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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* IAN GARETH ANGUS and OLGA C. WALKER

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Appeal 2019-000068  
Application 14/097,982  
Technology Center 3600

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Before LINZY T. McCARTNEY, JASON J. CHUNG, and  
JOYCE CRAIG, *Administrative Patent Judges*.

McCARTNEY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> seeks review under 35 U.S.C. § 134 of the Examiner's non-final rejection of claims 1–14. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> Appellant identifies The Boeing Company as the real party in interest. Appeal Brief 2, June 12, 2018 (“App. Br.”).

## BACKGROUND

This patent application concerns “managing software aircraft parts and the software configuration of an aircraft using a software part for the aircraft that defines an approved software configuration for the aircraft.” Specification ¶ 1, filed December 5, 2013 (“Spec.”). Claim 1 illustrates the claimed subject matter:

1. A method of operating an aircraft using a configuration software part for the aircraft, comprising:

[a] using a data processing system having a processor unit on the aircraft to perform the steps of:

[b] receiving a first software part;

[c] determining whether the first software part is the configuration software part, wherein the configuration software part comprises a list of approved software parts for an approved software configuration for the aircraft;

[d] storing the configuration software part on the aircraft in response to a determination that the first software part is the configuration software part when integrity of the configuration software part is verified;

[e] preventing storing of the configuration software part on the aircraft when the integrity of the configuration software part is not verified;

[f] receiving a second software part;

[g] determining whether the second software part is the configuration software part;

[h] in response to a determination that the second software part is not the configuration software part, determining whether the second software part is identified in the list of approved software parts in the configuration software part stored on the

[i] storing the second software part on the aircraft and loading the second software part stored on the aircraft on a system on the aircraft to implement a function

performed by the system on the aircraft in response to a determination that the second software part is identified in the list of approved software parts in the configuration software part and when the integrity of the second software part is verified; and

[j] preventing storing of the second software part on the aircraft in response to a determination that the second software part is not identified in the list of approved software parts in the configuration software part or when the integrity of the second software part is not verified.

App. Br. 11–12 (bracketed letters added).

#### REJECTION

<b>Claims</b>	<b>Basis</b>
1–14	§ 101

#### DISCUSSION

We have reviewed the Examiner’s rejection and Appellant’s arguments, and we disagree with Appellant that the Examiner erred. As consistent with the discussion below, we adopt the Examiner’s reasoning, findings, and conclusions on pages 2–19 of the Non-Final Office Action mailed January 12, 2018 (“Non-Final Act.”) and pages 3–7 of the Examiner’s Answer mailed July 30, 2018 (“Ans.”).

#### Section 101 Rejection

Section 101 of the Patent Act provides that “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof” is patent eligible. 35 U.S.C. § 101. But the Supreme Court has long recognized an implicit exception to this section: “Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (quoting *Ass’n for*

*Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)). To determine whether a claim falls within one of these excluded categories, the Court has set out a two-part framework. The framework requires us first to consider whether the claim is “directed to one of those patent-ineligible concepts.” *Alice*, 573 U.S. at 217. If so, we then examine “the elements of [the] 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.” *Alice*, 573 U.S. at 217 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 78, 79 (2012)). That is, we examine the claim for an “inventive concept,” “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 Patent Office has revised its guidance about this framework. *See* 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Revised Guidance”). Under the Revised Guidance, to decide whether a claim is directed to an abstract idea, we evaluate whether the claim (1) recites subject matter that falls within one of the abstract idea groupings listed in the Revised Guidance and (2) fails to integrate the recited abstract idea into a practical application. *See* Revised Guidance, 84 Fed. Reg. at 51, 54. If the claim is directed to an abstract idea, as noted above, we then determine whether the claim has an inventive concept. The Revised Guidance explains that when making this determination, we should consider whether the additional claim elements add “a specific limitation or combination of limitations that are not well-understood, routine,

conventional activity in the field” or “simply append[] well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality.” Revised Guidance, 84 Fed. Reg. at 56.

With these principles in mind, we turn to the § 101 rejection.

*Abstract Idea*

The Revised Guidance explains that the abstract idea exception includes “mental processes” and “certain methods of organizing human activity.” Revised Guidance, 84 Fed. Reg. at 52. The Examiner determined that claim 1 recites subject matter that falls into these abstract idea groupings. *See* Non-Final Act. 2–11.

