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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte XINGTIAN SHI, GUFEI SUN, HENG WANG, and
WEN-SYAN LI ¹

Appeal 2017-006824
Application 13/644,819
Technology Center 3600

Before CAROLYN D. THOMAS, BRADLEY W. BAUMEISTER, and
JON M. JURGOVAN, *Administrative Patent Judges*.

Opinion for the Board by THOMAS, *Administrative Patent Judge*.

Dissenting opinion by BAUMEISTER, *Administrative Patent Judge*.

THOMAS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants seek our review under 35 U.S.C. § 134(a) of the Examiner's Final Rejection of claims 1–15 and 17–20, all the pending claims in the present application. Claim 16 is canceled (*see* Claims Appendix). We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We REVERSE.

¹Appellants name SAP SE as the real party in interest (App. Br. 1).

CLAIMED INVENTION

The present invention relates generally to matching orders with incoming shipments (*see* Abstract).

Claim 1 is illustrative:

1. A system for matching orders with incoming shipments, the system comprising:
 - at least one processor;
 - a non-transitory computer-readable storage medium including instructions executable by one or more processors, the instructions configured to implement,
 - a product shipment handler configured to receive product shipment information specifying incoming products;
 - a product order handler configured to receive product order information specifying a plurality of product orders and input parameter information associated with each product order;
 - a job dispatcher configured to create a plurality of jobs based on the product shipment information and the product order information, the job dispatcher configured to arrange and group the incoming products and the product orders by product type such that each individual job specifies incoming products and products orders corresponding to a single type of product, wherein, when a single product order specifies two or more different types of products, the job dispatcher is configured to split the single product order into multiple product orders such that each of the multiple product orders has the single type of product;
 - a modeling tool configured to model each job as a separate constrained linear optimization problem; and
 - a linear solver configured to generate a delivery plan for delivering products as specified by the product orders by separately solving each constrained linear optimization problem based on the input parameter information and the product shipment information such that the incoming products are matched with the product orders according to a delivery schedule that maximizes one or more business values,

wherein the job dispatcher includes a complexity estimation unit configured to estimate a complexity of each job for solving the constrained linear optimization problem corresponding to a respective job, the job dispatcher configured to sort a list of the plurality of jobs based on the estimated complexity in either increasing or decreasing complexity, and sequentially assign the constrained linear optimization problem of each job of the sorted list to a plurality of computer processing units (CPUs).

Appellants appeal the following rejection:²

Claims 1–15 and 17–20 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to patent-ineligible subject matter (Final Act. 11; *see also* 2–8).

We review the appealed rejections for error based upon the issues identified by Appellants, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential).

ANALYSIS

Rejection under § 101

An invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *E.g., Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

² The Examiner withdrew the rejections of claims 1–15 and 17–20 under 35 U.S.C. § 103(a) (*see* Ans. 2).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with the framework, we first determine what concept the claim is “directed to.” *Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”). For example, concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must 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*, 573 U.S. at 221 (quotations marks omitted). “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

The PTO recently published revised guidance on the application of

§ 101. USPTO’s January 7, 2019 *Memorandum, 2019 Revised Patent Subject Matter Eligibility Guidance* (“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 interactions such as a fundamental economic practice, or mental processes); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

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 are 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.

With respect to independent method claim 20, and similarly, system claim 1 and computer-readable medium claim 13, the Examiner determines that the claims are at least directed to the abstract idea of “matching orders with incoming shipments” (Final Act. 3), which we conclude are certain methods of organizing human activity, e.g., commercial transactions such as sales activities or behaviors (*see* claim 1).

In *Cyberfone*, the court held that “using categories to organize, store, and transmit information is well-established,” and “the well-known concept

of categorical data storage, i.e., the idea of collecting information in classified form, then separating and transmitting that information according to its classification, is an abstract idea that is not patent-eligible.” *Cyberfone Sys., LLC v. CNN Interactive Grp., Inc.*, 558 F. App’x 988, 992 (Fed. Cir. 2014). Similarly, claim 1 recites (1) receiving product shipment information; (2) receiving product order information; (3) creating a plurality of jobs; (4) arranging and grouping the incoming products to a single type; (5) model each job; and (6) generate a delivery plan.

We conclude that *even if* we agree with the Examiner that the claims recites a judicial exception, i.e., certain methods of organizing human activity (and do not integrate that exception into a practical application), Appellants raise a persuasive issue regarding whether claim 1 adds specific limitations beyond the judicial exception that are not “well-understood, routine, and conventional” in the field (*see* MPEP § 2106.05(d)).

