improvement in the technology of computer databases” (*Intellectual Ventures I v. Erie Indem. Co.*, at 1328 (citing *Enfish*); see also *TLI Commc’n*, at 612).

In the second step of the *Alice* analysis, the Supreme Court has indicated we must “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 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.* (quotation 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”)).

More specifically, the Federal Circuit has provided guidance clarifying when claims reciting abstract ideas related to database technology do not amount to significantly more than the judicial exception. The Federal Circuit held the abstract idea of classifying and storing digital images in an organized manner was not significantly more than an abstract idea because “the recited physical components behave exactly as expected according to their ordinary use” and the claimed invention “fails to provide the requisite details necessary to carry out th[e] idea” (*TLI Commc’n*, at 615). Moreover, the Federal Circuit held the idea of creating an index, and using that index to search for and retrieve data was not significantly more than the abstract idea because “while the claims necessarily cabin the idea of categorical data search and retrieval to a computer environment, the claimed computer functionality can only be described as generic or conventional” (*Intellectual Ventures I v. Erie Indem. Co.*, at 1329).

In contrast, the Federal Circuit held claims directed to database technologies recite significantly more than the abstract idea “when the claim limitations. . . considered individually and as an ordered combination, . . . recited an invention that is not merely the ‘routine and conventional use’ of technology” (*Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1301–02 (Fed. Cir. 2016) (citing *DDR Holdings and BASCOM Global Internet Serv., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016))). Additionally, the Federal Circuit held the ordered combination of the claimed invention recited an inventive concept because “the distributed, remote enhancement that *produced an unconventional result*—reduced dataflows and the possibility of smaller databases,” which represented “a technical improvement over prior art technologies and served to improve the

performance of the system itself” (*Amdocs* at 1302 (emphasis added); *see also BASCOM* at 1352 (“an inventive concept can be found in the ordered combination of claim limitations that transform the abstract idea of filtering content into a particular, practical application”)).

“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)).

Here, for the first step, Appellants argue the Examiner “has not met the burden of establishing a *prima facie* case that claims 1–20 are directed to non-statutory subject matter” (App. Br. 5). Further, Appellants argue the Examiner “fails to provide any concrete evidence on the record in support of th[e] rejection” (*id.*). The Examiner responds that the “Examiner reiterates that the claims are drawn to a patent-ineligible abstract idea [and are] merely requiring generic computer implementation” (Ans. 2). The Examiner relies on the claim being “drawn to an abstract idea of databased benchmarking,” (*id.*) and specifically, “an idea of itself” similar to “organizing information through mathematical correlations” (*id.* at 3; *see also* Final Act. 3, 5–6).

The Federal Circuit treats “analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, as essentially mental processes within the abstract-idea category” (*Elec. Power Grp.*, 830 F.3d at 1355). We agree with the Examiner that “with 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” (*Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1318 (Fed. Cir. 2016)). In *Intellectual Ventures I v. Symantec Corp.*, the Federal Circuit held the claimed filtering of email was

the same abstract idea as the “long-prevalent practice for people receiving paper mail to look at an envelope and discard certain letters, without opening them, from sources from which they did not wish to receive mail based on characteristics of the mail” (*id.* at 1314). Moreover, “[t]he list of relevant characteristics could be kept in a person’s head” (*id.*) The same is true here where a human may mentally keep track of different benchmark characteristics to evaluate a database instance (*see* Ans. 4). For example, if an ordinarily skilled artisan wrote down definitions of benchmark component types and their associated parameters (i.e., the defining steps as in independent claim 1 and as commensurately recited in independent claims 9 and 16) and, used those definitions, in combination, to write one or more instances of the benchmark component types (i.e., the generating and combining steps in claim 1 and commensurately recited steps in claims 9 and 16), then the ordinarily skilled artisan would be able to execute at least one of the benchmarks to evaluate a database instance (i.e., the executing step in claim 1 and similarly recited steps in claims 9 and 16) (*see also* Ans. 4 “Examiner submits that...the invention as a whole can be done by a human mentally or by pen and paper”).