We agree that claim 1 recites an abstract idea. Limitations [c], [e], [g], [h], and [j] reproduced above each encompass an act that people can perform in their minds. Limitations [c], [g], and [h] involve determining whether a specified software part is a configuration software part or is on a particular list of approved software parts. *See* App. Br.11. These limitations recite *what* is determined but do not meaningfully limit *how* these determinations are performed. *See* App. Br. 11. These limitations are so broadly written that they encompass a person mentally comparing the name of the software part with the name of the configuration software part or with the names of the software parts on the recited list of approved software parts to determine if there is a match. *See CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373 (Fed. Cir. 2011) (determining that a claim limitation “is so broadly worded that it encompasses literally *any* method for” performing the limitation, including “even logical reasoning that can be performed entirely in the human mind”). Indeed, the written description indicates that people manually perform these kinds of determinations. *See, e.g.*, Spec. ¶ 33

("[C]urrent configuration and software part management processes are substantially manual. For example, determining whether the software configuration of an aircraft matches an approved software configuration is currently done manually.").

For similar reasons, limitations [e] and [j] encompass acts that people can perform in their heads. Limitation [e] recites preventing the storing of a specified software part when the integrity of the part is not verified, and limitation [j] recites preventing the storing of a specified software part in response to determining that the part is either not identified in a particular list of approved software parts or when the integrity of the part is not verified. *See App. Br. 11, 12.* Like limitations [c], [g], and [h], limitations [e] and [j] do not meaningfully limit how the recited preventing steps are performed. *See App. Br. 11, 12.* As written, these limitations are broad enough to encompass a person mentally deciding not to store the specified software parts when the recited conditions have been met. *See CyberSource, 654 F.3d at 1373.* And as with the functions recited in limitations [c], [g], and [h], the written description suggests that people can manually perform aspects of the functions recited in limitations [e] and [j]. *See, e.g., Spec. ¶¶ 33* (disclosing that "determining whether the software configuration of an aircraft matches an approved software configuration is currently done manually" and that "[c]urrently, software parts to be loaded on an aircraft are manually selected and unneeded software parts are removed from the aircraft manually"), *35* (disclosing "that continued integrity checking of software parts on an aircraft is currently done with specialized single function tables").

Because limitations [c], [e], [g], [h], and [j] encompass acts that people can perform in their minds, claim 1 recites mental processes. *Cf. CyberSource*, 654 F.3d at 1372 (determining that “unpatentable mental processes are the subject matter of” a claim when the claim’s “method steps can be performed in the human mind, or by a human using a pen and paper”). Appellant’s arguments have not persuaded us otherwise. Appellant argues that claim 1 does not recite an abstract idea because the claim recites “a concept inextricably tied to computer systems and other systems having functionality controlled by software.” App. Br. 8. But courts have made clear that claims that involve computers systems can still recite mental processes. *See, e.g., CyberSource*, 654 F.3d at 1375 (“That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*.”); *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1335 (Fed. Cir. 2015) (“Courts have examined claims that required the use of a computer and still found that the underlying, patent-ineligible invention could be performed via pen and paper or in a person’s mind.”). And the Revised Guidance explicitly states that “[i]f a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the mental processes category . . . .” Revised Guidance, 84 Fed. Reg. at 52 n.14. So the fact that claim 1 recites a concept that is allegedly “inextricably tied to computer systems” does not, without more, show that claim 1 recites patent-eligible subject matter.

Appellant argues for the first time in the Reply Brief that steps such as “receiving and storing software parts on an aircraft. . . . cannot be performed

by a person mentally or with pen and paper.” Reply Brief 2, filed October 1, 2018 (“Reply Br.”). Appellant also argues for the first time in the Reply Brief that claim 1 is similar to the claims in *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016). See Reply Br. 2–3. In Appellant’s view, “[a]s in *McRO*, the presently claimed process for storing and loading the correct software on an aircraft and preventing incorrect software from being stored on the aircraft is not the same as previous manual processes.” Reply Br. 3.

Appellant forfeited these arguments. The Examiner first made the determinations at issue in the Non-Final Office Action. See Non-Final Act. 8–11. Yet Appellant waited until the Reply Brief to present arguments about these determinations and did not explain why Appellant failed to raise these arguments earlier. As a result, Appellant forfeited these arguments. See 37 C.F.R. §§ 41.37(c)(1)(iv) (explaining that with exceptions inapplicable here, “any arguments or authorities not included in the appeal brief will be refused consideration by the Board for purposes of the present appeal”), 41.41(b)(2) (“Any argument raised in the reply brief which was not raised in the appeal brief . . . will not be considered by the Board for purposes of the present appeal, unless good cause is shown.”).

