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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* PETER S. BUCZKOWSKI, DOUGLAS C. LORD,  
FRANK J. TORTORICI JR., KURT G. KAUFMANN, JOSE A. MOLA,  
GARY N. SIMMONS, and KATHLEEN A. KILMER

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Appeal 2017-009850<sup>1</sup>  
Application 12/470,750  
Technology Center 3600

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Before HUBERT C. LORIN, BIBHU R. MOHANTY, and  
BRADLEY B. BAYAT, *Administrative Patent Judges*.

BAYAT, *Administrative Patent Judge*.

DECISION ON APPEAL

Peter S. Buczkowski et al. (“Appellants”)<sup>2</sup> appeal under 35 U.S.C. § 134(a) from the Examiner’s decision rejecting claims 1, 2, 6–9, 11, 12, 14, 15, 17, and 19–26 under 35 U.S.C. § 101 as directed to non-statutory subject matter. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> Our Decision references Appellants’ Appeal Brief (“Appeal Br.,” filed Jan. 24, 2017), Reply Brief (“Reply Br.,” filed July 13, 2017), the Examiner’s Answer (“Ans.,” mailed May 17, 2017), and Final Office Action (“Final Act.,” mailed Dec. 21, 2016).

<sup>2</sup> Appellants identify “Disney Enterprises, Inc.” as the real party in interest. Appeal Br. 1.

STATEMENT OF THE CASE

*Claimed Subject Matter*

This application is titled “Dynamic Bus Dispatching and Labor Assignment System.” Spec., Title. Appellants’ “invention relates, in general, to methods and systems for planning deployment or dispatching of buses/vehicles and drivers based on . . . ridership predictions.” Spec. ¶ 2.

Claims 1, 9, and 15 are the independent claims on appeal. Independent claim 1, reproduced below with added bracketed notations, is illustrative of the subject matter on appeal.

1. A method of performing dynamic passenger-transport vehicle dispatching, comprising:
  - [(1)] receiving current location information for a plurality of vehicles adapted for carrying passengers;
  - [(2)] determining a route completion time period for each of the vehicles; and
  - [(3)] generating a dispatch schedule for each of the vehicles based on the route completion time periods,
  - [(4)] wherein the generating of the dispatch schedule further comprises determining service intervals for the routes serviced by the vehicles based on the received current location information, the dispatch schedule being modified based on a comparison of the determined service intervals and a set of predefined goal service intervals for the routes,
  - [(5)] wherein the generating of the dispatch schedule further comprises determining demand for routes serviced by the vehicles based on counts of the passengers,
  - [(6)] wherein the dispatch schedule is modified based on the demand,
  - [(7)] wherein the demand and service intervals are determined for a plurality of origin and destination pairs on the routes,
  - [(8)] wherein the set of predefined goal service intervals include maximum targeted wait times and ideal wait times at a number of passenger pickup locations for the route, and

[(9)] wherein the comparison indicates a passenger wait time at one of the passenger pickup locations is less than the ideal wait time or is greater than the maximum targeted wait time.

Appeal Br. 30 (Claims App.).

## ANALYSIS

On October 4, 2016, in a prior Decision on Appeal, the Board affirmed the Examiner's decision to reject then-pending claims 1–3, 5–12, 14, 15, and 17–26 under § 101, but denominated the affirmance a new ground of rejection. Appellants filed an amendment on October 13, 2016, in which independent claims 1, 9, and 15 were amended to include limitations from previously presented dependent claims.<sup>3</sup> No new limitations have been added to the claims that were not present in the previous appeal.<sup>4</sup> Claims 1, 2, 6–9, 11, 12, 14, 15, 17, and 19–26 are now pending; claims 3–5, 10, 13, 16, and 18 have been canceled. Appeal Br. 30–34 (Claims App.).

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

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<sup>3</sup> Independent claim 1 was amended to include limitations from canceled dependent claims 3 and 5; independent claim 9 was amended to include limitations from canceled dependent claim 10; and independent claim 15 was amended to include limitations from canceled dependent claim 18. Claims 1 and 15 were also amended to delete various limitations including “a computer” and “a processor.”

<sup>4</sup> Although Appellants are correct that “the pending independent claims are NOT the same claims previously considered by the Board” (Reply Br. 2), the added limitations were all previously present in the dependent claims.

abstract ideas” are not patentable. *See, e.g., Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (citation omitted).

