UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte COREY FARABI, CHAD VOEGELE,
MATT SIMPSON, KEITH A. ANGUISH, STEVE ISHMAEL,
DMITRIY GLINBERG, IGOR ZOLOTAREV,
RAFET EVREN BAYSAL, JINGBIN YIN, and ZIYI WANG[1]

Appeal 2017-001969
Application 13/891,701
Technology Center 3600

Before JAMES R. HUGHES, ERIC S. FRAHM, and
MATTHEW J. McNEILL, *Administrative Patent Judges*.

McNEILL, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a rejection of claims
1–21. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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[1] According to Appellants, the real party in interest is Chicago Mercantile
Exchange Inc. App. Br. 2.

STATEMENT OF THE CASE

Introduction

Appellants' application relates to "reducing, minimizing or otherwise optimizing margin requirements for a trader having both an interest rate (IR) futures and over-the-counter (OTC) interest rate swaps (IRS) accounts by efficiently allocating IR futures across both accounts." Spec. ¶ 26. Claim 1, reproduced below, is illustrative of the claimed subject matter:

> 1. A computer-implemented method for modifying a plurality of data records stored in a memory of a data transaction processing system in which data items are transacted by a hardware matching processor that matches electronic data transaction request messages for the same one of the data items based on multiple transaction parameters from different client computers over a data communication network, each of the plurality of data records comprising data indicative of a result of the operation of the hardware matching processor with respect to a data item, wherein a first subset of the plurality of data records are associated with a first account of a trader and a second subset of the plurality of data records are associated with a second account of the trader, the first and second accounts being characterized by a combined value computed based on the data stored in the first and second subsets of the plurality of data records, the method comprising:

> retrieving, automatically by a processor of the data transaction processing system from the memory, the data stored in the first and second subsets of the plurality of data records;

> determining, automatically by the processor, an optimal reallocation of the data stored in the first and second subsets of the plurality of data records between the first and second subsets which results in a total value for the first and second subsets of the plurality of data records that is less than the combined value;

> determining, automatically by the processor, one or more modifications to the data of the data records of the first subset,

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the second subset, or a combination thereof to achieve the determined optimal reallocation;

generating, automatically by the processor, a set of proposed data transaction request messages to communicate to the hardware matching processor, each having multiple transaction parameters configured to effect the determined one or more modifications; and

transacting, by the hardware matching processor, the proposed set of data transaction request messages, wherein the data of the data records of the first subset, the second subset, or a combination thereof are modified thereby.

The Examiner's Rejections

Claims 1–21 stand rejected under 35 U.S.C. § 112, second paragraph, as failing to claim the subject matter which Appellants regard as the invention.

Claims 1–21 stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter.

Claims 1–5, 8–12, and 15–19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Glinberg et al. (US 2009/0171824 A1; July 2, 2009), Chigirinskiy et al. (US 2008/0183638 A1; July 31, 2008), and El-Sakkout et al. (US 2012/0209756 A1; Aug. 16, 2012).

Claims 6, 7, 13, 14, 20, and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Glinberg, Chigirinskiy, El-Sakkout, and Tully et al. (US 2009/0037320 A1; Feb. 5, 2009).

ANALYSIS

§ 112, Second Paragraph

The Examiner finds claims 1–21 fail to claim the subject matter
Appellants regard as the invention. Final Act. 6–7. Specifically, the
Examiner finds that "[e]vidence that claim[s] 1–21 fail[] to correspond in
scope with that which . . . the applicant(s) regard as the invention can be
found in the original specification." *Id.* However, as the MPEP instructs,
"[a] rejection based on the failure to satisfy this requirement is appropriate
only where an inventor has stated, *somewhere other than in the application
as filed*, that the invention is something different from what is defined by the
claims." MPEP § 2172 (I); *see also In re Conley*, 490 F.2d 972, 976 (CCPA
1974) ("This portion of the statutory language has been relied upon in cases
where some material submitted by applicant, other than his specification,
shows that a claim does not correspond in scope with what he regards as his
invention."). Here, the only evidence cited by the Examiner is the
Specification (*see* Final Act. 6–7). Any lack of agreement between the
claims and the Specification, however, is properly considered under §112,
first paragraph, not § 112, second paragraph. *See* MPEP § 2172 (II) (citing
In re Ehrreich, 590 F.2d 902 (CCPA 1979). Accordingly, the Examiner
erred in rejecting claims 1–21 under § 112, second paragraph.