Even if Appellant had timely raised these arguments, we would have found them unpersuasive. As discussed below, the receiving and storing steps are additional elements that do not form part of the mental processes at issue. Thus, Appellant’s argument that “receiving and storing software parts on an aircraft. . . cannot be performed by a person mentally or with pen and paper” does not show that the Examiner erred. As for Appellant’s reliance on *McRO*, in *McRO* the claims incorporated “specific,” “limited” rules that

improved computer animation. *McRO*, 837 F.3d at 1314–16. Instead of incorporating similar specific, limited rules, claim 1 recites a series of broadly worded functions without meaningfully limiting how the claimed invention performs the functions. *See* App. Br. 11–12. Claim 1 is thus distinguishable from the claims in *McRO*.

Because we determine that claim 1 recites an abstract idea, we next consider whether claim 1 integrates the abstract idea into a practical application. *See* Revised Guidance, 84 Fed. Reg. at 51. In doing so, we consider whether the claim as a whole “integrate[s] the [abstract idea] into a practical application, using one or more of the considerations laid out by the Supreme Court and the Federal Circuit.” Revised Guidance, 84 Fed. Reg. at 54–55. This includes considering whether any additional elements, in the context of the claim as a whole, integrate the abstract idea into a practical application.

The additional elements in claim 1 include the “data processing system having a processor unit on the aircraft” recited in limitation [a], the “receiving” steps recited in limitations [b] and [f], and “storing” steps recited in limitations [d] and [i]. *See* App. Br. 11–12. As explained below, when considered in the context of the claim as a whole, these additional elements do not integrate the recited abstract idea into a practical application because the additional elements use generic computer components to implement the abstract idea and add insignificant extra-solution activities to the abstract idea.

Starting with the “data processing system having a processor unit on the aircraft” recited in limitation [a], the written description makes clear that this element encompasses generic computer components. For example, the

written description discloses that “[d]ata processing system 1400 may be an example of one implementation of aircraft network data processing system 146 on aircraft 108.” Spec. ¶ 112; *see also* App. Br. 3 (mapping the recited data processing system to element 146 in Figure 1). When discussing data processing system 1400, the written description notes that “different embodiments may be implemented using *any hardware device or system capable of running program code*. As one example, the data processing system may include organic components integrated with inorganic components and/or may be comprised entirely of organic components excluding a human being. For example, a storage device may be comprised of an organic semiconductor.” Spec. ¶ 126 (emphasis added). As for the recited processor unit, the written description discloses that “[p]rocessor unit 1404 serves to execute instructions for software that may be loaded into memory 1406. Processor unit 1404 may be a number of processors, a multi-processor core, or some other type of processor, depending on the particular implementation.” Spec. ¶ 114; *see also* App. Br. 3 (mapping the recited processor unit to paragraph 114 of the written description and item 1404 in Figure 14). The written description also states that “processor unit 1404 may be implemented using a combination of processors found in computers and hardware units.” Spec. ¶ 129.

As for the “receiving” steps recited in limitations [b] and [f] and the “storing” steps recited in limitations [d] and [i], these steps encompass insignificant extra-solution activities. The “receiving” steps recited in limitations [b] and [f] recite receiving a specified software part. *See* App. Br. 11. Receiving software parts is a generic, insignificant data gathering activity. *See, e.g.*, Spec. ¶¶ 6–9 (describing, in the Background section,

providing and receiving software parts), 33 (“[C]urrent configuration and software part management processes are substantially manual.”), 56–57 (disclosing that “[a]ny appropriate apparatus and method may be used to deliver software parts 111 to aircraft 108” and that software parts may be delivered “via an appropriate wired or wireless connection”); *see also CyberSource*, 654 F.3d at 1372 (explaining that “even if some physical steps are required to obtain information from the database (e.g., entering a query via a keyboard, clicking a mouse), such data-gathering steps cannot alone confer patentability”); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed. Cir. 2014) (“That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive.”). The “storing” steps recited in limitations [d] and [i] involve storing a particular software part (and in the case of limitation [i], loading the software part) on the aircraft when particular conditions have been satisfied. *See* App. Br. 11. These activities are generic, insignificant extra-solution activities. *See, e.g.*, Spec. ¶¶ 5–11 (describing, in the Background section, storing and loading software parts), 33 (“[C]urrent configuration and software part management processes are substantially manual.”); *cf. OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1364 (Fed. Cir. 2015) (determining that “the addition of steps to test prices and collect data based on customer reactions does not add any meaningful limitations to the abstract idea”).

In short, the claimed method uses generic computer components to implement the abstract idea and adds insignificant extra-solution activity to the abstract idea. Using generic computer components to implement an abstract idea does not integrate the abstract idea into a practical application.

