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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* DEVIN CARLEN, JOE HECK, MIKE SZILAGYI, MARK GUIZ,  
KEN CARUSO, AND PAUL MCMILLAN

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Appeal 2018-007594  
Application 14/242,640  
Technology Center 2400

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Before JOHN A. JEFFERY, JENNIFER L. McKEOWN, and JOHN P.  
PINKERTON, *Administrative Patent Judges*.

McKEOWN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants<sup>1</sup> appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1–20, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> According to Appellants, the real party in interest is OC Acquisition LLC.  
App. Br. 1.

## STATEMENT OF THE CASE

Appellants' disclosed and claimed invention relates to

a method provides a first orchestration service instance for managing a set of containers operating on a controller node where the controller node controls a set of physical nodes. The method also provides a set of second orchestration service instances for managing a set of first services operating in the set of containers where a second orchestration service instance in a container manages a respective first service in the container. The set of physical nodes include a set of third orchestration service instances for managing a set of second services operating on the set of physical nodes. The first orchestration instance, the set of second orchestration service instances, and the set of third orchestration service instances communicate through a shared communication service that maintains a global state of the controller node, the set of containers, and the set of physical nodes.

Abstract.

## CLAIMS

Claim 1 is illustrative of the claimed invention and reads as follows:

1. A method comprising:
  - receiving a plurality of states from a hierarchy of orchestration service instances, wherein receiving the plurality of states comprises:
    - receiving, from a first orchestration service instance executing on a controller node, a first state corresponding to a container operating on the controller node, wherein the controller node controls a physical node separate from the controller node;
    - receiving, from a second orchestration service instance executing within the container operating on the controller node, a second state corresponding to a first system service executing within the container operating on the controller node;
    - receiving, from a third orchestration service instance executing on the physical node, a third state corresponding to a second system service executing on the physical node;

generating a global state comprising the first state, the second state, and the third state; and  
transmitting the global state to the first orchestration service instance, the second orchestration instance, and the third orchestration service instance,  
wherein the method is performed by at least one device including a hardware processor.

## THE REJECTIONS

The Examiner rejected claims 1–20 under 35 U.S.C. § 101 as directed to patent ineligible subject matter. Final Act. 3–4.

The Examiner rejected claims 1–8, 10–17, 19 and 20 under 35 U.S.C. § 103 as unpatentable over Labat et al. (US 2012/0222037 A1; Aug. 30, 2012) (“Labat”), Dostert et al. (US 2006/0143359 A1; June 29, 2006) (“Dostert”), and Hytcheson et al. (US 2004/0029638 A1; Feb. 12, 2004) (“Hytcheson”). Final Act. 4–16.

The Examiner rejected claims 9 and 18 under 35 U.S.C. § 103 as unpatentable over Labat, Dostert, Hytcheson, and Wang et al. (US 2010/0185893 A1; July 22, 2010). Final Act. 16–18.

## ANALYSIS

### THE § 101 REJECTION

#### *Claims 1–20*

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: “[I]aws of nature, natural phenomena, and abstract

ideas” are not patentable. *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

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 that framework, we first determine what concept the claim is “directed to.” *See 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.”).

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)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a

mathematical formula.” *Diehr*, 450 U.S. at 176; *see also id.* at 191 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). Having said that, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”).

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 (citation 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 section 101. *See 2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) (“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 activity such as a fundamental economic practice, or mental processes); and
- (2) additional elements that integrate the judicial exception into a practical application (see MANUAL OF PATENT EXAMINING PROCEDURE (“MPEP”) § 2106.05(a)–(c), (e)–(h) (9th ed. 2018)).

See Memorandum, 84 Fed. Reg. at 52, 55–56. 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, 84 Fed. Reg. 56.

#### *Examiner’s Findings and Conclusion*

Under step one of the *Alice* test, the Examiner determines that the claimed invention is “directed to the abstract act of combining intangible information and is similar to [] *Digitech Image Tech's v. Electronics for Imaging*, 758 F. 3d 1344.” Final Act. 4; see also Final Act. 19–20 (explaining that the claims are directed to gathering and combining data and again citing *Digitech* as support as it found that “combining information is abstract and ineligible.”).

