UNITED STATES PATENT AND TRADEMARK OFFICE

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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 DENIS MALOV and ZHIBIN CAO

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Appeal 2016-005793
Application 13/538,002[1]
Technology Center 3600

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Before MICHAEL J. STRAUSS, IRVIN E. BRANCH, and
JON M. JURGOVAN, *Administrative Patent Judges*.

JURGOVAN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants seek review under 35 U.S.C. § 134(a) from the Examiner's
Non-Final Rejection of claims 1, 3–8, and 10–20, constituting the only
claims pending in this application. We have jurisdiction under 35 U.S.C.
§ 6(b).

We affirm.[2]

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[1] Appellants identify SAP SE as the real party in interest. App. Br. 2.
[2] Our Decision refers to the Specification ("Spec.") filed June 29, 2012, the
Non-Final Office Action ("Final Act.") mailed March 12, 2015, the Appeal
Brief ("App. Br.") filed November 5, 2015, the Examiner's Answer ("Ans.")
mailed March 14, 2016, and the Reply Brief ("Reply Br.") filed May 16,
2016.

CLAIMED INVENTION

The claims are directed to applying a rule to a dataset replicated from a transactional data environment and stored in an in-memory database to determine customers or accounts likely to have a particular outcome, such as the opening of an account, a large deposit, or a loan account default. Spec. Abstract, ¶ 40. Claim 1, which is representative of the claimed invention, is reproduced below:

1. A method comprising:
   receiving input identifying at least one of a customer and a customer account attribute of interest;
   based on the at least one customer and customer account attribute of interest, performing a statistical analysis of other customer and customer account attributes of customers and customer accounts stored in a dataset replicated from a transactional data environment to an in-memory database, the in-memory database holding data in a memory bank, the statistical analysis performed to identify other customer and customer account attributes that contribute to the at least one customer and customer account attribute of interest;
   generating a rule identifying data attributes that contribute to the at least one outcome with regard to the at least one product based on the identified other customer and customer account attributes that contribute to the at least one customer and customer account attribute of interest;
   applying the rule to a dataset replicated from a transactional data environment to an in-memory database to segment at least one of customers and customer accounts likely to have each of the at least one outcomes, the replicated dataset including customer data; and
   outputting data representative of the segmented at least one of customers and customer accounts likely to have each of the at least one outcomes.

App. Br. 28 ("Claims App'x").

REJECTIONS

Claims 1, 3–8, and 10–20 stand rejected under 35 U.S.C. § 101 as directed to ineligible subject matter. Non-Final Act. 4– 6.

Claims 1, 3–8, 10–16, and 20 stand rejected under 35 U.S.C. § 103(a) based on Belgaied (US 2009/0234710 A1, Sept. 17, 2009) and Dempers (US 2007/0185751 A1, Aug. 9, 2007). Non-Final Act. 6–19.

Claim 17 stands rejected under 35 U.S.C. § 103(a) based on Belgaied, Dempers, and Amstutz (US 2004/0054610 A1, Mar. 18, 2004). Non-Final Act. 19–21.

Claim 18 stands rejected under 35 U.S.C. § 103(a) based on Belgaied, Dempers, Amstutz, and Cunningham (US 2008/0082386 A1, Apr. 3, 2008). Non-Final Act. 21–22.

Claim 19 stands rejected under 35 U.S.C. § 103(a) based on Belgaied, Dempers, Amstutz, Cunningham, and Pednault (US 2009/0030864 A1, Jan. 29, 2009). Non-Final Act. 22–23.

ANALYSIS

§ 101 Rejection

Patent eligibility is a question of law. *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1333 (Fed. Cir. 2012). Accordingly, we review the Examiner's § 101 determinations *de novo*.

Patentable subject matter is defined by 35 U.S.C. § 101, as follows:

> 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.