Specifically, Appellants contend:

For example, it is not well understood, routine, and conventional in the field of linear programming to model each job (having the same type of products) as a separate constrained linear optimization problem, estimate a complexity of each job for solving the constrained linear optimization problem, sort the list of jobs based on the estimated complexity in either increasing or decreasing complexity, and sequentially assign the constrained linear optimization problem of each job of the sorted list to a plurality of computer processing units (CPUs).

(App. Br. 22–23). Appellants further contend that “[b]y not considering the claims as an ‘ordered combination,’ the Office has stripped away the inventive concept from the claims” (*id.* at 23). We agree with Appellants.

The Examiner concludes that “the claims do not override the routine and conventional sequence or operation of the computer; rather, the

computer merely functions as a mechanism for permitting the operations to be performed” (Final Act. 6), and “[t]he claims represent the application of the idea itself on a generic computer” (*id.*; *see also* Ans. 10–11).

Although we understand the claimed invention may use “generic computer, network, and Internet components, none of which is inventive by itself,” the “inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces.” *Bascom Global Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed. Cir. 2016).

Here, the *Examiner* has not set forth with sufficient specificity or provided any finding that the specifically claimed additionally steps of modeling each job and generating a delivery plan is well-understood, routine, or conventional. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1369 (Fed. Cir. 2018) (“Whether something is well-understood, routine, and conventional to a skilled artisan at the time of the patent is a factual determination.”). The Dissent inappropriately states that “Appellants . . . present insufficient evidence that claim 1 recites any specific computer elements beyond those that were well understood, routine, and conventional in the field” (Dissent 9), because it is the Examiner’s (not Appellants’) burden to provide sufficient evidence to support whether the arrangement of additional pieces are well-understood, routine, and conventional. Here, the Majority highlight that the Examiner merely points out known generic components, i.e., processor, memory, etc., and generic functions, i.e., receiving or transmitting data (*see* Ans. 10–11), rather than specifically addressing the above-noted additional claim limitations focused on by Appellants. Although the Dissent further states that Appellants are

conflating the well-understood, routine, and conventional inquiry with a novelty inquiry, the Majority cannot readily find such a conflation, nor has the dissent cited precisely where this occurs.

Thus, on the record before us, the Examiner has not provided any factual finding that the specifically claimed manner of modeling each job and generating a delivery plan is well-understood, routine, or conventional. Thus, under *Alice Step Two* and *Memorandum (3)*, the Examiner has not properly considered the elements of the claims, both individually and “as an ordered combination,” to determine whether the additional elements transform the Examiner’s asserted abstract idea into a patent-eligible application.

For at least the above reasons, the Examiner’s rejection of claims 1–15 and 17–20 under 35 U.S.C. § 101 is reversed.

DECISION

We reverse the Examiner’s § 101 rejection.

REVERSED

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte XINGTIAN SHI, GUFEI SUN, HENG WANG, and
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Appeal 2017-006824
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JON M. JURGOVAN, *Administrative Patent Judges*.

BAUMEISTER, *Administrative Patent Judge*, dissenting.

Had we reviewed this appeal back in 2017 at the time Appellants filed the Reply Brief, I would have affirmed the rejection generally for the reasons the Examiner set forth in the Final Rejection and Examiner's Answer. Three intervening changes—one change to the § 101 jurisprudence and two changes to the PTO's procedural requirements for an Examiner analyzing patent eligibility under § 101—require that the Examiner's positions be reworded slightly and reorganized. But I still would affirm the Examiner's ultimate determination that the claims are directed to patent-ineligible subject matter.

Starting with step 2A1 of the 2019 Subject-Matter-Eligibility Memorandum in which the Examiner determines whether a claim is directed

to an abstract idea,³ I agree with the Examiner’s analysis of which portions of claim 1 are directed to an abstract idea and which portions are directed to additional elements beyond the abstract idea. *See* Ans. 4 (reproducing claim 1 with added underlining to indicate which portions of the claim are directed to the abstract idea). Specifically, the Examiner determines that the acts of receiving product shipment information, receiving product order information, creating orders in a specified manner based on the received information, modeling the jobs as separate optimization problems, generating a delivery plan, estimating the complexity of each job, sorting a list of jobs, and sequentially assigning each job for completion constitute a series of abstract ideas.

As our reviewing court has held, combining several abstract ideas does not render the combination any less abstract. *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (“Adding one abstract idea . . . to another abstract idea . . . does not render the claim non-abstract.”); *see also FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1093–94 (Fed. Cir. 2016) (patent-ineligible claims were directed to a combination of abstract ideas).