Under step two of the *Alice* test, the Examiner determines that the additional limitations do not add significantly more than the alleged abstract idea. Final Act. 20. In particular, the Examiner explains that the additional limitations of “receiving data over a network connection” and “transmitting the global state back out” are insignificant extra solution activity. *Id.* The Examiner further states that “[c]onsidering the claim as a whole, the claim requires nothing more than conventional data transfer after the ineligible act of combining disparate pieces of information together.” *Id.*

#### *Appellants’ Contentions*

Appellants, on the other hand, argue that the claimed invention is not directed to an abstract idea and instead is a “specific implementation to the problem of managing state in a distributed system.” App. Br. 5. Appellants explain that the claimed process of “transmitting a global state to a hierarchy of OSI’s on more than one node means that the system ‘can survive the failure of any single controller node” and, thus, is an improvement in computer capabilities. App. Br. 5.

Appellants also assert that the additional limitations amount to significantly more than the alleged abstract idea. App. Br. 5–6. Specifically, Appellants argue that the Examiner failed to consider the claim as a whole (Reply Br. 5) and that claimed invention provides unconventional techniques for managing state in a distributed system, which is necessarily rooted in computer technology. App. Br. 5–6.

#### *Analysis – Revised Step 1*

In step one we consider whether the claimed subject matter falls within the four statutory categories of patentable subject matter identified by 35 U.S.C. § 101: process, machine, manufacture, or composition of matter.

The claimed invention here recites a process including a number of steps. Accordingly, the claimed invention falls within the process category.

*Analysis – Revised Step 2A*

Under the Memorandum, in prong one of step 2A we look to whether the claims recite a judicial exception. The claims include “receiving a plurality of states. . . ., wherein receiving the plurality of states comprises: receiving. . . a first state corresponding to a container operating on the controller node. . .;” “receiving. . . a second state corresponding to a first system service executing within the container operating on the controller node;” “receiving. . . a third state corresponding to a second system service executing on the physical node;” and “generating a global state comprising the first state, the second state, and the third state.” In summary, the claimed invention recites collecting state information, i.e. data, from various components and combining that state information into the global state, i.e., additional data. As such, we agree with the Examiner that the claimed invention is similar to the ineligible subject matter in *Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014) in that the claimed invention here recites gathering and combining data. Final Act. 19; *see also Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1351 (Fed. Cir. 2016).

Under the Memorandum, in a broad sense the claimed invention includes the concept of receiving state information for each OSI and combining the received information into the global state, which is a method of organizing behavior or interactions. For example, the claimed invention merely collects and combines the information regarding system components. *See, e.g., Content Extraction & Transmission LLC v. Wells Fargo Bank,*

*Nat'l Ass'n*, 776 F.3d 1343, 1347 (Fed.Cir.2014) (finding ineligible the claimed concept of “1) collecting data, 2) recognizing certain data within the collected data set, and 3) storing that recognized data in a memory” and noting that “humans have always performed these functions.”); *In re TLI Communications LLC Patent Litigation*, 823 F.3d 607, 613 (Fed. Cir. 2016) (finding that the claimed concept of “classifying and storing digital images in an organized manner” is ineligible as a method of organizing human behavior). Further, the claimed invention includes a mental process in at least that a person can receive the state information from multiple sources and combine it, for example, with a pen and paper. *Cf. CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011) (noting that limitation reciting obtaining information about transactions that have used an Internet address identified with a credit card transaction can be performed by a human who simply reads records of Internet credit card transactions from a pre-existing database); *see also* Spec. Fig. 12B, 12C, and ¶ 135 (depicting and describing that the global state is merely a list of components and corresponding state, such as whether a component is online). Moreover, we note that the generating of the global state would include mathematical operations in that it is combining data. *See, e.g., RecogniCorp, LLC v. Nintendo Co., Ltd.*, 855 F.3d 1322 (Fed. Cir. 2017) (finding ineligible the claimed concept of performing a mathematical operation on one set of data to obtain a new set of data); *Digitech*, 758 F.3d 1344. As such, the claimed invention recites certain methods of organizing activity, mental processes, and mathematical operations – which are abstract ideas.