In interpreting this statute, the Supreme Court emphasizes that patent
protection should not preempt "the basic tools of scientific and technological
work." *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972); *Mayo Collaborative
Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2012); *Alice Corp. Pty.
Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). The rationale is that
patents directed to basic building blocks of technology would not "promote
the progress of science" under the U.S. Constitution, Article I, Section 8,
Clause 8, but instead would impede it. Accordingly, laws of nature, natural
phenomena, and abstract ideas are not patent-eligible subject matter. *Thales
Visionix Inc. v. U.S.*, 850 F.3d 1343, 1346 (Fed. Cir. 2017) (citing *Alice*, 134
S. Ct. at 2354).

The Supreme Court set forth a two-part test for subject matter
eligibility in *Alice*. 134 S. Ct. at 2355. The first step is to determine
whether the claim is directed to a patent-ineligible concept. *Id.* (citing
Mayo, 566 U.S. at 76–77). If so, then the eligibility analysis proceeds to the
second step of the *Alice/Mayo* test in which we "examine the elements of the
claim to determine whether it contains an 'inventive concept' sufficient to
'transform' the claimed abstract idea into a patent-eligible application."
Alice, 134 S. Ct. at 2357 (quoting *Mayo*, 566 U.S. at 72, 79). The "inventive
concept" may be embodied in one or more of the individual claim
limitations or in the ordered combination of the limitations. *Alice*, 134 S. Ct.
at 2355. The "inventive concept" must be significantly more than the
abstract idea itself, and cannot be simply an instruction to implement or
apply the abstract idea on a computer. *Alice*, 134 S. Ct. at 2358. "'[W]ell-
understood, routine, [and] conventional activit[ies]' previously known to the
industry" are insufficient to transform an abstract idea into patent-eligible

subject matter. *Alice*, 134 S. Ct. at 2359 (third alteration in original) (citing *Mayo*, 566 U.S. at 73).

At the outset, we note that the claims in this case are directed to methods, systems, and computer-readable storage media which fit the definitions of "process, machine, [and] manufacture" in § 101. However, this does not end the inquiry, as we must apply the two-step test in *Alice/Mayo* to determine if the claims are statutory.

The Examiner analyzes independent claims 1, 8, and 15 together for purposes of § 101, and determines as follows:

> In this case, the claims are directed towards segmenting customer accounts to model customer behavior, a method of organizing human activity. No improvement to another technology or technical field is recited, nor do the claims purport to improve the functioning of the computer itself. The claims require no more than a generic computer to perform generic functions that are well-understood, routine, and conventional [activities] previously known in the industry. As such, the claims recite ineligible subject matter under 35 USC § 101.

Non-Final Act. 6.

Turning to the first step of *Alice/Mayo*, Appellants argue that the Supreme Court in *Alice* relied on authoritative documentation (i.e., law journal articles) to establish that the claims included fundamental economic practices long prevalent in commerce. App. Br. 13. Appellants argue the Examiner was likewise compelled to provide similar authoritative documentation in this case to establish the claimed invention recites a fundamental economic practice. *Id.* In the Answer, however, the Examiner indicates he did not assert the claims are directed towards a fundamental economic practice. Ans. 4.

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Nonetheless, we determine the claims do recite a fundamental economic practice similar to the claims found abstract in *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359 (Fed. Cir. 2015) ("*OIP*"). There, the court found the similarity of OIP's claims to those in previous cases sufficient authority to decide that those claims were abstract. *Id.* at 1362. OIP's claims recited pricing a product for sale at different prices, gathering statistics about how customers reacted to the prices, using that data to estimate outcomes, and automatically selecting and offering a new price based on the estimated outcome. *Id.* at 1361–62. OIP's claims in effect segment customers according to price, and thus are similar to the claims in this case.

Appellants argue the Examiner has failed to provide evidentiary support or well-articulated reasoning that the claims are directed to an abstract idea. App. Br. 15. The Examiner determines the claims are directed to an abstract idea that is a method of organizing human activity "because it is intrinsically human in nature; it is a process that humans would conduct to improve business operations." Ans. 3. We agree with the Examiner the claims are also abstract for reciting a method of organizing human activity. In this regard, the Specification states: "Once segmented, the customers and customer accounts segments can be utilized for various purposes, such as marketing, default prevention, education, and account reviews." Spec. ¶ 19 (emphasis added). These are human activities organized by segmentation. Accordingly, we are not persuaded by Appellants' arguments. App. Br. 19–20.