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*, 573 U.S. at 217. The first step in that framework is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts,” such as an abstract idea. *Id.* 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 218–20. If the claims are not directed to a patent-ineligible concept, the inquiry ends. If, however, the claims are directed to a patent-ineligible concept, the inquiry proceeds to step two to look at the claim for “something more” by “examin[ing] 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.” *Id.* at 217, 221 (quoting *Mayo*, 566 U.S. at 72–73, 79). This inventive concept must do more than simply recite “well-understood, routine, conventional activity.” *Mayo*, 566 U.S. at 79.

Applying the framework in *Alice*, and as the first step of that analysis, the Examiner determines, as did the Board, that Appellants’ claims are “directed to dispatch scheduling [which] is a well-known fundamental economic practice.” Final Act. 3 (alteration in original). Proceeding to the second step, the Examiner determines:

Claim 1 describes a specific application of dispatch scheduling to buses. The dispatch scheduling of buses of claim 1 takes into account their “route completion time periods,” “service intervals for the routes serviced by the vehicles based on the received current location information,” . . . and “[a] set of predefined goal service intervals [that] include maximum targeted wait times and ideal wait times at a number of passenger pickup locations for the route.” Each of these characterize known variables in efficiently managing a bus transport system. The abstract idea of dispatch scheduling is not meaningfully transformed by applying it to buses and taking into account known variables in efficiently managing a bus transport system using generic computer components.

*Id.* at 4 (alterations in original).

Appellants argue independent claims 1, 9, and 15 separately and do not separately argue any dependent claims. *See* Appeal Br. 7–29; *see also* Reply Br. 2–7. Appellants contend that the Examiner’s analysis of each independent claim is erroneous under both step one (Appeal Br. 22–29; Reply Br. 5–7) and step two of *Alice* (Appeal Br. 7–21; Reply Br. 4–5).

#### *Independent Method Claims 1 and 15*

Under *Alice* step one, Appellants argue that “[c]laim 1 is directed to a method of performing dynamic vehicle dispatching that includes a very specific process/steps for generating a dispatch schedule for a set of vehicles (which is not an abstract idea or other judicial exception).” Appeal Br. 24. According to Appellants, “the method of claim 1 does not fit within any of the judicial exceptions identified by the courts.” *Id.* Appellants make similar arguments for independent claim 15. *Id.* at 27–29. We disagree.

Appellants’ characterization of the claimed invention as “a very specific process/steps for generating a dispatch schedule for a set of

vehicles” is consistent with and encompassed within the Examiner’s broader articulation as “dispatch scheduling,” and, thus, unpersuasive of Examiner error. “An abstract idea can generally be described at different levels of abstraction.” *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1240–41 (Fed. Cir. 2016). Indeed, an integral part of managing any system of passenger transportation is generating a schedule for dispatching vehicles (and drivers) to transport passengers. Whether claim 1 is characterized as “a process for generating a dispatch schedule for a set of vehicles,” or “dispatch scheduling” as the Examiner determined, or “dynamic passenger-transport vehicle dispatching” in the language of claim 1, the result is the same.<sup>5</sup> Generating a dispatch schedule is a fundamental economic practice. It has been practiced as long as passenger transportation has been in existence. Appellants’ characterization of claim 15 is similar to Appellants’ characterization of claim 1, and unpersuasive of Examiner error for the same reason.<sup>6</sup>

Appellants contend “[t]he Examiner has ignored a number of claim limitations to argue that claim 1 is only directed toward dispatch scheduling.” Appeal Br. 25 (reproducing various limitations of claim 1 that the Examiner allegedly ignored); *see also id.* at 28 (reproducing limitations of claim 15). But, there is no requirement that the Examiner’s formulation of the abstract idea must copy the claim language.

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<sup>5</sup> Or “dynamically dispatching passenger-carrying vehicles and drivers for the vehicles on routes of a transportation system” in the language of claim 15 (Appeal Br. 32).

<sup>6</sup> *See* Appeal Br. 27 (“Claim 15 is directed to a method for dynamically dispatching vehicles and drivers for those vehicles, which is not an abstract idea or other judicial exception.”).

