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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* GREGORY M. GUTT, DAVID A. WHELAN,  
WAYNE R. HOWE, BARTON G. FERRELL,  
and RACHEL RANÉ SCHMALZRIED

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Appeal 2018-002458<sup>1</sup>  
Application 12/887,859<sup>2</sup>  
Technology Center 3600

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Before JOSEPH A. FISCHETTI, NINA L. MEDLOCK, and  
KENNETH G. SCHOPFER *Administrative Patent Judges*.

MEDLOCK, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> Our decision references Appellants' Appeal Brief ("App. Br.," filed June 16, 2017) and Reply Brief ("Reply Br.," filed January 2, 2018), and the Examiner's Answer ("Ans.," mailed November 2, 2017) and Non-Final Office Action ("Non-Final Act.," mailed December 21, 2016).

<sup>2</sup> Appellants identify "The Boeing Company" as the real party in interest. App. Br. 2.

## STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1, 5–23, 26, and 29–31. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

## CLAIMED INVENTION

Appellants' claimed invention "relates to cost functions" and, in particular, to "cost functions for data transmission, which may be evaluated based on associated risks" (Spec. ¶ 1).

Claim 1, reproduced below with bracketed notations added, is the sole independent claim and representative of the claimed subject matter:

1. A method for data transmission from an aircraft, based upon the determination of cost and risk, the method comprising:

[(a)] identifying, by a processor, at least one risk area having a particular location;

[(b)] assigning, by the processor, data transmission costs;

[(c)] establishing different levels of service according to degree of risk and cost of providing service depending on transmission costs; and

[(d)] adjusting, with a transmitter, data transmission performance parameters according to the data transmission costs and the risks to account for different levels of service, said parameters comprising a rate of the data transmission, wherein data is transmitted at a high priority in a high risk area, and data is transmitted at a low priority in a high cost communication transmission area where bandwidth is available at high cost.

### REJECTION<sup>3</sup>

Claims 1, 5–23, 26, and 29–31 are rejected under 35 U.S.C. § 101 as directed to a judicial exception without significantly more.

### ANALYSIS

Appellants argue the pending claims as a group (App. Br. 4–8). We select independent claim 1 as representative. The remaining claims stand or fall with claim 1. *See* 37 C.F.R. §41.37(c)(1)(iv).

Under 35 U.S.C. § 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. The Supreme Court, however, has long interpreted § 101 to include an implicit exception: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

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 Corp.*, 573 U.S. at 217. The first step in that analysis is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Id.* If the claims are not directed to a patent ineligible concept, e.g., an abstract idea, the inquiry ends. Otherwise, the inquiry proceeds to the second step where the elements of the claims are considered “individually and ‘as an ordered combination’”

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<sup>3</sup> The Examiner has withdrawn the rejections of the pending claims under 35 U.S.C. § 103(a). *See* Ans. 3

to determine whether there are additional elements that “transform the nature of the claim’ into a patent-eligible application.” *Id.* (quoting *Mayo*, 566 U.S. at 79, 78). This is “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.* at 217–18 (alteration in original).

We are not persuaded, as an initial matter, by Appellants’ argument that the Examiner has failed to establish a *prima facie* case of patent-eligibility (App. Br. 4–6). The Federal Circuit has observed repeatedly that “the *prima facie* case is merely a procedural device that enables an appropriate shift of the burden of production.” *Hyatt v. Dudas*, 492 F.3d 1365, 1369 (Fed. Cir. 2007) (citing *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992)). The court has, thus, held that the USPTO carries its procedural burden of establishing a *prima facie* case when its rejection satisfies the requirements of 35 U.S.C. § 132 by notifying the applicant of the reasons for the rejection, “together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application.” *See In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011) (alteration in original). Thus, what is required of the Office is that it sets forth the statutory basis of the rejection in a sufficiently articulate and informative manner as to meet the notice requirement of § 132. *Id.*; *see also Chester v. Miller*, 906 F.2d 1574, 1578 (Fed. Cir. 1990) (“Section 132 is violated when a rejection is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection.”).

Here, in rejecting the pending claims under 35 U.S.C. § 101, the Examiner notified Appellants that the claims are directed to “providing a

level of service, such as bandwidth throttling, based on cost and/or risk” and “assigning costs,” which the Examiner concluded is similar to other concepts that the courts have held abstract (Non-Final Act. 5–6), and that the claims do not include additional elements or a combination of elements sufficient to amount to significantly more than the abstract idea itself (*id.* at 6–7). The Examiner, thus, set forth the statutory basis of the rejection in a sufficiently articulate and informative manner as to meet the notice requirement of 35 U.S.C. § 132. And we find that, in doing so, the Examiner established a *prima facie* case of patent-ineligibility.