The Examiner characterized these noted concepts as “an idea having no particular concrete or tangible form” (Final Act. 4)—concepts that fall under the category of “an idea ‘of itself.’” *See* MPEP § 2106.04(a)(2) Part III; *see also* July 2018: Eligibility Quick Reference Sheet *Identifying Abstract Ideas* (Part 2) (available at

³ *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) (“2019 Memorandum”) (available at <https://www.federalregister.gov/documents/2019/01/07/2018-28282/2019-revised-patent-subject-matter-eligibility-guidance>).

<https://www.uspto.gov/sites/default/files/documents/ieg-qrs.pdf>). The Office's subsequently issued 2019 Memorandum generally limits the categories that examiners may rely upon in determining that a claim is directed to an abstract idea. 2019 Memorandum at 52–53. The previously recognized category of “an idea of itself” is not one of the currently recognized categories (*id.*), so I do not consider whether that characterization of the claimed invention is accurate under section-101 jurisprudence. It is sufficient for the purposes of the present appeal that the claimed concepts reasonably can be characterized as falling within the still-recognized category of mental processes. *Id.* at 52. That is, the claimed concepts of job-scheduling optimization and assignment still can be reasonably characterized as “concepts performed in the human mind (including an observation, evaluation, judgment, [or] opinion).” *Id.*⁴

Appellants argue in response to the Examiner's characterization, it is incorrect to identify that all the functional limitations of claim 1 are directed to an abstract idea. By characterizing claim 1 in such a manner, the Examiner has stripped away the significant and meaningful technical limitations that go beyond the alleged abstract idea. Under the Examiner's rationale, despite any technical advancement in programming, all software-based improvements to linear optimization programming within the context of delivery schedule

⁴ Characterizing the abstract idea as a mental process instead of an idea unto itself does not constitute a change to the thrust in the Examiner's rejection. Appellants demonstrate that they understood the characterizations to be interrelated and had a reasonable opportunity to respond to this position. *See, e.g.*, Reply Br. 2 (“The Examiner [determines] that . . . this idea ‘is similar to an idea itself representing a scheme and plan that can be performed by [a] human using his mind and pen[,] which is recognized as abstract by the courts’”); *Id.* at 6 (“The limitations of claim 1 cannot entirely be performed mentally with pen or paper.”)

optimization would be ineligible for patent protection under Section 101.

Reply Br. 4 (emphasis omitted).

This argument is unpersuasive. The Examiner may have “‘stripped away’ . . . the extra limitations that go beyond the alleged abstract idea” (Reply Br. 4), but only for the initial inquiry of whether the claims are directed to an abstract idea. This is proper under step 2A1’s limited threshold inquiry. The separate questions of whether a claim’s additional limitations beyond the abstract idea (1) integrate the abstract idea into a practical application or (2) add significantly more beyond the abstract idea, are addressed properly in the 101 analysis’s subsequent steps—steps 2A2 and 2B.

Appellants further argue that “[c]laim 1 (as a whole or ordered combination) is not directed to a scheme and plan that can be performed by a human using his mind and pen.” Reply Br. 6 (emphasis omitted). In support, Appellants argue “computing delivery plans that maximize one or more business values that involve a large number of incoming shipments and product orders is a problem not even attempted without the use of computers.” *Id.*

This argument is unpersuasive. To be sure, the claimed invention may be able to model and solve complex delivery scheduling problems that cannot be attempted without the use of computers. However, Appellants point to no claim language that reasonably limits the scope of claim 1 exclusively to problems of such complexity. Claim 1 is, in fact, broad enough to read additionally on a scheme or plan that can be performed by a human using his or her mind aided by only a pen and paper.

Because claim 1 reasonably may be characterized as being directed to a mental process, it is unnecessary to determine further whether claim 1 also can be characterized reasonably as being directed to a commercial practice or a mathematical algorithm. *See, e.g.*, Reply Br. 2 (wherein Appellants summarize their arguments).

The next inquiry mandated by the 2019 Memorandum is to determine whether claim 1 integrates the recited abstract idea into a practical application. 2019 Memorandum 54 (“In [step 2A2], examiners evaluate whether the claim recites additional elements that integrate the exception into a practical application of that exception. This prong adds a more detailed eligibility analysis to step one of the *Alice/Mayo* test (USPTO Step 2A[1]) than was required under prior guidance”).

Because the appeal documents were filed and mailed prior to the issuance of the 2019 Memorandum, Appellants and the Examiner address the inquiries associated with the new step 2A2 either under step 2A1 or step 2B. *See* Final Act. 5–8; App. Br. 20–26; Ans. 9–14; Reply Br. 2–10. For the purposes of this opinion, though, the analysis of the Examiner’s determinations and Appellants’ arguments is separated into the three steps mandated by the 2019 Memorandum.