The Federal Circuit has explained that “the ‘directed to’ inquiry applies a stage-one filter to claims, considered in light of the specification, 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)). We ask 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. The Examiner’s determination here — that the claims are directed to “dispatch scheduling” — is fully consistent with the Specification, including the claim language (*see, e.g.*, Spec, Title (“Dynamic Bus Dispatching and Labor Assignment System”), ¶ 2 (“The present invention relates, in general, to methods and systems for planning deployment or dispatching of buses/vehicles and drivers based on such ridership predictions . . . .”), ¶ 9 (“performing dynamic bus (or other passenger-transport vehicle) dispatching and creation of labor assignments based on real time collected and processed data”), Abstract (“A method of dynamic bus dispatching and labor assignments based on real time vehicle and passenger data.”), claim 1 (“[a] method of performing dynamic passenger-transport vehicle dispatching”), claim 15 (“[a] method for dynamically dispatching passenger-carrying vehicles and drivers for the vehicles on routes of a transportation system”)).

Appellants’ invention relates to gathering location and passenger information for a plurality of vehicles and generating a dispatch schedule based on the analyzed information. The individual steps comprising the method, i.e., gathering information, analyzing same to determine a route

completion time period, and generating a dispatch schedule based on that analysis, are similar to others that have been found to be abstract. *See, e.g., OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1361–62 (Fed. Cir. 2015) (a method comprising (1) testing prices, (2) gathering statistics about how customers reacted to the prices, (3) using that data to estimate outcomes, and (4) acting on estimated outcomes (i.e., automatically selecting and offering new prices based on estimated outcome) held to be directed to the abstract idea of price optimization). Monitoring vehicle location is also an abstract idea. *See Wireless Media Innovations, LLC v. Maher Terminals, LLC*, 100 F. Supp. 3d 405, 413 (D.N.J. 2015) (“monitoring locations, movement, and load status of shipping containers within a container-receiving yard, and storing, reporting and communicating this information in various forms through generic computer functions” held to be an abstract idea), *aff’d*, 636 F. App’x 1014 (Fed. Cir. 2016). And merely combining several abstract ideas does not render the combination any less abstract. *Cf. Shortridge v. Found. Constr. Payroll Serv., LLC*, No. 14-CV-04850-JCS, 2015 WL 1739256, at \*11 (N.D. Cal. Apr. 14, 2015), *aff’d*, 655 F. App’x 848 (Fed. Cir. 2016).

We also find unpersuasive of error that “Appellant is not seeking to tie up one of the judicial exceptions such that others cannot practice the exception.” Appeal Br. 23, 26, 29. It is well established that “the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment.” *Alice*, 573 U.S. at 222 (alteration in original) (citation omitted). “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*, 573 U.S. at 216). “Where a patent’s claims are deemed only to disclose patent ineligible subject matter under the [*Alice*] framework, as they are in this case, preemption concerns are fully addressed and made moot.” *Id.* Even though “preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.” *Id.*; *see also OIP Techs.*, 788 F.3d at 1362–63 (“[T]hat the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract.”).

Turning to the second step of the *Alice* framework, we “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.’” *Alice*, 573 U.S. at 217–18 (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73). The Supreme Court in *Alice* cautioned that merely limiting the use of an abstract idea “to a particular technological environment” or implementing the abstract idea on a “wholly generic computer” is not sufficient as an additional feature to provide “practical assurance that the process is more than a drafting effort designed to monopolize the [abstract idea] itself.” *Id.* at 223–24 (alteration in original) (quoting *Mayo*, 566 U.S. at 77).

Indeed, claim 1 does not even require the use of a generic computer. Claim 15 requires storing information “in data storage” but does not otherwise indicate that any steps are performed by a computer. As such, we do not see how claims 1 and 15 could provide an improvement to computer

technology. The steps of claims 1 and 15 could all be performed by humans without a computer. *Cf. CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373 (Fed. Cir. 2011) (“[C]omputational methods which can be performed *entirely* in the human mind are the types of methods that embody the ‘basic tools of scientific and technological work’ that are free to all men and reserved exclusively to none.” (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972))).

According to Appellants, “claim 1 includes limitations that apply ‘dynamic vehicle dispatching’ to use of a particular machine in the form of a plurality of passenger-carrying vehicles.” Appeal Br. 17. Appellants make a similar argument as to claim 15. *Id.* at 21.