The Examiner also determines the claims are abstract for reciting "an idea of itself." Ans. 6. According to the *July 2015 Update: Subject Matter*

Eligibility, https://www.uspto.gov/sites/default/files/documents/ieg-july-2015-update.pdf ("*July 2015 Update*"), page 5, an "idea 'of itself'" describes "an idea standing alone such as an uninstantiated concept, plan or scheme, as well as a mental process (thinking) that 'can be performed in the human mind, or by a human using a pen and paper.'" Although the claims recite certain technical components, the method or functions recited in the claims can indeed be performed in the human mind or using pen and paper, as the Examiner contends. Ans. 6. Under similar circumstances, our reviewing court has found such claims to be ineligible. *See, e.g., Parker v. Flook*, 437 U.S. 584, 586 (1978) (holding claims unpatentable as capable of performance with pencil and paper even though described as primarily useful for computerized calculations producing automatic adjustments in alarm settings); *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1375 (Fed. Cir. 2011) ("That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*."). Thus, we are not persuaded by Appellants' arguments, including that "one cannot implement an in-memory database mentally or on paper." Reply Br. 4; App. Br. 18–19.

Appellants argue the Examiner fails to set forth any case law involving similar claims found to be abstract. App. Br. 15. Our reviewing court has stated "the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen— what prior cases were about, and which way they were decided." *Amdocs Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (citing *Elec. Power Grp. v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016)).

In the Answer, the Examiner relies on the *July 2015 Update, supra,* pages 4 to 5, which sets forth examples of abstract ideas including "comparing data to determine a risk level," "structuring a sales force or marketing company," and "using an algorithm for determining the optimal number of visits by a business representative to a client." These examples are based, respectively, on *PerkinElmer, Inc. v. Intema Ltd.,* 496 F. App'x 65, 73 (Fed. Cir. 2012); *In re Ferguson,* 558 F.3d 1359 (Fed. Cir. 2009); and *In re Maucorps,* 609 F.2d 481 (CCPA 1979).

These cases have some similarities to the facts of this case. For example, *PerkinElmer* and *Maucorps* involve predictions such as determining a risk level or an optimal number, which are similar in that respect to segmenting customers or accounts by likely outcome in the claimed invention. However, we find *OIP* to be particularly relevant to this case. OIP's offer-based price optimization similarly segments customers by price according to likely outcome, i.e., whether or not they are likely to buy a product at a certain price. *OIP,* 788 F.3d at 1363. OIP's claims were determined to be directed to an abstract idea ineligible for patent protection. *Id.* at 1364.

Another relevant case is *Versata Dev. Grp., Inc. v. SAP Am., Inc., SAP AG,* 793 F.3d 1306 (Fed. Cir. 2016). This case involved claims directed to pricing products in multi-level product and organizational groups. *Id.* at 1311. In other words, the claims recited arranging customers into a hierarchy of customer groups and products into a hierarchy of product groups, and determining pricing information based on those groupings. *Id.* at 1312–13. Those claims, involving segmentation of customers by

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hierarchy within an organization, were found directed to an abstract idea ineligible for patent protection. *Id.* at 1336.

Thus, we determine the previously decided cases most similar to this one compel the conclusion these claims are directed to an abstract idea.

Appellants argue the Examiner ignored the specific claim limitations and the claims as a whole and merely reduced the subject matter of the claims to an Examiner-created summarization that does not reflect the actual language in the claims. App. Br. 15; Reply Br. 3. Although we agree with Appellants' contention to the extent that the Examiner's articulation of the abstract idea embodied in the claims does not exactly mirror the claim language, it does nonetheless capture the essence of the recited abstract idea. More closely tracking the claim language, the claims are directed to the abstract idea of segmenting customers or their accounts by likely outcome. This abstract idea is embodied in the "applying" step of claim 1, the "rule application module" of claim 8, and the "apply the model" function of claim 15.