Appellants argue that “[i]n contrast to the claims of *Alice*, *Bilski*, and *Ultramercial*, the [present claims], on their face, do not only recite features directed to *generic financial activity*[.]” but rather “recite[] specific, technical features that solve a technical problem with a technical solution.” App. Br. 26. This argument is unpersuasive. The fact that the claims are not directed to financial activities does not necessarily mean that the claims are

directed to an improvement in technology that integrates the abstract idea into a practical application.

Appellants further argue that “claim 1 includes very specific technical limitations on *how* [the abstract idea of matching orders with incoming shipments] is accomplished.” App. Br. 14. Specifically, Appellants argue that claim 1 recites “a job dispatcher” that arranges and groups incoming products and product orders by type and splits multiple product orders into single types of products. *Id.* at 14–15.

This argument is unpersuasive because the function associated with the job dispatcher merely is a detailed description of one of the claimed abstract ideas—a mental process that entails observation, evaluation, and judgment. Furthermore, Appellants do not explain what structure or improvement to technology is denoted by the label “job dispatcher.” The term appears to be broad enough to encompass any hardware or software for performing the recited observations, evaluations, and judgments.

Our reviewing court has explained “the fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter.” *Bancorp Servs., L.L.C. v. Sun Life Assur. Co. of Canada (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012). Relying on a “processor” to “perform routine tasks more quickly or more accurately is insufficient to render a claim patent eligible.” *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015).

Appellants argue that “claim 1 recites limitations that are directed to an improvement to computer-related technology—improvement of linear programming with parallel processing.” App. Br. 16–17. Appellants then

describe some of the goals and claimed steps that are used for solving the modeling problem. *Id.* (discussing the goal of optimizing a linear optimization function by modeling each job as a separate constrained linear optimization problem, employing complexity estimations, and assigning sorted jobs to a plurality of central processing units). Appellants argue that “claim 1 can **not** be ‘understood as simply adding conventional computer components to well-known business practices’” because “[t]he ‘software arts’ are recognized within the field of computer science as including software that executes linear programming.” *Id.* at 17–18. Appellants also make similar arguments under the theory that the claims are “entirely rooted in computer technology.” *Id.* at 18.

These arguments are unpersuasive. The fact that the invention recites computer technology does not mean that the claim necessarily is directed to an improvement to the functioning of a computer or to any other technology of technical field. *See* MPEP § 2106.05(a). In the present case, the recited computer elements merely are employed to carry out the noted abstract idea of modeling scheduling problems. Appellants do not sufficiently explain how the present invention improves the computer technology that performs this abstract idea, as opposed to merely improving the underlying abstract idea, itself.

Appellants argue that claim 1 is similar to the claims of *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016) wherein “[t]he incorporation of claimed **rules** (that define morph weights sets as a function of the timing of phoneme sub-sequences) allows the process to be automated—as opposed to manually setting the morph weights by an artist.” App. Br. 19. Appellants argue that in *McRO*, our reviewing court held that

“[i]t is the incorporation of the claimed rules, not the use of the computer, that ‘improved [the] existing technology process’ by allowing the automation of further tasks.” *McRO* 837 F.3d at 1314, *cited in* App. Br. 19. Appellants assert that “[l]ike *McRO*, claim 1 of the present case does not simply use a computer as a tool to automate *conventional* activity, but rather incorporates specific technical features that improve the existing technology process.” App. Br. 19.

These arguments are unpersuasive. The *McRO* court went on to explain

the automation goes beyond merely “organizing [existing] information into a new form” or carrying out a fundamental economic practice. The claimed process uses a combined order of specific rules that renders information into a specific format that is then used and applied to create desired results: a sequence of synchronized, animated characters.

McRO 837 F.3d at 1315 (citation omitted).

Appellants’ claim 1 is distinguishable because it does not recite an improvement to an animation process or any other visual output, such as was the case in *In re Abele*, 684 F.2d 902 (CCPA 1982) (which the court found to be claiming an application of an improved algorithm to a statutory process for creating an x-ray image) or *Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859 (Fed. Cir. 2010) (which claimed a method of generating a digital halftoned image that uses a two-dimensional array of numbers called a halftone mask). Appellant’ claim 1, instead, merely outputs data—a delivery plan that is generated by the linear solver. Appellants present no persuasive evidence or arguments that the generated delivery plan is anything beyond processed data that has been generated in routine data format.