We are not persuaded by Appellants’ argument that the method is applied to “use of a particular machine,” because although the Supreme Court noted in *Bilski v. Kappos*, 561 U.S. 593, 604 (2010), that the machine-or-transformation test is a “useful and important clue” for determining patent eligibility, the Court, in *Mayo*, emphasized that satisfying the machine-or-transformation test, by itself, is not sufficient to render a claim patent-eligible, as not all transformations or machine implementations infuse an otherwise ineligible claim with an “inventive concept.” *See Mayo*, 566 U.S. at 84 (“[S]imply implementing a mathematical principle on a physical machine, namely a computer, [i]s not a patentable application of that principle.” (citing *Benson*, 409 U.S. at 64)).

Appellants’ argument that the claimed methods are applied to a “particular machine” is also unpersuasive because claims 1 and 15 do not require the performance of any steps by the vehicles, nor do they require the performance of any acts upon the vehicles. Claims 1 and 15 merely require

gathering information about the vehicles, and are not limited to any particular way of gathering that information. The “receiving” steps of claims 1 and 15 encompass receiving location information via telegraph, smoke signal, or carrier pigeon. Similarly, claim 1 does not specify any particular way of obtaining “counts of the passengers,” and encompasses a train conductor tallying passengers. Appellants cannot reasonably argue that gathering information regarding the whereabouts of passenger-carrying vehicles, or counting the number of passengers thereon, by any known means, is an inventive concept.

Appellants argue that the claims include “at least one technical point of novelty such that each claim adds significantly more to the abstract idea.” Appeal Br. 7. According to Appellants, “[a]llowance of all pending claims after a full prior art review is very strong evidence that an inventive technical concept (or ‘significantly more’) is included in each of the independent claims” (*id.* at 7–8; *see also id.* at 13, 16, 19).

To the extent that Appellants maintain the elements of the claims necessarily amount to “significantly more” than the abstract idea because the claimed methods are allegedly patentable over the prior art, Appellants misapprehend the controlling precedent. Although the second step in the *Alice* framework is termed a search for an “inventive concept,” the analysis is not an evaluation of novelty or nonobviousness, but rather, a search for “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.’” *Alice*, 573 U.S. at 217–18 (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73). In other words, a novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent

ineligible. *See Mayo*, 566 U.S. at 89–90 (rejecting the suggestion that Sections 102, 103, and 112 might perform the appropriate screening function and noting that in *Mayo* such an approach “would make the ‘law of nature’ exception . . . a dead letter”); *see also Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (“[U]nder the *Mayo/Alice* framework, a claim directed to a newly discovered law of nature (or natural phenomenon or abstract idea) cannot rely on the novelty of that discovery for the inventive concept necessary for patent eligibility . . . .”). “Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.” *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 591 (2013). Indeed, “[t]he ‘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).

Appellants’ reliance on *DDR Holdings*<sup>7</sup> (Appeal Br. 11) is unavailing because the claims at issue do not address a problem unique to the Internet. *See Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1371 (Fed. Cir. 2015) (“The patent at issue in *DDR* provided an Internet-based solution to solve a problem unique to the Internet that (1) did not foreclose other ways of solving the problem, and (2) recited a specific series of steps that resulted in a departure from the routine and conventional sequence of events after the click of a hyperlink advertisement. The patent claims here do not address problems unique to the Internet, so *DDR* has no

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<sup>7</sup> *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014).

applicability.” (citation omitted)). Indeed, passenger-carrying vehicles, such as trains, have been dispatched according to schedules long before the advent of the Internet.

Appellants highlight various limitations of claim 1 that allegedly provide “significantly more” than the concept of dispatch scheduling. *See* Appeal Br. 8, 15–18. Appellants argue that “claim 1 does not simply append well-understood, routine, and conventional activities known in the industry.” Appeal Br. 18. Appellants reproduce various limitations of claim 1, such as “generating of the dispatch schedule by determining service intervals for the routes serviced by the vehicles based on the received current location information” and “the dispatch schedule being modified based on a comparison of the determined service intervals and a set of predefined goal service intervals for the routes.” *Id.* But these steps can all be performed in the human mind, or using pen and paper. Moreover, the comparison of numerical values such as “predefined goal service intervals” and “maximum targeted wait times and ideal wait times” amounts to performing a mathematical calculation, itself an abstract idea. As to claim 15, Appellants point to, for example, the limitations of “solving the network flow model with linear programming techniques” and “generating a dispatch schedule for the vehicles based on the solved network flow model.” Appeal Br. 21. But, as described in the Specification, creating and solving a network flow model is a mathematical formulation.<sup>8</sup> For example, paragraph 74 describes constructing a “mathematical formulation of the network flow model that may then be carried out by a computer to facilitate generating a dynamic