Patent-Ineligible Subject Matter

Under 35 U.S.C. § 101, a patent may be obtained for "any new and
useful process, machine, manufacture, or composition of matter, or any new
and useful improvement thereof." The Supreme Court has "long held that
this provision contains an important implicit exception: Laws of nature,

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natural phenomena, and abstract ideas are not patentable." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014) (quoting *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)).

The Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012), "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S.Ct. at 2355. Assuming that a claim nominally falls within one of the statutory categories of machine, manufacture, process, or composition of matter, the first step in the analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." *Id.* For example, abstract ideas include, but are not limited to, fundamental economic practices, methods of organizing human activities, an idea of itself, and mathematical formulas or relationships. *Id.* at 2355–57. If the claim is directed to a judicial exception, such as an abstract idea, the second step is to determine whether additional elements in the claim "'transform the nature of the claim' into a patent-eligible application." *Id.* at 2355 (quoting *Mayo*, 566 U.S. at 78). This second step is described as "a search for an '"inventive concept"'—*i.e.*, an element or combination of elements that is '. . . significantly more than . . . the [ineligible concept] itself.'" *Id.* at 2355 (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73).

Alice Step One

"The first step in the *Alice* inquiry . . . asks whether the focus of the claims is on the specific asserted improvement in computer capabilities . . .

or, instead, on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool." *Enfish*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016). "The abstract idea exception prevents patenting a result where 'it matters not by what process or machinery the result is accomplished.'" *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1312 (Fed. Cir. 2016) (quoting *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 113 (1854)). "We therefore look to whether the claims . . . focus on a specific means or method that improves the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery." *McRO*, 837 F.3d at 1314.

Appellants disagree with the Examiner's characterization of the claims and argue

> the claimed invention is directed toward a unique communications and transaction protocol which can be used by a data transaction processing system to automatically increase transaction volume while minimizing bandwidth consumption and computational load, a concept inextricably tied to computer technology and distinct from the types of concepts found by the courts to be abstract.

App. Br. 9.

We are not persuaded by Appellants' argument. We see nothing in claim 1 that defines "a unique communications and transaction protocol," or that specifies a way to "increase transaction volume while minimizing bandwidth consumption and computational load." *Id.* Rather, claim 1 is a method that, given certain data in first and second data subsets associated with first and second trader accounts, determines an optimal reallocation of data between the first and second data subsets, determines modifications to the data to achieve the reallocation, sends messages with parameters for effecting the

modifications, and performs modifications to the data according to the messages. In sum, as the Examiner finds, claim 1 is directed to "cross-account optimization," which "is a fundamental economic practice," i.e., an abstract idea. Final Act. 7. Although we could characterize claim 1 with more detail, for example, as being directed to modifying data to achieve an optimal data reallocation between trader accounts, this does not change the patent-eligibility analysis. *See Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1240–1241 (Fed. Cir. 2016) ("An abstract idea can generally be described at different levels of abstraction. . . . The Board's slight revision of its abstract idea analysis does not impact the patentability analysis.").

The nature of claim 1 as a whole is not to define a specific technological improvement, but to recite the steps necessary to perform the abstract idea itself. In particular, contrary to Appellants' argument that "the claims relate to a specifically configured processor" (App. Br. 9), claim 1 does not specify how either of the two recited processors perform the claimed steps. For example, claim 1 provides no details on how "the processor" performs "determining . . . an optimal reallocation," or how "the hardware matching processor" performs "transacting . . . the proposed set of data transaction request messages." Instead, these steps are defined in terms of broadly recited results—i.e., "determining . . . an optimal reallocation . . . which results in a total value . . . that is less than the combined value," and "transacting . . . the proposed set of data transaction request messages . . . wherein the data . . . are modified thereby." Accordingly, claim 1 employs "generic processes and machinery" to achieve results, and is not focused on "a specific means or method that improves the relevant technology." *McRO*, 837 F.3d at 1314.