Next, under prong two of step 2A, we determine whether the recited judicial exception is integrated into a practical application of that exception

by: (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception(s); and (b) evaluating those additional elements individually and in combination to determine whether they integrate the exception into a practical application.

The claimed invention additionally recites “a hierarchy of orchestration service instances,” “a first orchestration service instance executing on a controller node,” “wherein the controller node controls a physical node separate from the controller node;” “a second orchestration service instance executing within the container operating on the controller node,” “third orchestration service instance executing on the physical node,” “transmitting the global state to the first orchestration service instance, the second orchestration instance, and the third orchestration service instance,” and “wherein the method is performed by at least one device including a hardware processor.”

As a whole, these additional limitations, such as the orchestration service instances, nodes, and containers, merely link the concept of gathering and combining state information to the technological environment of distributed computing. *See, e.g.*, MPEP § 2106.05(h); *Affinity Labs of Texas v. DirecTV, LLC*, 838 F.3d 1253, 120 USPQ2d 1201 (Fed. Cir. 2016). Notably, these limitations do not alter or affect the generation of the global state. Further, the step of transmitting the global state, i.e., data, is insignificant extra-solution activity. *See, e.g.*, MPEP § 2106.05(g); *OIP Techs., Inc.*, 788 F.3d at 1363 (collecting and analyzing data amounted to mere data gathering).

We are also not persuaded that the claimed invention includes a technological improvement. Namely, Appellants’ arguments are not

commensurate with the scope of the claim. For example, Appellants argue that “transmitting a global state to a hierarchy of OSI’s on more than one node means that the system ‘can thus survive the failure of any single controller node . . . .’” App. Br. 5. The mere provision of state information does not itself overcome the failure of nodes, but instead makes it possible to use the information to manage the system to compensate for that failure. Notably absent from the claimed invention here is any use or practical application of the transmitted information to manage the distributed computing system. *See also* Ans. 7 (noting the lack of use of the transmitted reorganized information).

Nor does the claimed invention recite an improvement to the functioning of a computer itself or improvement to other technology. For example, the claims generally provide for generating a global state, without any specific details of how the generation is performed. *Compare with Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016) (claims at issue are “directed to a *specific* implementation of a solution to a problem in the software arts” (emphasis added)). The broadly claimed process of converting data from one form to another is not a technological improvement sufficient to render the claimed invention eligible. *See, e.g., Digitech*, 758 F.3d at 1351 (Fed. Cir. 2014) (finding ineligible claims that take two data sets and organize this information into a new form, and reasoning that using an algorithm “to manipulate existing information to generate additional information is not patent eligible.”); *see also Content Extraction*, 776 F.3d 1343; Ans. 14–15. As such, based on the record before us, we are not persuaded that the claimed invention integrates the alleged abstract idea in to a practical application.

*Analysis – Step 2B*

We agree with the Examiner that the additional limitations are not sufficient to amount to significantly more than the abstract idea. *See* Final Act. 7. In particular, the Examiner finds, and we agree, as follows:

Claim 1 contains the additional limitations of receiving data over a network connection, which is entirely conventional in the field of networked computing and further is an insignificant pre-solution data gathering step, and transmitting the global state back out, which is the same thing - a conventional networked computer data transfer act - and insignificant post-solution activity. Considering the claim as a whole, the claim requires nothing more than conventional data transfer after the ineligible act of combining disparate pieces of information together. Thus Claim 1 contains no limitations, whether considered separately or as a whole, that constitute significantly more than the abstract idea.

Final Act. 20; *see also* Final Act. 20 (discussing *Digitech* as support); *Content Extraction*, 776 F.3d at 1347 (discussing that data collection, recognition, and storage is well-known); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1355 (finding that sending and receiving information over networks is insufficient to add significantly more to the claimed abstract idea).