After Appellants’ briefs were filed in this appeal, and the Examiner’s Answer mailed, the USPTO published revised guidance for use by USPTO personnel in evaluating subject matter eligibility under 35 U.S.C. § 101. 2019 REVISED PATENT SUBJECT MATTER ELIGIBILITY GUIDANCE, 84 Fed. Reg. 50, 57 (Jan. 7, 2019) (the “2019 Revised Guidance”). That guidance revised the USPTO’s examination procedure with respect to the first step of the *Mayo/Alice* framework by (1) providing groupings of subject matter that is considered an abstract idea; and (2) clarifying that a claim is not “directed to” a judicial exception if the judicial exception is integrated into a practical application of that exception. *Id.* at 50. The 2019 Revised Guidance, by its terms, applies to all applications, and to all patents resulting from applications, filed before, on, or after January 7, 2019. *Id.*

*Step One of the Mayo/Alice Framework (2019 Revised Guidance, Step 2A)*

The first step in the *Mayo/Alice* framework, as mentioned above, is to “determine whether the claims at issue are “directed to” a patent ineligible concept, e.g., an abstract idea. *Alice Corp.*, 573 U.S. at 217. This first step, as set forth in the 2019 Revised Guidance (i.e., Step 2A), is a two-prong test;

in Step 2A, Prong One, we look to whether the claim recites a judicial exception, e.g., one of the following three groupings of abstract ideas: (1) mathematical concepts; (2) certain methods of organizing human activity, e.g., fundamental economic principles or practices, commercial or legal interactions; and (3) mental processes. 2019 Revised Guidance, 84 Fed. Reg. at 54. If so, we next consider whether the claim includes additional elements, beyond the judicial exception, “that integrate the [judicial] exception into a practical application,” i.e., that apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception (“Step 2A, Prong Two”). *Id.* at 54-55. Only if the claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application do we conclude that the claim is “directed to” the judicial exception, e.g., an abstract idea.

We are not persuaded by Appellants’ arguments here that the Examiner erred in determining that claim 1 is directed to an abstract idea (App. Br. 6-7). The Federal Circuit has explained that “the ‘directed to’ inquiry applies a stage-one filter to claims, considered in light of the [S]pecification, based on whether ‘their character as a whole is directed to excluded subject matter.’” *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)). It asks whether the focus of the claims is on a specific improvement in relevant technology or on a process that itself qualifies as an “abstract idea” for which computers are invoked merely as a tool. *See id.* at 1335–36. Here, it is clear from the Specification,

including the claim language, that the claims focus on an abstract idea, and not on any improvement to technology and/or a technical field.

The Specification is entitled “COST FUNCTION FOR DATA TRANSMISSION”, and states that the disclosure relates, in particular, “to cost functions for data transmission, which may be evaluated based on associated risks” (Spec. ¶ 1) and “to an apparatus, method, and system for cost functions for data transmission” (*id.* ¶ 2). The Specification discloses that the risks are associated with potential danger or harm, e.g., potential data loss, and have varying levels of severity, which impact the data transmission cost (*id.* ¶ 3). Data transmission costs also are impacted by the amount of available radio frequency bandwidth (*id.* ¶ 4), and additionally are related to a data transmission level of service (LoS) and a quality of service (QoS) (*id.* ¶¶ 5, 9). The Specification discloses that the data transmission LoS includes a plurality of different levels of service, each of which has an associated trigger boundary (*id.* ¶ 5). The trigger boundary indicates when to begin data transmission, when to end data transmission, and/or when to adjust data transmission (*id.* ¶ 6). The data transmission QoS also includes a plurality of levels, each of which has an associated data transmission LoS (*id.* ¶ 9). Each different QoS also has an associated data transmission priority, an associated data queuing priority, and an associated rate of data transmission (*id.*). The QoS level, thus, controls the amount of information sent, the priority with which the information is sent, the immediacy or delay with which the information is sent, and/or which specific information is sent (*id.* ¶ 42). In some embodiments, the disclosed method is employed for data transmission from an aircraft; in other embodiments, the method is

employed from a spacecraft and/or various types of vehicles, e.g., cars, boats, trains (*id.* ¶¶ 11, 12).