In fact, Appellants' arguments indicate that the generated delivery plans are merely data generated in routine format, albeit generated more efficiently through the use of higher processing-power computers:

For large systems, the processing time for generating delivery plans can be complex and involve long processing times. The performance of *conventional* delivery plan systems are inadequate because they involve long processing delays that sometimes make the generated delivery plan obsolete because it would take a day or more to compute.

App. Br. 21 (emphasis added).

In summary, Appellants do not provide persuasive evidence or arguments that claim 1 recites significantly more than an abstract idea by virtue of reciting an improvement to the function of a computer or to any other technology or technological field (*see* MPEP § 2106.05(a)), by reciting a particular machine or transformation (*see* MPEP §§ 2106.05(b), (c)), or by reciting any other meaningful limitations (*see* MPEP § 2106.05(e)). That is, Appellants do not provide persuasive evidence that the abstract idea is claimed in a manner that integrates Appellants' job-scheduling optimization and assignment protocol into a practical application.

Turning to step 2B of the Office's patent-eligibility inquiry, Appellants, likewise, present insufficient evidence that claim 1 recites any specific computer elements beyond those that were well understood, routine, and conventional in the field. Appellants argue, for example,

it is not well understood, routine, and conventional in the field of linear programming to model each job (having the same type of products) as a separate constrained linear optimization problem, estimate a complexity of each job for solving the constrained linear optimization problem, sort the list of jobs based on the estimated complexity in either increasing or decreasing complexity, and sequentially assign the constrained

linear optimization problem of each job of the sorted list to a plurality of computer processing units (CPUs). Furthermore, these unconventional steps confine claim 1 to a particular useful application, the generation of delivery plans.

App. Br. 22–23.

This argument is unpersuasive because Appellants’ argument conflates the step-2B inquiry (whether the additional elements beyond the abstract idea, viewed individually and as an ordered combination, are well understood, routine, and conventional) with an improper inquiry into whether the underlying abstract idea, itself, is novel. “The ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.” *Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981). A novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent ineligible. *See Mayo*, 566 U.S. at 90.

[The factual inquiry of whether a claim element or combination is well-understood, routine, and convention] falls under step two in the § 101 framework, in which we “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent eligible application.” It is clear from *Mayo* that the “inventive concept” cannot be the abstract idea itself, and *Berkheimer* and *Aatrix* leave untouched the numerous cases from this court which have held claims ineligible because the only alleged “inventive concept” is the abstract idea.

Berkheimer v. HP Inc., 890 F.3d 1369, 1374 (Fed. Cir. 2018) (Judge Moore, *Concurring*) (citations omitted).

Not only have Appellants failed to persuade that the Examiner erred in determining the additional elements of claim 1 do not add significantly

more to the abstract idea, Appellants' arguments, instead, support the Examiner's determination that the recited additional elements are merely well understood, routine, and conventional. For example, Appellants describe their inventive efforts, as follows:

The inventors have built the system on an HP Z800 server with 12 cores (Intel Xeon CPU X5690@3.47 GHZ) and 128G memory, and performed extensive experiments to discover how the two most important variables (e.g., the # of incoming shipments, the # of product orders) will affect the algorithm's performance. For relatively large delivery plan problems (e.g., the case of # shipments = 5,000 and the # product orders = 10,000), the optimization problem can be solved within 290 seconds, which is an acceptable timeframe considering the problem size.

Reply Br. 5.

This explanation does not describe a technical solution to a technical problem. It describes the testing of Appellants' abstract idea on an off-the-shelf computer system to ascertain the time required for this powerful, but conventional, processing system to solve large job-scheduling-optimization problems with the inventive abstract models.

Appellants additionally argue that pre-emption is a consideration in determining patent eligibility, and that "claim 1 do[es] not pre-empt all uses of 'matching orders with incoming shipments.'" App. Br. 24. This argument is unpersuasive. We recognize that the Supreme Court has described "the concern that drives this exclusionary principle [i.e., the exclusion of abstract ideas from patent eligible subject matter] as one of pre-emption." *See Alice*, 573 U.S. 216. However, characterizing preemption as a driving concern for patent eligibility is not the same as characterizing preemption as the sole test for patent eligibility. As our reviewing court has

explained: “The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability” and “[f]or this reason, questions on preemption are inherent in and resolved by the § 101 analysis.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (citing *Alice*, 134 S. Ct. at 2354). Although “preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.” *Id.*

For these reasons, I would affirm the Examiner’s rejection of claims 1–15 and 17–20 under 35 U.S.C. § 101 on the basis that Appellants have not established that the Examiner erred in determining that the claims are directed to patent-ineligible subject matter.