*See, e.g., Alice*, 573 U.S. at 223–24 (“[W]holly generic computer implementation is not generally the sort of ‘additional featur[e]’ that provides any ‘practical assurance that the process is more than a drafting effort designed to monopolize the [abstract idea] itself.’” (second and third alterations in original) (quoting *Mayo*, 566 U.S. at 77)). Adding generic, insignificant extra-solution activity to the abstract idea also does not integrate the abstract idea into a practical application. *See Bilski v. Kappos*, 561 U.S. 593, 612 (2010) (“*Flook* established that limiting an abstract idea to one field of use or adding token postsolution components did not make the concept patentable.”); *CyberSource*, 654 F.3d at 1372. And, in the context of the claim as a whole, combining these generic components and insignificant extra-solution activities fails to integrate the abstract idea into a practical application. *See, e.g., Intellectual Ventures I LLC v. Erie Indem. Co.*, 850 F.3d 1315, 1328 (Fed. Cir. 2017); *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1242 (Fed. Cir. 2016).

Appellant disagrees and contends that claim 1 is analogous to the patent-eligible claims in *Classen Immunotherapies, Inc. v. Biogen IDEC*, 659 F.3d 1057 (Fed. Cir. 2011). *See App. Br.* 8–9. According to Appellant, like the patent-eligible claims in *Classen*, claim 1 recites “transformative steps for putting the information obtained and analyzed therein to practical use, namely, by loading software on an aircraft system to implement a function performed by the system on the aircraft.” *App. Br.* 8.

We find Appellant’s argument unpersuasive. The Federal Circuit decided *Classen* before the Supreme Court set out the current framework for determining whether a claim is directed to a judicial exception in *Mayo* and *Alice*. In *Mayo* and *Alice*, the Supreme Court made clear that adding generic

activities to an abstract idea does not transform the abstract idea into a patentable concept. *See, e.g., Mayo*, 566 U.S. at 82 (“[S]imply appending conventional steps, specified at a high level of generality, to laws of nature, natural phenomena, and abstract ideas cannot make those laws, phenomena, and ideas patentable.”); *Alice*, 573 U.S. at 225 (determining that the claims at issue do not have an inventive concept when “each step does no more than require a generic computer to perform generic computer functions”). As discussed above, loading software onto an aircraft is a generic, insignificant extra-solution activity and therefore does not integrate the recited abstract idea into a practical application.

#### *Inventive Concept*

Finally, we consider whether claim 1 has an inventive concept, that is, whether the claim has additional elements that “transform the nature of the claim’ into a patent-eligible application.” *Alice*, 573 U.S. at 217 (quoting *Mayo*, 566 U.S. at 78, 79). As discussed above, this requires us to evaluate whether the additional claim elements add “a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field” or “simply append[] well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality.” Revised Guidance, 84 Fed. Reg. at 56.

The additional elements recited in claim 1 “simply append[] well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality.” Revised Guidance, 84 Fed. Reg. at 56. The written description describes the “data processing system having a processor unit on the aircraft” recited in limitation [a] and the “receiving” and “storing” steps recited in limitations [b], [d], [f], and [i] in a

functional, result-oriented manner with few technical details. *See, e.g.*, Spec. ¶¶ 105–107, 112, 114, 126, 129, Fig. 12; *see also* App. Br. 3 (mapping limitations [b], [d], [f], and [i] to paragraphs 52, 106, and 107 of the written description). The same is true of the steps recited in limitations [c], [e], [g], [h], and [j]. *See, e.g.*, Spec. ¶¶ 105–107, Fig. 12; *see also* App. Br. 3–4 (mapping limitations [c], [e], [g], [h], and [j] to paragraphs 106 and 107 of the written description). This shows that these elements are conventional. *See, e.g., Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986) (“[A] patent need not teach, and preferably omits, what is well known in the art.”); USPTO, Memorandum on Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (*Berkheimer v. HP, Inc.*) at 3 (Apr. 19, 2018), available at <https://www.uspto.gov/sites/default/files/documents/memo-berkheimer-20180419.PDF> (explaining that a specification that describes additional elements “in a manner that indicates that the additional elements are sufficiently well-known that the specification does not need to describe the particulars of such additional elements to satisfy 35 U.S.C. § 112(a)” can show that the elements are well understood, routine, and conventional). In light of this evidence, we find unpersuasive Appellant’s argument that there is no evidence that additional elements involve well-understood, routine, and conventional activity. *See* Reply Br. 3.

#### *Summary*

For the above reasons, we determine that claim 1 is directed to an abstract idea and does not have an inventive concept. We therefore sustain the Examiner’s rejection of claim 1 under § 101. Because Appellant does not

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present separate arguments for claims 2–14, we also sustain the Examiner’s rejections of these claims under § 101.

CONCLUSION

<b>Claims Rejected</b>	<b>Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1–14	§ 101	1–14	

No period for taking any action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

AFFIRMED