The fact that claim 1 uses two different processors to perform the claimed steps does not in itself show the claim is directed to a technological improvement, particularly because the communication between the processors is devoid of details that could, as Appellants argue, establish "a unique communications and transaction protocol." App. Br. 9. Rather, with respect to communications from the "processor" to the "hardware matching processor," claim 1 simply recites using "data transaction request messages . . . each having multiple transaction parameters configured to effect the determined one or more modifications." Such a broadly defined "data transaction request message" encompasses a communication with an instruction to modify a piece of data by a certain amount. This communication is basic enough to be no different in kind than that between two people working together to reallocate data between trader accounts: one person to determine the reallocation, and another person to make a change to the data determined by the first person. In fact, the Specification describes how data reallocation between trader accounts was heretofore performed by multiple people: "For example, current mechanisms will typically employ a business analyst for data aggregation, a quantitative analyst for computing optimized allocation of futures positions, and an operations analyst for inputting the resulting transfers into a graphical user interface (GUI)." Spec. ¶ 30. Claim 1 simply automates this reallocation process by reciting a method in "which computers are invoked merely as a tool." *Enfish*, 822 F.3d at 1336.

Accordingly, we find claim 1 does not contain the specificity necessary to show how the processors' operations or the communications between processors differ from prior human methods, and is therefore not

directed to a technological improvement, but the abstract idea itself. *See McRO*, 837 F.3d at 1314 ("The computer here is employed to perform a distinct process to automate a task previously performed by humans. . . . This is unlike *Flook, Bilski*, and *Alice*, where the claimed computer-automated process and the prior method were carried out in the same way.").

However, we note that "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 (Isr.) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (citing *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016)). Here, a survey of other cases supports our finding that claim 1 is directed to an abstract idea. That is, claim 1 is analogous to other cases where the Federal Circuit has found claims relating to computer-implemented fundamental economic processes to be directed to abstract ideas, for example, *Inventor Holdings, LLC v. Bed Bath & Beyond, Inc.*, 876 F.3d 1372, 1374 (Fed. Cir. 2017) ("purchasing goods at a local point-of-sale system from a remote seller"), *Credit Acceptance Corp. v. Westlake Services*, 859 F.3d 1044 (Fed. Cir. 2017) (providing financing packages to a customer for products in a dealer's inventory based on customer financial information transmitted to a server via a communication network), *OIP Technologies, Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) (automatic optimization of product pricing based on potential customer responses to offers), *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350 (Fed. Cir. 2014) (performing a transaction performance guaranty service for online commercial transactions).

Alice Step Two

The second step in the *Alice* analysis requires a search for an "inventive concept" that "must be significantly more than the abstract idea itself, and cannot simply be an instruction to implement or apply the abstract idea on a computer." *Bascom Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349 (2016). There must be more than "computer functions [that] are 'well-understood, routine, conventional activit[ies]' previously known to the industry." *Alice*, 134 S.Ct. at 2359 (second alteration in original) (quoting *Mayo*, 566 U.S. at 73).

Appellants argue the claimed invention provides significantly more than an abstract idea because it "improves the functioning of a computer," includes "specific limitations other than what is well-understood, routine and conventional in the field," "requires more than just a general purpose computer system to operate," and "does not merely amount to adding the words 'apply it' . . . or mere instructions to implement an abstract idea on computer." App. Br. 9–11. We are not persuaded by these arguments. As discussed above, claim 1 does not embody an improvement in the functioning of a computer because it does not specify how the claimed processors perform the steps of the method. Accordingly, claim 1 requires no more than conventional computer processors for performing well-understood computer functions. Essentially, claim 1 is an application of computers to implement an abstract idea, because, as described in the Specification, Appellants' invention simply automates a prior manual process. *See* Spec. ¶¶ 30–31. To wit, the Specification characterizes the benefits of the invention as follows:

> Clearly, automation in accordance with the present teachings
> can result in significant savings in man-hours . . . . Moreover,
> an optimization tool in accordance with the present teachings
> can ensure accuracy of the transfers by programmatically
> generating them according to the results of the optimization as
> opposed to relying upon entry of the transfers into a GUI by an
> operations analyst which, as noted above, is susceptible to
> human user error.