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<sup>8</sup> *See, e.g.*, Spec. ¶¶ 72–74.

dispatching of a plurality of buses or similar passenger-carrying vehicles.” “The novelty of the algorithm, however, does not determine whether the claim recites an inventive concept.” *Coffelt v. NVIDIA Corp.*, 680 F. App’x 1010, 1011 (Fed. Cir. 2017), *cert. denied*, 137 S. Ct. 2143 (2017). Indeed, “[i]f a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory.” *Parker v. Flook*, 437 U.S. 584, 595 (1978) (quoting *In re Richman*, 563 F.2d 1026, 1030 (CCPA 1977)).

We conclude that claims 1 and 15 do not contain an inventive concept sufficient to “transform the nature of the claim’ into a patent-eligible application.” *Alice*, 573 U.S. at 217 (citation omitted).

In view of the foregoing, we are not persuaded that the Examiner erred in concluding that claims 1 and 15 are directed to patent-ineligible subject matter. Accordingly, we sustain the Examiner’s rejection of claims 1 and 15 under 35 U.S.C. § 101, including their dependent claims 2, 6–8, 17, and 19–24, which are not separately argued.

#### *Independent System Claim 9*

Challenging the Examiner’s determination under *Alice* step one, Appellants argue that “[t]he transportation system of claim 9 includes physical/concrete limitations such as a bus (with a location device and an automatic passenger counter) and a deployment system that functions in a very specific way (not shown or known before) to provide and update a dispatch schedule.” Appeal Br. 23. According to Appellants, “[c]laim 9 when considered as a whole is directed toward a transportation system and not to merely generating a dispatch scheduling system.” *Id.*

We do not agree. Like method claims 1 and 15, system claim 9 is directed to the abstract idea of dispatch scheduling. *Cf. Alice*, 573 U.S. at 226 (“[T]he system claims are no different from the method claims in substance.”). Although it is true that the system of claim 9 includes additional devices not present in the method claims, the focus of claim 9 is on generating “dispatch schedule information.” The additional limitations, including “a plurality of buses,” “an automatic passenger counter positioned on each of the buses,” and “a vehicle location mechanism positioned on each of the buses” are properly considered under step two of *Alice*.

Under step two of *Alice*, Appellants argue that “the deployment system of claim 9 is adapted to improve operations of a transportation system so as to provide improvements to the field of human transportation” (Appeal Br. 14),<sup>9</sup> and “claim 9 includes limitations that apply generating dispatch schedule information to use of a particular machine in the form of a plurality of buses (with each bus configured with an automatic passenger counter and a vehicle location mechanism) in a transportation system.” *Id.* at 14–15.

The introduction of the additional limitations into claim 9 does not alter the analysis under step two of *Alice*. To qualify as an inventive concept under step two of *Alice*, the implementation of the abstract idea must involve “more than performance of ‘well-understood, routine, [and] conventional activities previously known to the industry.’” *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat. Ass’n*, 776 F.3d 1343,

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<sup>9</sup> Citing *Diamond v. Diehr*, 450 U.S. 175 (1981).

1347–48 (Fed. Cir. 2014) (alteration in original) (quoting *Alice*, 573 U.S. at 225).

Claim 9 uses conventional data-gathering devices to perform well-understood, routine, conventional activities previously known to the industry. We are not apprised of anything in the claims, understood in light of the Specification that requires components other than off-the-shelf, conventional components such as buses, automatic passenger counters, and vehicle location mechanisms. As in *Alice*, the hardware components of claim 9 are “purely functional and generic.” *Alice*, 573 U.S. at 226. For example, Appellants do not contend that there is anything assertedly inventive about the “plurality of buses” in claim 9.<sup>10</sup> The data-gathering devices perform their expected, conventional functions. Specifically, the automatic passenger counters gather “count data indicating numbers of embarking and disembarking passengers from the buses” while the vehicle location mechanisms gather “location information.” The Specification does not disclose a new automatic passenger counter<sup>11</sup> or a new vehicle location

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<sup>10</sup> See Spec. ¶ 3 (“Public transportation has long provided buses that travel along predefined routes and pick up and drop off passengers along the route.”).