Consistent with this disclosure, claim 1 recites a method for data transmission from an aircraft comprising: (1) identifying a location that has risks associated with potential danger, harm, and/or data loss,<sup>4</sup> i.e. “identifying, by a processor, at least one risk area having a particular location” (step (a)); (2) determining data transmission costs, i.e., “assigning, by the processor, data transmission costs” (step (b)); (3) establishing different levels of service based on the degree/probability of risk of harm and the costs of providing the service, i.e., “establishing different levels of service according to degree of risk and cost of providing service depending on transmission costs” (step (c)); and (4) adjusting data transmission performance parameters, e.g., the rate of data transmission, to account for the different levels of service, i.e., “adjusting . . . data transmission performance parameters according to the data transmission costs and the risks to account for different levels of service, said parameters comprising a rate of the data transmission, wherein data is transmitted at a high priority in a high risk area, and . . . transmitted at a low priority in a high cost communication transmission area” (step (d)). These limitations, given their broadest reasonable interpretation, recite a method for determining the cost of data transmission operation and, depending on the data transmission operation cost, establishing different levels of service having different levels of data transmission performance, according to the degree of associated risk

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<sup>4</sup> Risks are related to various factors, e.g., topographical features of a terrain, weather factors, conflict factors, crime factors, terrorism factors, geographical areas, and/or environmental region factors (Spec. ¶ 10).

and the cost of providing the service. i.e., a commercial interaction, which is a method of organizing human activity and, therefore, an abstract idea. *See* 2019 Revised Guidance, 84 Fed. Reg. at 52; *see also, e.g., OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015) (holding that the concept of offer-based price optimization is an abstract idea); *Content Extraction & Transmission LLC v. Wells Fargo Bank, N.A.*, 776 F.3d 1343, 1347 (Fed. Cir. 2014) (explaining that claims directed to “the mere formation and manipulation of economic relations” and “the performance of certain financial transactions” have been held to involve abstract ideas).

Having concluded that claim 1 recites a judicial exception, i.e., an abstract idea (Step 2A, Prong 1), we next consider whether the claim recites “additional elements that integrate the judicial exception into a practical application” (Step 2A, Prong 2).

The only additional elements recited in claim 1, beyond the abstract idea, are the claimed “processor” and “transmitter” — both of which are disclosed in the Specification at a high degree of generality, i.e., as generic computer components. For example, the Specification discloses that “any system that is capable of performing basic mathematical calculations may be employed for the processor of the present disclosure” (Spec. ¶ 20). The transmitter also is generally described as communicating information and adjusting data transmission performance parameters, without any structural details (*see, e.g., id.* ¶¶ 14–17).

We find no indication in the Specification, nor do Appellants direct us to any indication, that the operations recited in claim 1 invoke any assertedly inventive programming, require any specialized computer hardware or other inventive computer components, i.e., a particular machine, or that the

claimed invention is implemented using other than generic computer components to perform generic computer functions. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014) (“[A]fter *Alice*, there can remain no doubt: recitation of generic computer limitations does not make an otherwise ineligible claim patent-eligible.”).

We also find no indication in the Specification that the claimed invention effects a transformation or reduction of a particular article to a different state or thing. Nor do we find anything of record, short of attorney argument, that attributes an improvement in computer technology and/or functionality to the claimed invention or that otherwise indicates that the claimed invention integrates the abstract idea into a “practical application,” as that phrase is used in the Revised Guidance.<sup>5</sup>

Appellants note that claim 1 recites that “data is transmitted at a high priority in a high risk area, and data is transmitted at a low priority in a high cost communication transmission area where bandwidth is available at high cost” (App. Br. 6). And Appellants argue that because “[t]he act of data being transmitted at a high priority in a high risk area requires the use of a tangible device (e.g., a transmitter), and cannot be performed as a mental process,” it is not an abstract idea (*id.*).

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<sup>5</sup> The Revised Guidance references the MANUAL OF PATENT EXAMINING PROCEDURE (“MPEP”) §§ 2106.05(a)–(c) and (e) in describing the considerations that are indicative that an additional element or combination of elements integrates the judicial exception, e.g., the abstract idea, into a practical application. *Id.* at 55. If the recited judicial exception is integrated into a practical application, as determined under one or more of these MPEP sections, the claim is not “directed to” the judicial exception.

Appellants appear to be arguing that any invention that cannot be performed mentally or by hand, because the claim recites a physical device is, therefore, not abstract. Yet, a substantially similar argument was expressly rejected by the Court in *Alice*. See *Alice Corp.*, 573 U.S. at 223 (“the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention”).

“[A] method that can be performed by human thought alone is merely an abstract idea and is not patent-eligible under § 101.” *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373 (Fed. Cir. 2011). But, it does not logically follow that methods involving a physical object — i.e., that arguably cannot be performed entirely in the human mind — are, therefore, not directed to abstract ideas. As described above, there is no indication here that the claimed transmitter is other than a generic component used as a tool in its ordinary capacity, i.e., to transmit information.