In our analysis, we are mindful that claims directed to improvements in computer functionality or other technology are not abstract. *See, e.g.*, MPEP § 2106.04(a) 9th ed. (R-08.2017); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016) (claims to a self-referential table for a computer database were directed to an improvement in computer capabilities and not an abstract idea). Here, Appellants argue that, because the claims replicate transactional data into an in-memory database to process data faster, the claims recite an improvement over the prior art. Reply Br. 5–6. In support of their contention, Appellants cite the case of *DDR Holdings v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014) ("*DDR*"), for the

proposition that claims necessarily rooted in and directed to an improvement to computer technology are patentable.

We are not persuaded by this argument, in part, because of the breadth with which the Specification describes the claimed "in-memory database." Initially, we note that claim terms are given their broadest reasonable interpretation consistent with the specification in which they appear. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004). The Specification states "the in-memory database 212 stores transactional data in a large bank of random access memory (RAM)" (¶ 31). However, the Specification also states "the in-memory database 212 may store the replicated data primarily on disk" and may further include "other memory types." *Id.* To the extent Appellants are arguing that the improvement results from replicating transactional data to relatively fast types of memory like RAM (*see* Spec. ¶ 34), this feature is not reflected in the claims. Thus, Appellants' argument for patentability is unpersuasive.

Furthermore, the Specification appears to state a speed advantage is attained by consolidating data from multiple sources into a single in-memory database so that multiple transactions are not required to segment the data (¶ 34). However, the claims are silent regarding this feature, so we do not agree these claims recite an improvement that would take the claims out of the realm of abstract ideas per *DDR*. Accordingly, we determine the claims recite an abstract idea.

For the same reasons, under step two of *Alice/Mayo*, we determine the claims do not recite an "inventive concept" sufficient to transform the abstract idea embodied therein into patent-eligible subject matter, particularly considering the breadth of the claim terms when viewed in light

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of the Specification, contrary to Appellants' arguments. App. Br. 21–23. The claim elements other than the abstract idea, such as "in-memory database," "transactional data environment," "memory bank," "attribute of interest," "statistical analysis," "processor," "rules," "rule repository," "rule application module," and other features, are generic and well-known components, at least as recited, and they are insufficient to transform the claim into patent-eligible subject matter. *See Alice*, 134 S. Ct. at 2357.

Appellants argue the claims recite a "specially-configured computer" and attempt to distinguish the "in-memory database" as using large banks of memory, such as RAM or flash memory. App. Br. 21–23. As indicated previously, the Specification also describes the "in-memory database" as including disk or other types of memory. Accordingly, Appellants' argument is unpersuasive because the claims do not restrict the "in-memory database" to only large banks of RAM or flash memory. In addition, the claimed features such as the "in-memory database" are recited in the sort of vague, functional language that our reviewing court has determined insufficient to confer patent eligibility. *See In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 615 (Fed. Cir. 2016) ("Such vague, functional descriptions of server components are insufficient to transform the abstract idea into a patent-eligible invention."). Thus, we are not persuaded the claims recite an "inventive concept" that is significantly more than the abstract idea under step two of *Alice/Mayo*.

Although the claims do not entirely preempt the abstract idea embodied therein due to the presence of some technical features, the preemption resulting from a patent on such claims is nonetheless significant. A patent on these claims would foreclose applying a rule to transactional

data to segment customers or accounts likely to have an unspecified outcome, using statistical analysis, attributes, rules, in-memory database, processor, repositories, etc., all of which, at the general level claimed, were known in this art. Even if the claims do not entirely preempt use of the abstract idea, "the absence of complete preemption does not demonstrate patent eligibility." *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015).