<sup>11</sup> See Spec. ¶ 31 (“A variety of APCs 114 may be used such as infrared beam-type APCs (e.g., passive IR counters, target reflective IR counters, active IR counters, passive optical, or the like), radio beam APCs, pressure pad-based APCs, magnetic APCs, induction loop APCs, and the like located on the path(s) of the passengers (e.g., near the door(s) of the bus 110).”).

mechanism.<sup>12</sup> *Cf. In re TLI Commc 'ns LLC Patent Litig.*, 823 F.3d 607, 612 (Fed. Cir. 2016) (“The specification does not describe a new telephone, a new server, or a new physical combination of the two. The specification fails to provide any technical details for the tangible components, but instead predominately describes the system and methods in purely functional terms.”). Claim 9 also uses some unspecified computer to perform well-understood, routine, conventional activities previously known to the industry, such as receiving data from the data-gathering devices and analyzing data and performing mathematical calculations. *See Bancorp Servs., L.L.C v. Sun Life Assur. Co. of Canada (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (“[T]he use of a computer in an otherwise patent-ineligible process for no more than its most basic function – making calculations or computations – fails to circumvent the prohibition against patenting abstract ideas and mental processes.”).

Appellants argue “[s]olving the network flow model is not routine or known (again, no prior art references cited suggesting this solving step) let alone in the specific manner recited.” Appeal Br. 9 (emphasis in original). According to Appellants, “the claims do NOT merely use ‘known variables’ to manage a bus transport system” and “no cited reference to date has made any reference to using origin-destination pairs and determining demand for these OD pairs as called out in the claims.” *Id.* at 10.

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<sup>12</sup> *See Spec.* ¶ 32 (“To provide location information, the bus 110 may include a location device 116 such as, but not limited to, an automatic vehicle location (AVL) component that uses a satellite-based global positioning system (GPS) antenna 118 to obtain the location of the bus 110 when the counts are made by the APC 114.”).

This argument is unpersuasive at least because, as discussed with regard to claim 15, the Specification explains that solving a network flow model is a mathematical formulation.<sup>13</sup> The same is true for the calculation of demand for origin-destination pairs from passenger count data.<sup>14</sup>

The process itself, not merely the mathematical algorithm, must be new and useful. Indeed, the novelty of the mathematical algorithm is not a determining factor at all. Whether the algorithm was in fact known or unknown at the time of the claimed invention, as one of the “basic tools of scientific and technological work,” *see Gottschalk v. Benson*, 409 U.S., at 67 it is treated as though it were a familiar part of the prior art.

*Parker v. Flook*, 437 U.S. at 591–92 (parallel citation omitted).<sup>15</sup> Unlike the invention in *Diehr*, the invention here does not involve any transformation of a physical article “to a different state or thing.” 450 U.S. at 191. The network flow model is solved and dispatch schedule information is generated and transmitted. *Cf. Id.* (“A mathematical formula as such is not accorded the protection of our patent laws, *Gottschalk v. Benson*, 409 U.S. 63, 93 S. Ct. 253, 34 L.Ed.2d 273 (1972), and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.”). Appellants do not adequately explain, what particular assertedly inventive technology for performing the recited functions is required for achieving the claimed result. *See Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1057 (Fed. Cir. 2017)

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<sup>13</sup> *See, e.g.*, Spec. ¶¶ 72–74.

<sup>14</sup> *See, e.g.*, Spec. ¶¶ 47–55.

<sup>15</sup> Citing *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86 (1939), and *Funk Bros. Seed Co. v. Kalo Co.*, 333 U.S. 127, 130 (1948).

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(“[T]he claims do not provide details as to any non-conventional software for enhancing the financing process.”); *see also*, *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1342 (Fed. Cir. 2017) (“Our law demands more” than claim language that “provides only a result-oriented solution, with insufficient detail for how a computer accomplishes it.”).

We have considered Appellants’ remaining arguments and conclude they are not persuasive of error in the rejection. Accordingly, we sustain the rejection of claim 9 under 35 U.S.C. § 101, and its dependent claims 11, 12, 14, 25, and 26, which are not separately argued.

#### DECISION

The rejection 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).

AFFIRMED