Spec. ¶ 31.

Merely making the practice of an abstract idea more effective by implementing the idea on a computer does not suffice to meet the inventive concept requirement of *Alice*. *See OIP Technologies*, 788 F.3d at 1363 ("[R]elying on a computer to perform routine tasks more quickly or more accurately is insufficient to render a claim patent eligible.").

Appellants additionally argue that, "as with the invention at issue in the DDR case, which was directed to solving an Internet-centric problem, Appellants' claimed invention [is] similarly patentable, and directed to solving a transaction/data processing-centric problem." App. Br. 12. We disagree with Appellants' comparison. In *DDR Holdings, LLC v. Hotels.com, L.P.*, the Federal Circuit found claims drawn to "generating a composite web page that combines certain visual elements of a 'host' website with content of a third-party merchant" provided a solution "necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks." 773 F.3d 1245, 1248, 1257 (Fed. Cir. 2014). In contrast, claim 1 solves a problem of automating data reallocation between trader accounts. *See* Spec. ¶¶ 30–31. That is, claim 1 improves a prior manual process; it does not embody a solution to a computer-based problem. Thus, claim 1 is akin to the type of claim the Federal Circuit admonished against in *DDR Holdings*. 773 F.3d at

1257 (differentiating the claims at issue from claims that "merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet").

We are, therefore, not persuaded the Examiner erred in rejecting claim 1, and claims 2–7, which are not specifically argued separately, as patent-ineligible. Although Appellants nominally address the groups of claims 8–14 and 15–21 separately, Appellants provide no new arguments for these groups. *See* App. Br. 11. Thus, we are also not persuaded the Examiner erred in rejecting claims 8–21 as patent-ineligible.

Obviousness

Appellants contend, with respect to claim 1, that "Chigirinskiy does not teach 'determining, automatically by the processor, one or more modifications to the data of the data records of the first subset, the second subset, or a combination thereof to achieve the determined optimal reallocation,' where the determined optimal reallocation is a reallocation of 'the data stored in the first and second subsets of the plurality of data records . . . .'" App. Br. 15. That is, although "Chigirinskiy may reduce the transaction costs to rebalance multiple accounts in the aggregate, it does not teach reallocating data between individual data records, i.e. between multiple accounts, as recited by claim 1." App. Br. 15. Appellants further contend Glinberg and Chigirinskiy both teach away from reallocating data between accounts. App. Br. 16. Additionally, Appellants contend none of the cited references teach "transacting, by the hardware matching processor, the proposed set of data transaction request messages, wherein the data of the data records of the first subset, the second subset, or a combination

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thereof are modified thereby," as also recited in claim 1. We are not persuaded by Appellants' arguments.

Chigirinskiy describes rebalancing asset portfolios by providing certain parameters and constraints to an optimization engine, which then creates suggested trades that a user can incorporate into executions. *See* Chigirinskiy, ¶¶ 61–64. Further, Chigirinskiy describes:

> In some embodiments, the system performs optimization on a smaller or individual basis (such as, e.g., on an account-by-account basis) and evaluates which results also satisfy multi-portfolio needs. Thus, certain embodiments can, essentially, optimize individual accounts, subject to an aggregate. Based on this optimization, the system can generate results providing *optimized portfolios across multiple accounts*—reducing potential transaction costs, reducing the frequency of required trades and/or providing other benefits.

(Chigirinskiy, ¶ 117) (emphasis added).