For the second step, Appellants argue that the claims recite significantly more because “the claimed system and process does not tie up all applications for ‘database benchmarking’ such that others cannot practice them” (App. Br. 9). However, we agree with the Examiner (Ans. 2) that “[w]hile 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 argue that the claims are significantly more than an abstract idea because the system and process is “necessarily rooted in database technology[,] and solves the technological problem of evaluating database performance” (App. Br. 7–8). But as discussed above, we agree with the Examiner that other than a generic “computer system,” Appellants fail to demonstrate that “the argued limitation cannot be performed mentally by a human being” (Ans. 2–4) and, we are unpersuaded, therefore, that the claims are necessarily rooted in computer technology. Further, Appellants do not persuasively show that the claim limitations, when considered individually and as an ordered combination, produce an unconventional result or recite more than the routine and conventional use of technology (*Amdocs*, 841 F.3d at 1301–02).

Accordingly, we sustain the Examiner’s rejection under § 101 of independent claims 1, 9, and 16 and dependent claims 2–8, 10–15, and 17–20, which Appellants do not argue separately (*see* App. Br. 4–9; 37 C.F.R. § 41.37(c)(1)(iv)).

*35 U.S.C. § 102(b)*

Appellants contend Bromberg fails to disclose  
defining a plurality of benchmark component types, each of the  
benchmark component types representing a meta model  
defining a data model benchmark and  
  
combining one or more of the generated instances of the  
plurality of benchmark component types and the defined  
parameters associated with the plurality of benchmark  
component types to form respective one or more benchmarks,

as recited in independent claim 1 and commensurately recited in independent claims 9 and 16. More specifically, Appellants contend “Bromberg merely describes customizing a benchmark test,” but does not disclose the disputed limitation (App. Br. 10). According to Appellants, the Examiner has not provided evidence “that [Bromberg’s] driver program 78 and/or processes 56, 58, 60 are ‘instances of the plurality of benchmark component types,’” (*id.* at 11). Appellants additionally contend Bromberg fails to describe “both a plurality of benchmark component types each representing a meta model defining a data model benchmark, **and** instances of the plurality of benchmark component types” (App. Br. 11–12 (underlining omitted)).

The words of a claim are given their “plain meaning” unless that meaning is inconsistent with the specification (*see In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989); *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1372 (Fed. Cir. 2004)). The presumptive plain meaning may be rebutted by Appellants by setting forth an alternate definition in the specification (*In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997)).

Here, in Appellants’ Specification, benchmark component types are defined as “a meta model that represents concept(s) of the benchmark” (Spec. ¶ 14). The Specification further describes benchmark component types as including numerous different embodiments, including at least “an artifact type” and “a ‘meta-model’ level” that “each define or specify a type of component comprising the benchmark of data model 100” (*id.*). Benchmark components may be “parameterized, stored, and reused” (*id.*).

Appellants’ Specification further describes that the benchmark component types “will each comprise a meta model” which may include one

or more of: “a data definition model 110, a DDL (Data Definition Language) tuning meta model 115, a data generator meta model 120, a database server meta model 125, and a query set meta model 130” (*id.* ¶ 15). Appellants’ Specification then describes that “benchmark component type *data definition* 110 may provide abstract information regarding the schema definition of workload data for individual benchmarks” (*id.* ¶ 16). “[D]ata definition 110 may describe aspects such as the tables, columns, *data types*, and *constraints* of the data model” (*id.* (emphasis added)). The Specification further describes “benchmark component type DDL tuning 115 may be provided to further define or tune the (basic) data model specified by benchmark component type data definition 110” (*id.* ¶ 17). “[B]enchmark component type data generator 120 may define a custom data generator that *establishes specific requirements*” (*id.* ¶ 21 (emphasis added)). The Specification continues “parameters may be defined or specified at the abstraction level of the meta models 105. That is, parameters may be defined when the benchmark component type(s) or artifact type(s) are defined” (*id.* ¶ 24).