Appellants mention in passing that dependent claims 5–7 and 20 recite additional features relevant to subject matter eligibility. App. Br. 16. However, merely mentioning the claim limitations without indicating why the recited features show error in the Examiner's determination is an insufficient argument to establish patentability. *See* 37 C.F.R. § 41.37(c)(1)(iv) (the arguments shall explain *why* the examiner erred as to each ground contested by appellant).

For all of the foregoing reasons, we sustain the rejection of claims 1, 3–8, and 10–20 under 35 U.S.C. § 101.

§ 103 Rejection

Obviousness is a question of law based on underlying factual findings. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1373 (Fed. Cir. 2016). Specifically, the question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). The prior art references cited in the Examiner's rejection may be viewed as representative of the level of ordinary skill in the art. *Litton*

Indus. Prods., Inc. v. Solid State Sys. Corp., 755 F.2d 158, 164–65 (Fed. Cir. 1985).

Appellants attempt to distinguish independent claims 1, 8, and 15 over Belgaied and Dempers on the basis of the "in-memory database" that utilizes large banks of memory, such as RAM or flash memory, to replicate a dataset from a transactional data environment against which to apply rules. App. Br. 23–26. Appellants state the Examiner admits Belgaied fails to disclose this feature, and argue Dempers describes only conventional databases and data warehouses. *Id.* at 24.

We find Appellants' arguments (App. Br. 23–26; Reply Br. 7–9) unpersuasive considering the breadth with which the Specification (¶ 31) describes the term "in-memory database" to include disk and other types of memory, i.e., conventional databases, as previously explained. Thus, Appellants' attempt to distinguish the claims from Dempers on the basis of the "in-memory database" is unpersuasive.

Appellants further argue Belgaied fails to disclose applying a rule against a dataset replicated from a transactional data environment. App. Br. 24–25. We agree with the Examiner this feature is taught or suggested by Belgaied. Non-Final Act. 8, 12, 17; Ans. 8 (citing Belgaied, Abstract, ¶¶ 67, 217). Belgaied mentions gathering and storing transaction data (customer characteristics and preferences, context, offers presented, customer choices) for each customer interaction (¶ 68), producing reports based in part on customer segment (¶ 69), and defining business rules for optimization of transactions (¶ 71). Belgaied further mentions use of a splitting rule to segment a customer (¶ 217). Furthermore, Belgaied mentions "collection and storage of large datasets of transaction data (customer level historical

interactions and sales) to derive predictions/forecasts of choice probabilities by offer" (¶ 58), "application of Discrete Choice Analysis to these transaction datasets . . . to derive choice probabilities" (¶ 59), and "segmentation of customers according to their choice behavior . . . to identify customer characteristics that have the highest influence on the observed choices" (¶ 60). Belgaied also mentions grouping customers having similar choice behaviors into segments using a segmentation tree (¶ 171). Considering these teachings together, we agree with the Examiner that Belgaied teaches or at least suggests applying a rule against transaction data to segment customers.

Appellants also argue the Examiner fails to show the cited references replicate data. Reply Br. 9. Belgaied mentions gathering and storing transaction data (¶ 68) and collection and storage of large datasets of transaction data (¶ 58). As the Examiner finds (Non-Final Act. 7, 11–12, 16), Dempers also mentions collecting and storing data in a transactional database (¶¶ 75, 76, 90). Gathering or collecting data at least suggests its replication from one storage place to another. Accordingly, we find Appellants' arguments unpersuasive to show Examiner error.

Remaining Claims

The remaining claims depend from claims 1, 8, and 15. No separate arguments are submitted for these claims. Accordingly, for the reasons stated with regard to their independent claims, we sustain the rejection of these claims. 37 C.F.R. § 41.37(c)(1)(iv).

DECISION

We affirm the Examiner's decision to reject claims 1, 3–8, and 10–20 under 35 U.S.C. § 101.

We affirm the Examiner's decision to reject claims 1, 3–8, and 10–20 under 35 U.S.C. § 103(a).

AFFIRMED