In other words, Chigirinskiy discloses determining trades for individual accounts that effect an optimization for multiple accounts in the aggregate. We find this disclosure suggests the claim 1 limitations "determining, automatically by the processor, an optimal reallocation of the data stored in the first and second subsets of the plurality of data records between the first and second subsets" and "determining, automatically by the processor, one or more modifications to the data of the data records of the first subset, the second subset, or a combination thereof to achieve the determined optimal reallocation." That is, Chigirinskiy's "optimized portfolios across multiple accounts" suggest the claim 1 feature of "an optimal reallocation of the data stored in the first and second subsets of the plurality of data records between the first and second subsets."

To the extent Appellants assert claim 1 requires some data transfer from one account to another—based on the arguments that "Chigirinskiy simply does not teach evaluating subsets of data records associated with first and second accounts of a trader in concert, as claimed, to automatically determine transactions to be executed . . . and obtain a[n] optimal reallocation of data therebetween" and that "Chigirinskiy operates on a single portfolio, i.e. a single subset of data records, at [] any one time" (App. Br. 17)—we disagree. Although claim 1 recites "an optimal reallocation . . . between the first and second subsets," claim 1 also recites achieving this reallocation by making "one or more modifications to the data of the data records of *the first subset, the second subset, or a combination thereof.*" Here, claim 1 defines "an optimal reallocation," in part, to include a modification to a single subset of data records associated with a single account. Accordingly, the broadest reasonable interpretation of claim 1 encompasses a modification to one of a first or second subset of data, associated with respective first and second accounts, without any transfer of data between the first and second subsets of data. Chigirinskiy suggests this feature by describing an optimization engine that can determine trades for individual accounts that effect an optimization for multiple accounts in the aggregate. *See* Chigirinskiy, ¶¶ 64, 117.

We are not persuaded by Appellants' teaching away arguments (App. Br. 16) for two reasons. First, Chigirinskiy suggests the feature of an optimal reallocation of data between accounts, as discussed above, rather than teaches away from it. Second, Glinberg also does not teach away from the optimal reallocation feature because Glinberg does not discourage reallocating data between accounts. *See In re Fulton*, 391 F.3d 1195, 1201

(Fed. Cir. 2004) (finding no teaching away where the prior art's disclosure did "not criticize, discredit, or otherwise discourage the solution claimed"). Glinberg describes determining the margin requirements for individual portfolios, and then considering whether a margin requirement for a theoretical combined portfolio may be lower than the sum of the individual margin requirements. *See* Glinberg, ¶ 590. Appellants point to Glinberg's description of "margining offsets across multiple distinct portfolios or classes of portfolios while preserving the identity of each portfolio" (Glinberg, ¶ 30) to support the teaching away argument. App. Br. 16. However, the quoted description merely means that portfolios are not merged into one, but rather the portfolios remain distinct and are combined only theoretically to determine whether any margin requirement savings are justified. *See* Glinberg, ¶ 590. Glinberg does not teach away from reallocating data between portfolios, in addition to Glinberg's inventive considering of a theoretical combined portfolio, as a way to achieve margin requirement savings.

Finally, we are not persuaded by Appellants' argument that none of the references teach "transacting, by the hardware matching processor, the proposed set of data transaction request messages, wherein the data of the data records of the first subset, the second subset, or a combination thereof are modified thereby." Appellants argue Chigirinskiy teaches user execution of trades. App. Br. 16. However, the fact that Chigirinskiy's user initiates the trade (*see* Chigirinskiy, ¶ 64), does not show that a "hardware matching processor" does not actually perform the transaction. Claim 1 does not preclude user involvement in decision-making, in addition to the claimed steps that are performed by processors.

We are, therefore, not persuaded the Examiner erred in rejecting claim 1, and claims 2–5, 8–12, and 15–19, which are not specifically argued separately, as obvious. Although Appellants nominally argue claims 6, 7, 13, 14, 20, and 21 separately, Appellants do not present arguments addressing the specific limitations of those claims. *See* App. Br. 17–18. Thus, we are also not persuaded the Examiner erred in rejecting claims 6, 7, 13, 14, 20, and 21 as obvious.

DECISION

We affirm the Examiner's decision to reject claims 1–21.

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