Bromberg relates to “database administration, and more particularly to a benchmarking application and method for measuring the performance of a database server” (Bromberg 1:5–8). In particular, Bromberg discloses:

benchmarking application 2 may be customized to suit the requirements of database environment 4 or a particular benchmark test using one or more customizing components 80. Customizing components 80 may operate in association with one or more components of benchmarking application 2 external to process 56 to provide a programmatic interface for customizing benchmark application 2. Customizing components 80 may be used to modify benchmark transaction profile 110. In one embodiment, benchmarking application 2 is customized using

customizing components 80 of driver program 78 before processes 56, 58, and 60 are generated (*id.* at 7:52–64). Thus, Bromberg discloses customized definitions of associated components representing a benchmark transaction profile, where the modified benchmark transaction profile employs defined parameters associated with the plurality of customized components.

The Examiner finds the benchmarking application of Bromberg discloses “high level modeling and definition by including the driver program used to customize the environment/test and the particular customized components of the driver program” (Ans.7 (citing Bromberg, 5:17–32, 7:52–64)). Bromberg describes “[b]enchmarking application 2 includes a driver program 78 that may be customized to suit the requirements of a particular database environment 4 or benchmark test,” where “[c]ustomizing components 80 provide this capability” (Bromberg, 5:17–20).

The Examiner further finds “[t]he concept of generating the instances of the benchmark component types is described in Bromberg where particular processes are generated according to particular execution parameters as distinct instantiations of the program” (Ans. 7). Bromberg discloses:

Driver program 78 generates processes 56, 58, and 60 in accordance with execution parameters 82. In one embodiment, *each process 56, 58, and 60 is a distinct instantiation* of driver program 78. Driver program 78 generates separate processes 56, 58, and 60 to represent each user 16, 18, and 20, respectively, specified in execution parameters 82 by the NUM parameter. Processes 56, 58, and 60 may be generated in accordance with execution parameters 82 in any suitable manner. For example, driver program 78 may read execution parameters 82 to determine the number of processes 56, 58, and 60 that driver

program 78 must generate to represent users 16, 18, and 20 in accordance with the NUM parameter. In one embodiment, driver program 78 passes execution parameters 82 to each generated process 56, 58, and 60 as run-time arguments for use in generating benchmark transactions for submission to database server 14

(Bromberg at 5:33–49 (emphasis added); Ans. 7). Thus, the distinct instantiations of a plurality of generated processes, which are specified according to customized benchmark execution parameters, define a plurality of benchmark component types (Bromberg at 5:33–49; Ans. 7).

Thus, we are unpersuaded Bromberg’s plurality of instantiations of processes employed by a driver program, using a plurality of benchmark parameters, fails to disclose “defining a plurality of benchmark component types, each of the benchmark component types representing a meta model defining a data model benchmark,” as recited in claim 1.

Furthermore, the Examiner finds Bromberg describes “how during benchmark tests, ‘processes 56, 58, and 60 combine to generate reproducible and scalable benchmark transaction profiles for submission to database server 14’; and . . . ‘[c]ollectively, as indicated by box, the SQL statements embedded in benchmark modules 106 define a benchmark transaction profile for the particular benchmark test’” (Final Act. 8 (citing Bromberg, 4:21–28, 7:32–46)). As the Examiner sets forth, processes 56, 58, and 60 “may be generated in accordance with execution parameters 82 in any suitable manner” (Ans. 7 (citing Bromberg 5:39–41)). Appellants have not proffered sufficient evidence or argument to persuade us the Examiner’s findings are in error.

We are, therefore, not persuaded Bromberg fails to teach “defining a plurality of benchmark component types, each of the benchmark component types representing a meta model defining a data model benchmark” and “combining one or more of the generated instances of the plurality of benchmark component types and the defined parameters associated with the plurality of benchmark component types to form respective one or more benchmarks,” as recited in independent claim 1 and commensurately recited in independent claims 9 and 16. Claims 2–8, 10–15 and 17–20 depend, directly or indirectly, from independent claims 1, 9, and 16 and thus, fall with independent claims 1, 9, and 16.

Accordingly, we sustain the Examiner’s rejections under § 102(b) of independent claims 1, 9, and 16, and their dependent claims 2–8, 10–15, and 17–20.

#### DECISION

For the reasons above, we affirm the decision rejecting claims 1–20 under § 101 and we affirm the decision rejecting claims 1–20 under § 102(b).

No time for taking 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