Appellants' argument that the claimed invention adds significantly more by providing "unconventional techniques for managing state in a distributed system" is unpersuasive. *See* App. Br. 5–6. In particular, as discussed above, the claimed invention merely provides the state information without acting upon that transmitted information. Moreover, as also discussed above, the claimed invention receives, processes, and transmits data – this is merely conventional data gathering and analysis. *See* MPEP § 2106.05(g); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359,

1363 (*Fed. Cir. 2015*) at 1363 (collecting and analyzing data amounted to mere data gathering). As such, based on the record before us, we are not persuaded of error in the Examiner’s determination that the claimed invention is directed to ineligible subject matter.

Accordingly, we affirm the Examiner’s decision to reject claims 1–20 as directed to patent ineligible subject matter.

THE § 103 REJECTION BASED ON LABAT, DOSTERT, AND HYTCHESON  
*Claims 1–8, 10–17, 19, and 20*

Based on the record before us, we are persuaded that the Examiner erred in finding that claims 1–8, 10–17, 19, and 20 are unpatentable over Labat, Dostert, and Hytcheson.

Appellants contend that the cited combination of Labat, Dostert and Hytcheson does not teach or suggest the claimed “hierarchy of OSI’s” or transmitting the claimed global state. App. Br. 6. More specifically, Appellants assert that Labat “uses a single layer (which is not a hierarchy) of ‘orchestration tools.’” App. Br. 7. Appellants maintain that Labat’s modeling apparatus is not an orchestration tool and, even if it was an orchestration tool, it does not transmit a global state to a hierarchy of OSIs. *Id.*

The Examiner, however, does not rely on Labat as teaching either a hierarchy of OSIs or transmitting a global state. Final Act. 5–6. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Nevertheless, based on the record before us, we are persuaded that the Examiner fails to show sufficiently how the cited combination of references teaches or suggests the claimed hierarchy of orchestration service instances. For example, the Examiner appears to rely on Dostert for this limitation. *See, e.g.*, Final Act. 6 (finding that “in an analogous art, Dostert discloses: receiving a plurality of states from a hierarchy of orchestration service instances . . .”); Ans. 13 (referring to “the hierarchical nature of Dostert”).

Dostert is directed to “a system and method for monitoring internal operations of a virtual machine.” Dostert, Abstract. As the Examiner explains, Dostert describes a monitoring program that may receive the state of programs and services running on a virtual machine. Final Act. 6 (citing Dostert ¶¶ 20, 21, 24, and 34). Based on the record before us, it is unclear how the Examiner interprets Dostert’s receiving of a plurality of states to disclose the claimed hierarchy of orchestration service instances. The Examiner additionally suggests that Appellants admitted the hierarchy of orchestration service instances, but this statement is similarly lacking support. *Compare* Ans. 13 *with* App. Br. 7. Neither this alleged admission nor generally stating that Dostert “reports two different states” is sufficient to show the claimed hierarchy of orchestration service instances. As such, based on the record before us, we are persuaded of Examiner error.

Accordingly, we reverse the Examiner’s decision to reject claims 1–8, 10–17, 19, and 20 as unpatentable over Labat, Dostert, and Hytcheson.

THE REMAINING § 103 REJECTION

*Claims 9 and 18*

Based on the record before us, we are persuaded that the Examiner erred in rejecting the remaining claims as unpatentable over the cited combinations of prior art. As discussed above, the cited combination of Labat, Dostert, and Hytcheson fails to teach or suggest the limitations of independent claims 1, 8, and 15. The additional cited prior art fails to cure the deficiencies. As such, we are similarly persuaded that the Examiner erred in rejecting dependent claims 9 and 18.

Accordingly, we reverse the Examiner's decision to reject claims 9 and 18 as unpatentable over the cited combinations of prior art.

DECISION

We affirm the Examiner's decision to reject claims 1–20 as directed to ineligible subject matter, but reverse the Examiner's obviousness rejections. Because the rejection of each appealed claim is affirmed on at least one ground specified in the Office Action from which the appeal was taken, the Examiner's decision to reject these claims is affirmed. *See* 37 C.F.R. § 41.50(a).

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