Appellants note in their Reply Brief that claim 1 recites that (1) data transmission performance parameters are adjusted by the transmitter, and (2) data are transmitted at a high priority in a high risk area and transmitted at a low priority in a high cost communication transmission area where bandwidth is available at high cost (Reply Br. 8). Appellants assert, “[a]s such, the claim demonstrates a technical effect (i.e.,] the data being transmitted) resulting from structural and functional features (i.e.,] the rate of data transmission being adjusted by the transmitter) to render the claims patent eligible” (*id.*). But we fail to see why, and Appellants do not explain why, this “technical effect” renders the claims patent eligible.

Further responding to the Examiner’s Answer, Appellants assert in the Reply Brief that the claims are not directed to an abstract idea, but instead

“provide a technical solution to a problem in the technical field of data of data transmission from an aircraft” (*id.* 2). Referencing paragraph 34 of the Specification, Appellants, thus, argue that “the present claims are directed to a method for the transmission of data from an aircraft based on cost/risk functions that are related to the cost of providing transmission service balanced against the difficulty of recovering the black box in the event of an airplane crash in a particular region,” and, as such, “are directed to an improvement to the technical field of data transmission from an aircraft” (*id.* at 4–5).

That argument is not persuasive at least because it is not commensurate with the scope of the claim. We find nothing in claim 1 that recites balancing the cost of providing transmission service against the difficulty of recovering the black box in the event of an airplane crash.

We also are not persuaded of Examiner error to the extent Appellants maintain that the claims patent-eligible because there is no risk of preemption (Reply Br. 7–8). There is no dispute that the Supreme Court has described “the concern that drives [the exclusion of abstract ideas from patent eligible subject matter] as one of pre-emption,” *Alice Corp.*, 573 U.S. at 216. But, characterizing preemption as a driving concern for patent eligibility is not the same as characterizing preemption as the sole test for patent eligibility. “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 Corp.*, 573 U.S. at 216). “[P]reemption

may signal patent ineligible subject matter, [but] the absence of complete preemption does not demonstrate patent eligibility.” *Id.*

We conclude, for the reasons outlined above, that claim 1 recites a method of organizing human activity, i.e., an abstract idea, and that the additional elements recited in the claim are no more than generic components used as tools to perform the recited abstract idea. As such, they do not integrate the abstract idea into a practical application. *See Alice Corp.*, 573 U.S. at 223–24 (“[W]holly generic computer implementation is not generally the sort of ‘additional feature[e]’ that provides any ‘practical assurance that the process is more than a drafting effort designed to monopolize the [abstract idea] itself.’” (quoting *Mayo*, 566 U.S. at 77)). Accordingly, we agree with the Examiner that claim 1 is directed to an abstract idea.

*Step Two of the Mayo/Alice Framework (2019 Revised Guidance, Step 2B)*

Having determined under step one of the *Mayo/Alice* framework that claim 1 is directed to an abstract idea, we next consider under Step 2B of the 2019 Revised Guidance, the second step of the *Mayo/Alice* framework, whether claim 1 adds specific limitations beyond the judicial exception that are not “well-understood, routine, conventional” in the field, or simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

As described above, the only claim elements beyond the abstract idea are the claimed “processor” and “transmitter.” Appellants cannot reasonably dispute, nor do they, that the operation of these components is well-understood, routine, and conventional, where, as here, there is nothing in the

Specification to indicate that the operations recited in claim 1 require any specialized hardware or inventive computer components or that the claimed invention is implemented using other than generic components to perform generic computer functions, e.g., receiving, processing, and transmitting information. *See Berkheimer v. HP, Inc.*, 890 F.3d 1369, 1373 (Fed. Cir. 2018) (Moore, J., concurring) (“[I]n accordance with *Alice*, we have repeatedly recognized the absence of a genuine dispute as to eligibility for the many claims that have been defended as involving an inventive concept based merely on the idea of using existing computers or the Internet to carry out conventional processes, with no alteration of computer functionality.”) (citations omitted); *see also BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281, 1291 (Fed. Cir. 2018) (“BSG Tech does not argue that other, non-abstract features of the claimed inventions, alone or in combination, are not well-understood, routine and conventional database structures and activities. Accordingly, the district court did not err in determining that the asserted claims lack an inventive concept.”).

We are not persuaded, on the present record, that the Examiner erred in rejecting independent claim 1 under 35 U.S.C. § 101. Therefore, we sustain the Examiner’s rejection of claim 1, and claims 5–23, 26, and 29–31, which fall with claim 1.<sup>6</sup>

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<sup>6</sup> Appellants summarily assert that even if claim 1 is found to be directed to an abstract idea, “the subject matter of [dependent] claims 30 and 31 amount[s] to significantly more than the alleged abstract idea” (App. Br. 7-8). But, Appellants merely quote the claim language, without providing any persuasive argument or technical reasoning to support their position.

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**DECISION**

The Examiner's rejection of claims 1, 5–23, 26, and 29–31 under 35 U.S.C. § 101 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED**