

United States District Court
Northern District of California

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

WISK AERO LLC,
Plaintiff,
v.
ARCHER AVIATION INC.,
Defendant.

Case No. [3:21-cv-02450-WHO](#)

**ORDER ON CLAIM CONSTRUCTION
AND MOTION FOR JUDGMENT ON
THE PLEADINGS**

Re: Dkt. Nos. 196, 201, 202

Plaintiff Wisk Aero LLC (“Wisk”) and defendant Archer Aviation Inc. (“Archer”) seek construction of claim terms in this patent infringement (and trade secret misappropriation) suit. Archer also moves for judgment on the pleadings that the asserted claims of two of Wisk’s patents cover ineligible subject matter under 35 U.S.C. § 101. Archer’s motion for judgment on the pleadings is granted; the challenged claims are invalid. My construction of the disputed claim terms in the remaining patents is set out below.

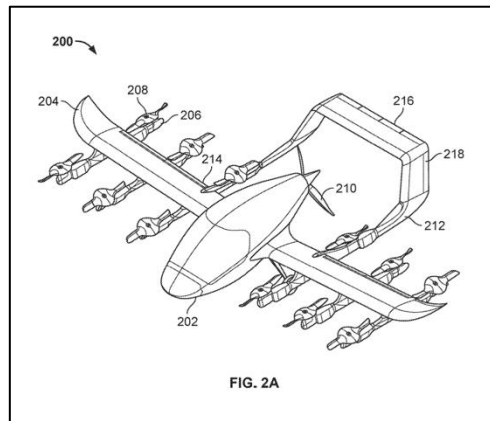
BACKGROUND

I. FACTUAL BACKGROUND

In this case, Wisk asserts infringement by Archer of a set of patents and misappropriation of a set of trade secrets. This Order concerns five of Wisk’s patents.

A. The ‘036 Patent

U.S. Patent No. 10,364,036 (“the ‘036 Patent”) concerns a “multicopter with boom mounted rotors.” *See* ‘036 Patent [Dkt. No. 196-2]. Claim 1 recites an aircraft comprised of a fuselage with wings, each of which has booms mounted to it with “lift rotors”—that is, blades that spin—attached to them. *See id.*, Cl. 1. One embodiment of that aircraft is depicted as:



Id., Fig. 2A.

B. The '033 and '328 Patents

U.S. Patent Nos. 10,110,033 (“the ‘033 Patent”) and 10,333,328 (“the ‘328 Patent”) are related and concern “multi-battery charging station which selectively connects battery sub-modules to a common power bus for charging.” *See* ‘033 Patent [Dkt. No. 196-3]; ‘328 Patent [Dkt. No. 196-4]. Claim 1 of both patents recites a system comprising a processor and memory that, at a general level, select “battery sub-modules” that can be connected to a “common power bus,” receive metrics from those sub-modules, determine whether a sub-module is in a “discharge-related fault,” and connect sub-modules to the power bus only if they are not in discharge-related fault. *See* ‘033 Patent, Cl. 1; ‘328 Patent, Cl. 1.

C. The '099 and '441 Patents

U.S. Patent Nos. 11,034,441 (“the ‘441 Patent”) and 10,370,099 (“the ‘099 Patent”) are related and concern an “online optimization-based flight control system.” *See* ‘441 Patent [Dkt. No. 196-6]; ‘099 Patent [Dkt. No. 196-5]. Claim 1 of the ‘099 Patent recites a method of controlling the flight of an aircraft in which inputs from “forces and moments”—that is, the different movements the aircraft can make—are received and then an “optimal mix” is computed by “minimizing a weighted set of costs,” including the costs that come from errors if a rotor fails. *See* ‘099 Patent, Cl. 1. Claim 1 of the ‘441 Patent recites an aircraft in which a flight controller and sensors perform a calculation to determine the “solution space” of all possible solutions to the algorithm and then selects the best from among them after excluding solutions that do not factor in

1 that an error has occurred. *See* ‘441 Patent, Cl. 1.

2 **II. PROCEDURAL BACKGROUND**

3 Wisk filed suit against Archer in April 2021. It sought a preliminary injunction to prohibit
4 alleged trade secret misappropriation, which I denied in July 2021. *See* Dkt. Nos. 110, 133. In
5 June 2021, Wisk filed an amended complaint that added the ‘441 and ‘099 Patents to this case.
6 Dkt. No. 45. In January 2022, Archer moved for judgment on the pleadings that those two patents
7 are invalid, which I heard on the same date as the claim construction hearing in March 2022.

8 **LEGAL STANDARD**

9 **I. MOTION FOR JUDGMENT ON THE PLEADINGS**

10 Federal Rule of Civil Procedure (“FRCP”) 12(c) provides that, “[a]fter the pleadings are
11 closed—but early enough not to delay trial—a party may move for judgment on the pleadings.” A
12 motion for judgment on the pleadings can “raise the defense of failure to state a claim.”
13 *McGlinchy v. Shell Chem. Co.*, 845 F.2d 802, 810 (9th Cir. 1988). When that is so, the court
14 employs the “same test as a motion under Rule 12(b)(6).” *Id.*

15 Under FRCP 12(b)(6), a district court must dismiss a complaint if it fails to state a claim
16 upon which relief can be granted. To survive a Rule 12(b)(6) motion to dismiss, the plaintiff must
17 allege “enough facts to state a claim to relief that is plausible on its face.” *See Bell Atl. Corp. v.*
18 *Twombly*, 550 U.S. 544, 570 (2007). A claim is facially plausible when the plaintiff pleads facts
19 that “allow the court to draw the reasonable inference that the defendant is liable for the
20 misconduct alleged.” *See Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (citation omitted). There
21 must be “more than a sheer possibility that a defendant has acted unlawfully.” *Id.* While courts
22 do not require “heightened fact pleading of specifics,” a plaintiff must allege facts sufficient to
23 “raise a right to relief above the speculative level.” *See Twombly*, 550 U.S. at 555, 570.

24 In deciding whether the plaintiff has stated a claim upon which relief can be granted, the
25 Court accepts the plaintiff’s allegations as true and draws all reasonable inferences in favor of the
26 plaintiff. *See Usher v. City of Los Angeles*, 828 F.2d 556, 561 (9th Cir. 1987). However, the court
27 is not required to accept as true “allegations that are merely conclusory, unwarranted deductions of
28 fact, or unreasonable inferences.” *See In re Gilead Scis. Sec. Litig.*, 536 F.3d 1049, 1055 (9th Cir.

1 2008).

2 If the court dismisses the complaint, it “should grant leave to amend even if no request to
3 amend the pleading was made, unless it determines that the pleading could not possibly be cured
4 by the allegation of other facts.” *See Lopez v. Smith*, 203 F.3d 1122, 1127 (9th Cir. 2000). In
5 making this determination, the court should consider factors such as “the presence or absence of
6 undue delay, bad faith, dilatory motive, repeated failure to cure deficiencies by previous
7 amendments, undue prejudice to the opposing party and futility of the proposed amendment.” *See*
8 *Moore v. Kayport Package Express*, 885 F.2d 531, 538 (9th Cir. 1989).

9 **II. CLAIM CONSTRUCTION**

10 Claim construction is a matter of law. *See Markman v. Westview Instruments, Inc.*, 517
11 U.S. 370, 372 (1996); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).
12 Terms contained in claims are “generally given their ordinary and customary meaning.” *Vitronics*,
13 90 F.3d at 1582. When determining the proper construction of a claim, a court begins with the
14 intrinsic evidence of record, consisting of the claim language, the patent specification, and, if in
15 evidence, the prosecution history. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005);
16 *see also Vitronics*, 90 F.3d at 1582. “A claim term used in multiple claims should be construed
17 consistently.” *Inverness Med. Switzerland GmbH v. Princeton Biomeditech Corp.*, 309 F.3d 1365,
18 1371 (Fed. Cir. 2002).

19 “The appropriate starting point [] is always with the language of the asserted claim itself.”
20 *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998). “[T]he ordinary
21 and customary meaning of a claim term is the meaning that the term would have to a person of
22 ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date
23 of the patent application.” *Phillips*, 415 F.3d at 1312. “There are only two exceptions to this
24 general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when
25 the patentee disavows the full scope of a claim term either in the specification or during
26 prosecution.” *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

27 “Importantly, the person of ordinary skill in the art is deemed to read the claim term not
28 only in the context of the particular claim in which the disputed term appears, but in the context of

1 the entire patent, including the specification.” *Phillips*, 415 F.3d at 1313. “Claims speak to those
2 skilled in the art,” but “[w]hen the meaning of words in a claim is in dispute, the specification and
3 prosecution history can provide relevant information about the scope and meaning of the claim.”
4 *Electro Med. Sys., S.A. v. Cooper Life Scis., Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994) (citations
5 omitted). “[T]he specification is always highly relevant to the claim construction analysis.
6 Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Vitronics*,
7 90 F.3d at 1582. “However, claims are not to be interpreted by adding limitations appearing only
8 in the specification.” *Id.* “Thus, although the specifications may well indicate that certain
9 embodiments are preferred, particular embodiments appearing in a specification will not be read
10 into the claims when the claim language is broader than such embodiments.” *Id.* Conversely,
11 “where [] the claim language is unambiguous, [the Federal Circuit has] construed the claims to
12 exclude all disclosed embodiments.” *Lucent Techs., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1215–
13 16 (Fed. Cir. 2008). “[T]he description may act as a sort of dictionary, which explains the
14 invention and may define terms used in the claims,” and the “patentee is free to be his own
15 lexicographer,” but “any special definition given to a word must be clearly defined in the
16 specification.” *Markman*, 517 U.S. at 989–90.

17 On the other hand, it is a fundamental rule that “claims must be construed so as to be
18 consistent with the specification.” *Phillips*, 415 F.3d at 1316. “The construction that stays true to
19 the claim language and most naturally aligns with the patent’s description of the invention will be,
20 in the end, the correct construction.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d
21 1243, 1250 (Fed. Cir. 1998).

22 The court may consider the prosecution history of the patent, if in evidence. *Markman*, 52
23 F.3d at 980. The prosecution history may “inform the meaning of the claim language by
24 demonstrating how the inventor understood the invention and whether the inventor limited the
25 invention in the course of prosecution, making the claim scope narrower than it would otherwise
26 be.” *Phillips*, 415 F.3d at 1317 (citing *Vitronics*, 90 F.3d at 1582–83); *see also Chimie v. PPG*
27 *Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) (“The purpose of consulting the prosecution
28 history in construing a claim is to exclude any interpretation that was disclaimed during

1 prosecution.”) (internal quotations omitted).

2 In most situations, analysis of this intrinsic evidence alone will resolve claim construction
 3 disputes. *Vitronics*, 90 F.3d at 1583. However, “it is entirely appropriate . . . for a court to consult
 4 trustworthy extrinsic evidence to ensure that the claim construction it is tending to from the patent
 5 file is not inconsistent with clearly expressed, plainly apposite, and widely held understandings in
 6 the pertinent technical field.” *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1309
 7 (Fed. Cir. 1999). Extrinsic evidence “consists of all evidence external to the patent and
 8 prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.”
 9 *Markman*, 52 F.3d at 980. All extrinsic evidence should be evaluated in light of the intrinsic
 10 evidence. *Phillips*, 415 F.3d at 1319. Courts should not rely on extrinsic evidence in claim
 11 construction to contradict the meaning of claims discernible from examination of the claims, the
 12 written description, and the prosecution history. *Pitney Bowes*, 182 F.3d at 1308 (citing *Vitronics*,
 13 90 F.3d at 1583). While extrinsic evidence may guide the meaning of a claim term, such evidence
 14 is less reliable than intrinsic evidence. *Phillips*, 415 F.3d at 1318–19.

15 DISCUSSION

16 I. MOTION FOR JUDGMENT ON THE PLEADINGS

17 Archer moves for judgment on the pleadings that the asserted claims of the ‘099 and ‘441
 18 Patents (collectively, the “Challenged Patents”) are invalid for claiming unpatentable subject
 19 matter. *See* Motion for Judgment on the Pleadings (“Mot.”) [Dkt. No. 201]. For the reasons that
 20 follow, the motion is granted.

21 35 U.S.C. § 101 restricts the scope of patentable subject matter to “any new and useful
 22 process, machine, manufacture, or composition of matter, or any new and useful improvement
 23 thereof.” But “laws of nature, natural phenomena, and abstract ideas are not patent-eligible
 24 because they represent the basic tools of scientific and technological work.” *Visual Memory LLC*
 25 *v. NVIDIA Corp.*, 867 F.3d 1253, 1257 (Fed. Cir. 2017) (internal quotation marks and citation
 26 omitted). In *Alice Corporation Pty. v. CLS Bank International*, 573 U.S. 208 (2014), and *Mayo*
 27 *Collaborative Servs. v. Prometheus Lab’ys, Inc.*, 566 U.S. 66 (2012), the Supreme Court clarified
 28 the two-step framework for determining whether patents claim this type of ineligible subject

1 matter. Because “[a]t some level, all inventions embody, use, reflect, rest upon, or apply laws of
 2 nature, natural phenomena, or abstract ideas[,] . . . an invention is not rendered ineligible for patent
 3 simply because it involves an abstract concept.” *Alice*, 573 U.S. at 217 (internal quotation marks,
 4 alteration, and citation omitted). Certain “applications” of those concepts can be made “to a new
 5 and useful end” and be patentable. *Id.* (internal quotation marks and citations omitted). Patent
 6 eligibility under Section 101 is a question of law and can be determined on Rule 12(c) motion.
 7 *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1373 (Fed. Cir. 2016).

8 **A. *Alice* Step One**

9 At the first step of the *Alice* framework, courts must “determine whether the claims at issue
 10 are directed to a patent-ineligible concept.” *Alice*, 573 U.S. at 218. Accordingly, the court must
 11 “articulate with specificity what the claims are directed to and ask whether the claims are directed
 12 to an improvement to . . . functionality versus being directed to an abstract idea.” *Visual Memory*,
 13 867 F.3d at 1258 (internal quotation marks and citations omitted). The Federal Circuit has
 14 instructed that this inquiry asks “what the patent asserts to be the focus of the claimed advance
 15 over the prior art.” *TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1292 (Fed. Cir. 2020) (internal
 16 quotation marks and citations omitted). The court must “focus on the language of the Asserted
 17 Claims themselves . . . considered in light of the specification” and avoid “overgeneralizing” those
 18 claims or stating them at too “high [a] level of abstraction.” *Id.* (internal quotation marks and
 19 citations omitted).

20 **i. ‘099 Patent**

21 Claim 1 of the ‘099 Patent recites a “method of controlling flight of an aircraft.” ‘099
 22 Patent, Cl. 1. That method has two steps. The first is “receiving a set of inputs associated with a
 23 requested set of forces and moments to be applied to the aircraft.” *Id.* The second is “computing
 24 an optimal mix of actuators and associated actuator parameters to achieve to an extent practical the
 25 requested forces and moments, including by minimizing a weighted set of costs that includes costs
 26 associated with one or more errors each corresponding to a difference between a requested force
 27 or moment and a corresponding force or moment achieved by the computed solution.” *Id.* As
 28 Wisk agrees, “what the patent asserts to be the focus of the claimed advance over the prior art,”

1 *TecSec*, 978 F.3d at 1292, is the minimization of a weighted set of costs, including costs of errors.
2 *See, e.g.*, Opposition to the Mot. (“Oppo.”) [Dkt. No. 210] 1 (“To address this problem, the claims
3 recite modeling a weighted set of costs, and they include within that set of costs a novel
4 consideration of the cost.”).

5 This purported advance over the prior art—which is what Claim 1 is directed to—is simply
6 a mathematical technique that could be performed in the human mind or, in Wisk’s framing, an
7 improvement to such a technique. In particular, the method “receiv[es]” inputs and “comput[es]”
8 an “optimal mix” of actuators and parameters. *See* ‘099 Patent, Cl. 1. The point of novelty is just
9 an aspect of that “comput[ation]”: it minimizes a weighted set of costs in a specific way. *See id.*

10 That computation, including the minimization of a weighted set of costs, is just what it
11 sounds like: a mathematical technique or method.¹ The advance over the prior art, the
12 specification makes clear (and Wisk agrees), is the precise technique in that mathematical
13 calculation for modeling the costs and incorporating the error cost. The specification explains
14 that, in the prior art, there were two ways to perform these calculations: offline and online. *See*
15 ‘099 Patent at 1:31–60. “Offline” techniques sought to calculate all of the possible outcomes
16 before flight and pre-load them into the system; “online” techniques sought to do the calculation
17 during flight. *See id.* The advance of the ‘099 Patent over the prior art, it claims, is the technique
18 of minimizing weighed costs. *See, e.g., id.* at 3:10–25. That, however, is just factoring in specific
19 inputs into the equation in a specific way. Indeed, the specification explicitly contrasts this
20 approach with previous mathematical techniques. *See id.* Performing this calculation is simply a
21 “method[] which can be performed mentally, or which are the equivalent of human mental work,”
22 and is, therefore, an “unpatentable abstract idea[.]” *CyberSource Corp. v. Retail Decisions, Inc.*,
23 654 F.3d 1366, 1371 (Fed. Cir. 2011).

24 The Supreme Court and Federal Circuit have repeatedly held that mathematical techniques
25 like this are not patentable. “Courts have long held that mathematical algorithms for performing

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27 ¹ At the hearing, Wisk argued that agreeing with Archer would essentially mean that any claim
28 that recited “computing” would be invalid. As the substantive explanation in this Order makes
clear, that is not what I hold. Any number of claims involving computing can be valid. My
analysis is based on the entirety of the patent, not that single word.

1 calculations, without more, are patent ineligible under § 101.” *In re Bd. of Trustees of Leland*
2 *Stanford Junior Univ.*, 991 F.3d 1245, 1250 (Fed. Cir. 2021) (citations omitted). As the Supreme
3 Court has put it, “if a claim is directed essentially to a method of calculating, using a mathematical
4 formula, even if the solution is for a specific purpose, the claimed method is” not patentable.
5 *Parker v. Flook*, 437 U.S. 584, 595 (1978) (internal quotation marks and citation omitted). The
6 reason is the same one that drives any *Alice* analysis: “the patent would wholly pre-empt the
7 mathematical formula and in practical effect would be a patent on the algorithm itself.”
8 *Gottschalk v. Benson*, 409 U.S. 63, 72 (1972).

9 This case is similar to others in which the claims have been invalidated. *Stanford*, for
10 instance, concerned a method for “inferring haplotype phase in a collection of unrelated
11 individuals.” 991 F.3d at 1250. That method, like this one, “receiv[ed]” the information and then
12 employed its mathematical technique. There, those mathematical steps were “repeatedly
13 randomly modifying at least one of the imputed initial haplotype phases to automatically
14 recompute the parameters of the HMM until the parameters indicate that the most likely haplotype
15 phase is found.” *Id.* (internal quotation marks and citation omitted). And here, the mathematical
16 technique is computing an optimal mix of actuators taking into account minimized weighed costs.
17 It did not matter there, and does not matter here, that the mathematical technique was better than
18 previous ones. *See id.* at 1251 (so holding). Other cases have held similar claims invalid. *See,*
19 *e.g., SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018) (“The focus of the
20 claims . . . is on selecting certain information, analyzing it using mathematical techniques, and
21 reporting or displaying the results of the analysis.”); *In re Gopalan*, 809 F. App’x 942, 945 (Fed.
22 Cir. 2020) (holding invalid claims directed to a mathematical technique for optimizing the number
23 of “true positives” and avoiding “false positives” to make “spectrally based measurements”).

24 Nor do any of the dependent claims to Claim 1 change this reality. They (Claims 2–4, 8–
25 10, 13–17, 19, and 21–22) all begin with the “method of claim 1” and add either (1) inputs for that
26 calculation, (2) limitations on that calculation, or (3) providing the data produced by the equation
27 to the actuator. All of those are, by their nature, simply part of the mathematical technique.

28 Independent Claim 26 is likewise directed to the same abstract concept. It recites a

1 “computer program product to control flight of an aircraft” embodied in a “computer readable
2 medium” that comprises “computer instructions for” carrying out the receiving and computing
3 functions discussed in Claim 1. *See* ‘009 Patent, Cl. 26. This is a textbook example of a generic
4 computer simply executing the abstract idea in computerized form, which cannot save an
5 otherwise abstract claim. *See Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d
6 1341, 1349 (Fed. Cir. 2016).

7 Wisk’s primary counterargument, repeated in several different formulations, undermines
8 its case rather than helps it. As Wisk puts it, the “claims recite the novel solution of including
9 error as a weighted cost in a cost function.” *Oppo*. 9. That is precisely what makes them
10 ineligible: including a new mathematical step in the computational technique. Wisk also leans
11 heavily on the idea that this technique is an advance over the prior art and a solution to a technical
12 problem. But, when it comes to something like this, “even if the solution is for a specific purpose,
13 the claimed method is nonstatutory.” *Parker*, 437 U.S. at 595. Wisk cites several cases that it
14 believes compel a different outcome, but, if anything, they demonstrate how abstract Wisk’s
15 patent is. *CardioNet, LLC v. InfoBionic, Inc.*, concerned a physical device that *itself* was
16 technologically improved, including in its physical features. 955 F.3d 1358, 1368 (Fed. Cir.
17 2020). *California Inst. of Tech. v. Broadcom Ltd.*, found that the claim “does not claim a
18 mathematical formula as such. It claims more than a mathematical formula because it is directed to
19 an efficient, improved method *of encoding data* that relies in part on irregular repetition.” 2022
20 WL 333669, at *8 (Fed. Cir. 2022) (emphasis added). And *Enfish, LLC v. Microsoft Corp.*,
21 concerned an improvement to a computer’s functionality *itself*, not merely the use of a computer to
22 perform some other task. 822 F.3d 1327, 1335 (Fed. Cir. 2016).

23 Wisk also relies on *Thales Visionix Inc. v. United States*, 850 F.3d 1343 (Fed. Cir. 2017),
24 which is in some ways closer to this case. The first claim there recited a “system for tracking the
25 motion of an object relative to a moving reference frame” that included two sensors, one on an
26 object to track and one on a reference frame, and an element that received signals and was
27 “configured to determine an orientation of the object relative to the moving reference frame based
28 on the signals received from the first and second inertial sensors.” *Id.* at 1345. The second recited

1 a method for determining the object’s orientation based on the signals from the two sensors. *Id.* at
2 1345–46. The Federal Circuit held that the claims were not directed to abstract math because
3 “[w]hile the claims utilize mathematical equations to determine the orientation of the object
4 relative to the moving reference frame, the equations—dictated by the placement of the inertial
5 sensors and application of laws of physics—serve only to tabulate the position and orientation
6 information in this configuration.” *Id.* at 1348. The claims were focused not on that math but on
7 the “particular arrangement of sensors.” *Id.* It was the placement of sensors in combination with
8 the equation, not the underlying mathematical technique alone, that was an advance over the prior
9 art. *See id.* (“Though the unconventional utilization of inertial sensors as specified by the ‘159
10 patent ‘may seem somewhat strange’ to those within the field, this combination of sensor
11 placement and calculation based on a different reference frame mitigates errors by eliminating
12 inertial calculations with respect to the earth.” (citations omitted)). Here, however, Wisk does not
13 contend that the point of novelty is the actuators or any other aspect of the technology. Instead, it
14 is clear (as is the patent itself) that minimizing the weighted costs is the focus of the claims over
15 the prior art and *that is*, unlike the technology in *Thales*, ineligible.

16 **ii. ‘441 Patent**

17 Claim 1 of the ‘441 Patent recites an “aircraft” with several components, but the claimed
18 advance over the prior art is “a flight controller” that is configured to (1) “receive flight control
19 inputs corresponding to a set of forces and moments to be applied to the aircraft”; (2) “monitor the
20 sensor data to detect whether any one of a plurality of lift fans has a failure induced reduced
21 capacity to generate lift”; (3) if there is such a failure, determine a “solution space”; and (4)
22 “determine within the solution space, a combination of the actuators and associated actuator
23 parameters to apply the set of forces and moments to the aircraft to an extent practicable with the
24 failure induced reduced capacity of the at least one of the lift fans.” ‘441 Patent, Cl. 1.

25 Claim 1 is directed toward an abstract mathematical technique as well. It contemplates
26 that, in the event of a failure induced reduced capacity to generate lift, the flight controller
27 generates a “solution space”—that is, all of the possible solutions—and then determines the best
28 one, taking into account that a lift fan has failed. As Wisk admits, the novelty is the determination

1 of the use of a solution space that takes into account the failure. *See* Oppo. 5; *see also id.* 21
2 (“[T]he ’441 Patent is directed to . . . generation of a solution space and selection of a control mix
3 within that solution space. . . .”); *id.* (arguing that “these claims improve the functioning of an
4 aircraft flight control system” by “first model[ing] a “solution space” to account for actuator
5 limitations, and then “select[ing] a solution whose variables are bounded to the limits of the
6 solution space”). Modeling a solution space is the result of a mathematical technique that can be
7 performed in the human mind, and that is what the claims are directed to. I incorporate the
8 caselaw discussed above about the ineligibility of an abstract concept like this. For the reasons
9 explained there, this mathematical approach is not patentable.

10 The dependent claims (2–7, 12–13, and 15–19) do not change this. Each simply elaborates
11 on specified inputs to or functions performed by the method that generates the solution space and
12 produces the best solution from it. I again reject Wisk’s argument that, just because it was solving
13 a specific problem, the claims are eligible. *See* Oppo. 22. Wisk’s patent purports to solve the
14 problem by generating a solution space taking into account the variable of failure—the
15 unpatentable idea itself. *See, e.g., Parker*, 437 U.S. at 595.

16 **B. Alice Step Two**

17 At the second step, the court must “consider the elements of each claim both individually
18 and as an ordered combination to determine whether the additional elements transform the nature
19 of the claim into a patent-eligible application.” *Enfish*, 822 F.3d at 1334 (internal quotation marks
20 and citations). The court must “search for an inventive concept—i.e., an element or combination
21 of elements that is sufficient to ensure that the patent in practice amounts to significantly more
22 than a patent upon the [ineligible concept] itself.” *Alice*, 573 U.S. at 217 (internal quotation marks
23 and citations omitted). But this allegedly inventive concept “cannot simply be an instruction to
24 implement or apply the abstract idea on a computer” and “must be significantly more than the
25 abstract idea itself.” *Bascom*, 827 F.3d at 1350.

26 Generally, this innovation “must involve more than performance of well-understood,
27 routine, [and] conventional activities previously known to the industry.” *Content Extraction &*
28 *Transmission LLC v. Wells Fargo Bank, N.A.*, 776 F.3d 1343, 1347–48 (Fed. Cir. 2014). “[T]he

1 mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a
2 patent-eligible invention.” *Id.* at 1348. However, “an inventive concept can be found in the non-
3 conventional and non-generic arrangement of known, conventional pieces.” *Bascom*, 827 F.3d at
4 1350.

5 Here, each mathematical technique is, from the plain text of the claims and the
6 specification, carried out solely by generic components performing their conventional functions—
7 a reality Wisk barely disputes. Most fundamentally, the claims themselves recite essentially the
8 mathematical concept itself, and Wisk (as discussed above) characterized the substance of the
9 claims in essentially the same way. That alone is good evidence that there is no unconventional
10 and inventive step that transforms the abstract idea. *See Bascom*, 827 F.3d at 1350.

11 The ‘441 Patent, it is true, recites a physical device—an aircraft and its component flight
12 controller. But that, the Federal Circuit has repeatedly made clear, is not determinative. *See, e.g.,*
13 *Yu v. Apple Inc.*, 1 F.4th 1040, 1044 & n.2 (Fed. Cir. 2021). Claims that purport to recite physical
14 devices can, instead, be directed in truth toward abstract concepts. *See id.* Just as importantly, the
15 analysis focuses on the *advance* over the prior art. *TecSec*, 978 F.3d at 1292. Even Wisk does
16 not maintain that a generic aircraft or flight controller (that is, the physical components
17 themselves) is the point of novelty; as it and the patents themselves make clear, if there is any
18 novelty, it is in (1) the minimization approach in the ‘099 Patent and (2) in the optimization from
19 solution space approach in the ‘441 Patent.

20 Another good indication that the claims are directed only to mathematical techniques is
21 that they are entirely ends-oriented and use only functional language. *See Elec. Power Grp.*, 830
22 F.3d at 1356. Claim 1 of the ‘099 Patent, for instance, just recites that it “receives” information
23 and then “computes” it in a particular way, taking into account errors. The claim does not explain
24 any technical requirements of how any of this occurs. Claim 1 of the ‘441 Patent, similarly, states
25 without elaboration that the flight controller is “configured” to perform the math. The purported
26 “technical solution” is really just “the abstract idea itself.” *Yu*, 1 F.4th at 1040.

27 Wisk’s counterarguments illustrate that the patents are invalid, rather than pointing the
28 other way. Wisk argues, on the ‘099 Patent, that “the inventive step is taking the . . . error[]

1 between the requested force or moment and the calculated achievable force or moment and
2 factoring that error into the analysis as a cost to be minimized.” *Oppo*, 19. I agree. But that
3 inventive step is nothing more than a mathematical step and “[t]he different use of a mathematical
4 calculation, even one that yields different or better results, does not render patent eligible subject
5 matter.” *Stanford*, 991 F.3d at 1251.

6 On the ‘441 Patent, Wisk argues that what “adds significantly to the mere concept of
7 computing a set of outputs” is that the patent is directed “to an *aircraft* comprising a *flight*
8 *controller* that has been configured to apply novel techniques for determining an optimal solution
9 when faced with a *specific type of actuator failure* and under the circumstances where the
10 unconstrained optimum solution may *fall entirely outside a calculated solution space* of
11 practically achievable solutions.” *Oppo*, 24. Parenthetically, Wisk’s statement appears to admit
12 that “the mere concept of computing a set of outputs” *is* part of the focus and is *not* patentable. In
13 any event, Wisk’s purported inventive steps do not hold up under scrutiny. First, there is no
14 colorable argument that the *advance over the prior art* is the aircraft or flight controller, it is the
15 calculation. Second, merely reciting an “aircraft” and “flight controller” without more are generic
16 and conventional components that are there only to perform the abstract idea without adding
17 anything substantial. This is, in effect, a repeat of the argument Wisk made at step one and is not
18 persuasive for the reasons explained there and those given here.

19 Finally, Wisk’s brief argued without much elaboration that this issue cannot be decided at
20 the pleadings stage and that it should be given leave to amend if I grant this motion. Prior to the
21 hearing, I asked Wisk to put forward the specific facts it would plead if given leave to amend. *See*
22 Dkt. No. 227. At the hearing, it announced twelve purported facts that it could plead. To avoid a
23 costly and time-consuming round of amendment and motion practice, I will treat them as pleaded
24 allegations here. None of them save the claims.

25 To start, many of these new facts are already part of the record in one way or another.
26 Several of them were simply the problems identified in the patents’ specifications as being solved;
27 I address that issue above. Another set of allegations was that the solutions in the patents are
28 “specific applications” of the mathematical methods. I address above why this application is

1 really just the alteration of the technique to make it better, which is not patentable. In any case, it
 2 is established law that “the prohibition against patenting abstract ideas cannot be circumvented by
 3 attempting to limit the use of the idea to a particular technological environment.” *Alice*, 573 U.S.
 4 at 222 (internal quotation marks, alteration, and citation omitted). That same principle dooms
 5 another set of proposed allegations—that the invention has “no significance” outside of this area.

6 Several other proposed allegations are arguably not already part of the record, but even if
 7 they were pleaded and credited, they would not alter the analysis. Wisk argued that it would plead
 8 that a POSITA would recognize that the techniques disclosed in both patents were
 9 “counterintuitive” and, in even stronger terms, “unconventional.” But whether a claim is abstract
 10 does not turn on whether it is intuitive or not; a counterintuitive math technique is still a math
 11 technique. And even taking as true the (conclusory) assertion that a POSITA would understand
 12 the techniques to be unconventional, it does not change the unpatentability of these particular
 13 claims. In *ChargePoint, Inc. v. SemaConnect, Inc.*, the Federal Circuit faced a patentee’s pleading
 14 that its claims were patentable because they were “unconventional,” “paradigm-shifting” and that
 15 it was the “first” to practice this technology. 920 F.3d 759, 774 (Fed. Cir. 2019). Just as in that
 16 case, however, pleadings like this cannot save the claims because this alleged unconventional
 17 concept “is the abstract idea itself, and a claimed invention’s use of the ineligible concept to which
 18 it is directed cannot supply the inventive concept that renders the invention ‘significantly more’
 19 than that ineligible concept.” *Id.* (internal quotation marks and citation omitted).²

20 **II. CLAIM CONSTRUCTION**

21 The parties seek construction of three claim terms.³

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 23
 24
 25 ² Wisk made two other proposed allegations. First is that Archer willfully infringed these patents.
 26 But that is immaterial to the analysis of whether the claims themselves are unpatentable. Second,
 27 Wisk argued that the patent examiner considered the issue of abstraction and determined that the
 28 claims were tied to a practical application. But, now that the issues have been through the crucible
 of a fully briefed adversarial challenge, I find otherwise for the reasons explained.

³ The parties also sought construction of three terms that appeared solely in the ‘099 and ‘441
 Patents. Because I find the asserted claims of those patents invalid, I do not construe the terms.

1 **A. “lift rotors”**

2

Wisk’s Construction	Archer’s Construction	Court’s Construction
“rotors configured to provide lift”	“rotor installed only for vertical thrust”	“rotors configured to provide lift”

3

4 Claim 1 of the ‘036 uses the term “lift rotors.”⁴ *See* ‘036 Patent, Cl. 1. The parties’
 5 dispute is over whether these rotors must *only* provide “lift” or “vertical thrust”—terms the parties
 6 and I agree are synonymous—or whether they may also perform other functions in addition to
 7 providing lift or vertical thrust. For the reasons that follow, I agree with Wisk that the lift rotors
 8 contemplated in the ‘036 Patent can perform functions other than providing lift.⁵

9 **i. Intrinsic Evidence**

10 Claim 1 uses the term “lift rotors” several times. Those rotors, it recites, are mounted on
 11 booms that extend from the wings of the aircraft. ‘036 Patent, Cl. 1 at 25–30. The claim language
 12 makes clear that “each rotor . . . produces an amount of vertical thrust independent of levels of
 13 vertical thrust produced by the other rotors.” *Id.* at 31–34. Both parties agree that the rotors
 14 produce lift. The question is whether a rotor that produces lift and can or does perform other
 15 functions is included in the claim.

16 The intrinsic evidence settles the dispute in Wisk’s favor. The first line of the specification
 17 explains that “[m]ulticopter aircraft typically include . . . horizontally oriented rotors, sometimes
 18 referred to as ‘lift fans,’ to provide lift, stability, and control.” *Id.* at 1:5–7. Because patents use
 19 the same language to presumptively mean the same thing, it follows that the lift rotors in Claim 1
 20 not only provide lift but also stability and control. *See Inverness Med.*, 309 F.3d at 1371
 21 (explaining the rule of parallel construction); *Phillips*, 415 F.3d at 1313 (holding that claims terms
 22 should be interpreted in line with the specification). The patent suggests from the start that, when
 23 it discusses lift rotors, it understands that they can perform functions other than strictly providing
 24

25 _____
 26 ⁴ The ‘441 Patent used the term “lift fans” and the parties construed that term and “lift rotors”
 together.

27 ⁵ At the hearing, for the first time, Archer argued that what it really seeks is a construction that the
 28 rotors *cannot* create *purely horizontal* movement. That is distinct from the construction it sought
 in briefing and what the parties disputed. I will not address this unbriefed proposed construction.

1 vertical thrust.

2 There are other indications too. Claim 1 recites that one subset of the booms (to which the
3 lift rotors are attached) are mounted to a wing “at a non-zero angle relative to a substantially
4 vertical axis of the aircraft such that the boom is tilted inboard.” ‘036 Patent, Cl. 1 at 35–39. A
5 second subset of the booms (again, to which the lift rotors are attached) are mounted to be tilted
6 “outboard.” *Id.*, Cl. 1 at 40–44. The specification elaborates that one diagram shows that some
7 lift fans “oriented” to “angles off the vertical axis . . . sometimes referred to herein as ‘cant
8 angles.’” *Id.* at 4:58–65. Even more clearly, it explains that the lift rotors can, in some
9 embodiments, be oriented at an *angle* “relative to the horizontal plane” so that they can generate
10 *both non-vertical and vertical force*. *Id.* at 5:47–53. The specification explains that, in some
11 embodiments, “angling the lift fans, as indicated, may provide additional options to control the
12 aircraft, especially at or near hover.” *Id.* at 4:65–5:4. It gives the example of the rotors being used
13 to “exercise yaw control”—that is, rotating around the z-axis—“to slip sideways or counteract the
14 force of wind.” *Id.* The specification elsewhere contemplates that the rotors are oriented at
15 “angles.” *See, e.g., id.* at 5:5–9, 5:19–21. And it indicates at various points that the rotor angles
16 will be set according to the need to perform such tasks as “angular accelerations” and “center of
17 gravity variations”—that is, tasks other than pure lift. *Id.* at 5:20–30. From all this, it is plain that
18 the patent understands lift fans as capable of performing more functions than strictly providing lift.

19 To resist this, Archer points to a few specific lines in the patent. First, it relies on the same
20 opening line recited above, singling out the statement that lift rotors are “horizontally oriented.”
21 Responsive Claim Construction Brief (“Resp.”) [Dkt. No. 202] 7. But, as explained above, that
22 line explains that the fans are “horizontally oriented” *and* that they provide “lift, stability, and
23 control.” ‘036 Patent at 1:6–8. More to the point, there is no indication that the fans being
24 “horizontally oriented” rules out that they can also at times turn to *angles to the horizontal*; to the
25 contrary, the patent is littered with indications that its lift rotors *are* angled and, therefore, that
26 they produce forces other than pure vertical thrust.

27 Archer next points to a line in the ‘441 Patent (which, as the parties agree, uses the term in
28 the same way as the ‘036 Patent and is descended from a common application) that differentiates

1 between “sources of forward thrust, such as propellers or jet engines” and “sources of lift such as
 2 rotors or lift fans.” ‘441 Patent at 1:22–27. But, in context, that something is a “source[] of lift”
 3 does not mean that it is *only* a source of lift. Nor does this change because other devices are
 4 sources of other forces. As explained above, the patent repeatedly contemplates that lift rotors can
 5 do other things too.

6 Relatedly and finally, Archer points out that the ‘441 Patent states that the propeller is
 7 “‘configured to push the aircraft through the air in the forward (e.g., x axis) direction,’ while” the
 8 ‘036 Patent states that “the ‘lift fans’ are the actuators that ‘produce[] vertical thrust.’” Resp. 9–10
 9 (quoting ‘036 and ‘441 Patents). As an initial matter, the patents themselves do not draw this sort
 10 of sharp contrast; in fact, the two statements are from different patents. More importantly, Archer
 11 edits the statement from the ‘036 Patent into something it is not. The full statement just makes the
 12 point that “[e]ach lift fan produces vertical thrust *independent of the thrust produces by other lift*
 13 *fans.*” ‘036 Patent at 4:13–17 (emphasis added). It does not state or imply that the lift rotors are
 14 *confined* to that purpose.

15 ii. Extrinsic Evidence

16 Because I find the intrinsic evidence to be all but conclusive, the extrinsic evidence would
 17 need to be so unambiguously against my construction that it showed it was inconsistent with
 18 “clearly expressed, plainly apposite, and widely held understandings” in the field. *Pitney Bowes*,
 19 182 F.3d at 1309. Even then, it would also have to explain why this other understanding did not
 20 contradict the plain teachings of the patent discussed above. *See id.*; *Vitronics*, 90 F.3d at 1583.
 21 The extrinsic evidence is not particularly helpful or revealing either way, and it is certainly
 22 insufficient to overcome the intrinsic evidence discussed above.

23 Both parties point almost exclusively to technical dictionaries. Wisk cites the Dictionary
 24 of Aeronautical Terms, which defines “lift fan” as a “specific type of turbofan engine installed on
 25 an aircraft in such a way that it *can be pivoted to direct its thrust* in a vertical direction” Opening
 26 Claim Construction Brief (“Open.”) [Dkt. No. 196] 9 (quoting 7th ed. (2020)) (emphasis in Wisk’s
 27 brief). It also cites the Aircraft Technical Dictionary, which defines a “lift fan” as a type of engine
 28 that “can be swiveled up and down” or “can be turned to provide upward thrust for vertical or

1 short takeoff.” *Id.* 10 (quoting 2nd ed. (1980)) (emphasis omitted). Archer cites the Cambridge
2 Aerospace Dictionary, which defines a “lift fan” as a structure “installed only for lift.” Resp. 8
3 (quoting 2nd ed. (2009)). Archer attempts to discount Wisk’s dictionaries as being more removed
4 in time from the patent. It also argues that the definitions Wisk gives simply could mean that the
5 fan itself moves but only provides thrust when vertical. *See id.* 8–9. Wisk attempts to discount
6 Archer’s definition as only applying to one particular type of aircraft and because that definition
7 notes that lift fans “may have exit vanes to give a diagonal lift/thrust component.” Dkt. No. 202-2.

8 This is the precise sort of situation in which the Federal Circuit has cautioned that
9 overreliance on dictionary definitions—especially contradictory and contested ones—is to be
10 avoided. *See Phillips*, 415 F.3d at 1322 (“[H]eavy reliance on the dictionary divorced from the
11 intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning
12 of the term in the abstract, out of its particular context, which is the specification.”). Archer is
13 correct that its dictionary is closer in time to the drafting of the patent, perhaps suggesting it is
14 closer to what a person of skill in the art at the time of the drafting would understand. Yet
15 Wisk provides two definitions spanning a period of decades, which may instead suggest that its
16 definition is robust across time. Archer also may be right that Wisk’s dictionaries contemplate
17 that the rotors are movable only when they are not producing thrust. But it may also be wrong; the
18 plain text includes no such limitation. Wisk, too, may be correct that Archer’s dictionary intended
19 to limit itself either to particular aircraft types or that the “exit vanes” proviso contradicts what
20 otherwise appears to be the plain meaning. Or it may not be. Ultimately, constructions “should
21 not rise or fall based upon the preferences of a particular dictionary editor, or the court’s
22 independent decision, uninformed by the specification, to rely on one dictionary rather than
23 another.” *Id.* This murky dictionary evidence is not sufficient to change—let alone to
24 conclusively contradict—the clearer content of the patent itself.⁶

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28 ⁶ Archer also argues that the Code of Federal Regulations defines a “Tiltorotor” aircraft as one
with rotors that vary in pitch. Resp. 9. That sheds no light on the meaning of the separate term
“lift rotor,” let alone the meaning in this particular patent.

1 **B. “battery sub-module”**

2

Wisk’s Construction	Archer’s Construction	Court’s Construction
“a component of a battery system, that includes a battery management system and a switch”	“a container of two or more cells that is a sub-part of a module, which in turn may be combined with other modules to make up a battery pack”	“a component of a battery system that includes one or more cells, a battery management system, and a switch”

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6 The parties dispute the proper construction of the term “battery sub-module” in the ‘033 and
7 ‘328 Patents. *See* ‘033 Patent, Cl. 1, 10, 19; ‘328 Patent, Cl. 1, 6, 11. I divide the analysis into three
8 component parts: whether the term (1) is a component of a battery system or a tiered hierarchy, (2)
9 is made up of (a) cell(s), and (3) includes a battery management system (“BMS”) and switch.

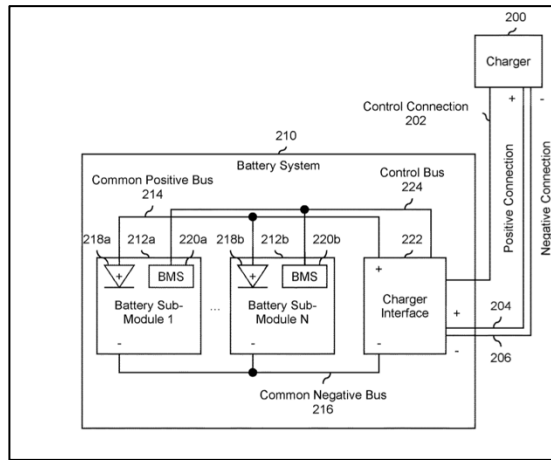
10 **i. Battery System or Hierarchy**

11 Archer argues that a battery sub-module “has [an] ordinary meaning in the hierarchy of
12 battery terminology.” *Resp.* 11. According to it, a “sub-module” is a component part of a battery
13 “module,” which in turn is a component part of a battery pack. *See id.* Wisk, for its part, argues
14 that a sub-module is merely a component of a broader “battery system,” without the hierarchy
15 Archer envisions. *See Open.* 11. I agree with Wisk that, as it is used in the asserted claims, “battery
16 sub-module” is just a component of a “battery system,” not Archer’s more elaborate hierarchy.

17 1. Intrinsic Evidence

18 The intrinsic evidence supports Wisk’s reading and does not offer anything in support of
19 Archer’s. Claim 1 of the ‘033 Patent recites “[a] system, comprising” a processor and memory
20 coupled with the processor. *See* ‘033 Patent, Cl. 1. It “receive[s], for each battery sub-module”
21 certain metrics, “select[s]” one or more sub-modules to connect to the common bus, “configure[s]”
22 those sub-modules to connect them to the common bus, and “charge[s]” the sub-modules. *Id.*
23 Accordingly, the language of the claim supports Wisk’s view that the sub-modules are part of a
24 broader “system.” Claim 1 of the ‘328 Patent similarly recites “[a] system” comprising a processor
25 and memory configured to perform specified analyses and actions related to sub-modules. *See* ‘328
26 Patent, Cl. 1. The specifications reinforce this understanding. Figure 2 of both patents depicts a
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1 “battery system” with various component parts including individual “battery sub-module[s]”:



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10 *Id.*, Fig. 2; ‘033 Patent, Fig. 2. While the description of the figure indicates the figures are an
11 embodiment, they are, as explained, consonant with the language of the claims themselves.

12 Archer’s interpretation, in contrast, is not grounded in the claims or specification. To
13 support its position, Archer first relies on the word “sub-module” itself. *See* Resp. 11. According
14 to it, the word itself conveys that it is “different from, and smaller than, a ‘battery’ or a ‘battery
15 module.’” *Id.* Archer is correct to the extent that, as a matter of plain and ordinary meaning, the
16 prefix “sub” will often mean “a subordinate portion of,” “a subdivision of,” or “underneath, beneath,
17 [or] below.” *See, e.g., Sub-*, Merriam-Webster Dictionary (11th ed. 2020). On Archer’s reading,
18 this means that that a “sub-module” must be part of a bigger “module.” But there are at least three
19 problems with reading the term this way here. First, this definition is of the prefix standing alone,
20 not used in any particular context, let alone this one. Second, even under this plain meaning it is
21 plausible that a “sub-module” would mean a unit that is a part of a bigger whole that did not have
22 the same terminology. While that reading may perhaps be less natural in a vacuum, it is the one that
23 aligns with the claim language and specification, as explained above. Third, it is conspicuous that
24 neither patent contemplates a “module” at all; it would be a stretch to read it into the patent solely
25 from the general operation of a prefix.⁷

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27
28 ⁷ Somewhat strangely, *Wisk* labelled the “battery system” as a “module” in its brief, perhaps to support an argument that “module” means “battery system” in this context. *See* Open. 11. But, as explained, the patents do not mention a “module.”

1 Next, Archer argues that “Wisk proposes that a ‘battery sub-module’ can be any ‘component
2 in a battery system,’ even though in Wisk’s view that phrase would apply to an entire battery in a
3 multi-battery system. Thus Wisk’s construction would remove any distinction between a ‘battery’
4 and a ‘battery sub-module,’ in violation of black-letter law.” Resp. 11 (citation omitted). But just
5 as the patents do not reference any “module,” they do not include “battery” as a stand-alone term.
6 There is, as a result, no issue of superfluity under the construction I adopt.

7 2. Extrinsic Evidence

8 Archer’s construction relies primarily on extrinsic evidence that, it claims, shows that it is
9 generally understood in the art that a battery sub-module is part of the hierarchy it argues for.
10 Archer’s expert opines that the prefix “sub” would have the meaning to those of skill in the art as
11 part of this hierarchy. See Declaration of Heath Hofmann (“Hofmann Decl.”) [Dkt. No. 202-4] ¶
12 43. He says that POSITAs would understand it to be part of a module that is part of a battery pack.
13 *Id.* ¶ 47. He points to a textbook, a thesis, a paper, and a series of real-world example that used sub-
14 module to mean a component part of a module. See *id.* ¶¶ 48–53. Archer also points to Wisk’s
15 energy storage system architecture, which it asserted as a trade secret in this action. See Dkt. No.
16 17-10 at 38–39. And Archer points to several of Wisk’s patents or patent applications that use this
17 sort of hierarchy in embodiments. See Resp. 12–13 (citations omitted). From this, the evidence
18 appears to be strong that the term is often used in the art in the way that Archer argues for.

19 But Wisk has introduced extrinsic evidence cutting the other way. Its expert opines that
20 POSITAs “use the term differently depending on the context.” Declaration of E. Randolph Collins,
21 Jr. (“Collins Decl.”) [Dkt. No. 196-10] ¶ 36. In support, he cites a patent unrelated to this case that
22 recites a battery system made up of battery sub-modules that themselves “may be a fully contained
23 battery.” *Id.* (citing U.S. Patent No. 10,027,133).

24 In light of this, I cannot say that the extrinsic evidence shows that even the “battery sub-
25 module” contemplated in these patents is necessarily part of the hierarchy Archer pushes for. It
26 instead shows that the art contains examples of battery sub-module taking both meanings. In the
27 absence of more conclusive extrinsic evidence, the meaning of this term is, in my view, settled by
28 the intrinsic evidence.

1 **ii. Cell(s)**

2 Wisk’s proposed construction does not reference a battery sub-module being composed of
3 cells. Archer’s proposed construction includes a sub-module being “a container of two or more
4 cells.” I conclude that the evidence shows that a battery sub-module must include at least one cell
5 but does not show that it necessarily includes more than one.

6 To start, Wisk agreed at the hearing (in response to my tentative construction, *see* Dkt. No.
7 227) that a battery sub-module includes at least one cell. Archer, as noted, believes it has more than
8 one, so both parties concur that *at least* one cell is present. The evidence also supports that finding.
9 Both specifications, for example, repeatedly discusses the “cell level” of each submodule. *See, e.g.*,
10 ‘033 Patent at 5:29–32, 6:4–10; ‘328 Patent at 5:39–42, 6:14–19. And both parties’ experts discuss
11 battery sub-modules as being composed of at least one cell. *See* Collins Decl. ¶ 30; Hofmann Decl.
12 ¶ 44.

13 The question is whether a battery sub-module is necessarily composed of more than one cell.
14 Archer has produced no intrinsic or extrinsic evidence that adequately supports its position. The
15 only intrinsic evidence that Archer musters is that several embodiments in the specification indicate
16 that a sub-module contains multiple cells. But each is only discussed as an exemplary embodiment.
17 *See* ‘033 Patent at 3:30–33, 5:31–34, 13:22–24. While courts “read claims in view of the
18 specification, of which they are a part, we do not read limitations from the embodiments in the
19 specification into the claims.” *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1310
20 (Fed. Cir. 2017). This is true even when it is the “only embodiment described.” *In re Am. Acad. of*
21 *Sci. Tech. Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004).

22 Archer also relies on the opinion of its expert, who states that a POSITA would understand
23 a sub-module as containing multiple cells. *See* Hofmann Decl. ¶¶ 42–44. Wisk’s expert replies that
24 a POSITA would understand that it “may be comprised of a single cell, or multiple cells depending
25 on the use case.” Collins Decl. ¶ 42. The expert evidence does not compel the conclusion that the
26 claims implicitly include the limitation Archer urges in the absence of an indication from the claim
27 language or specification.

28 Archer contends that several patent applications filed by Wisk that are not involved in this

1 suit and not from the same patent family show that the sub-modules need to include multiple cells.
2 *See* Resp. 12–13. Because those patents are not connected to these, their particular definitions are
3 of minimal value. In any event, all that Archer points to in those patents are, again, *embodiments*
4 that include multiple cells, so even if they were relevant their limitations would not alter the scope
5 of the term. *See id.* (citing Dkt. Nos. 196-14, 202-19); *MasterMine*, 874 F.3d at 1310.

6 **iii. Battery Management System and Switch**

7 Wisk argues that a battery sub-module includes a BMS and a switch. *See* Open. 11. Archer
8 counters that the claim language does not include a “switch” and that BMSs are only referenced in
9 dependent claims. *See* Resp. 14.

10 Wisk has the better of the argument. Claim 1 of the ‘033 Patent (an independent claim)
11 recites that the system (among other things) (1) connects and disconnects sub-modules to the
12 common bus and (2) receives metrics about the sub-modules. *See* ‘033 Patent, Cl. 1. Claim 1 of
13 the ‘328 Patent does too. *See* ‘328 Patent, Cl. 1. The technology must, therefore, include
14 components that perform those functions. And “[a] patentee is free to recite features of an apparatus
15 either structurally or functionally.” *In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997). A switch
16 (of some sort) would connect and disconnect from the common bus; a BMS would monitor the
17 batteries. *See* ‘033 Patent, Fig. 2, Fig. 7, 4:27–34 (“Although a diode is shown here, any (e.g.,
18 electrical) switch may be used to connect or disconnect a battery sub-module from the common
19 power bus.”); ‘328 Patent, Cl. 3, 8, 13 (reciting a limitation in dependent claims as a “built-in battery
20 management system in [a] given battery sub-module”). Embodiments in the patent include precisely
21 the structure Wisk argues for: sub-modules that contain BMSs and switches, indicating at least that
22 it is possible. *See* ‘033 Patent, Fig. 2. Accordingly, the best reading of the claim is that the sub-
23 modules contain BMSs and switches to perform the recited functions. *See Phillips*, 415 F.3d at
24 1313 (holding that claims terms should be interpreted in line with the specification).

25 Archer responds that the BMS is only a limitation in dependent claims and therefore cannot
26 be a structure present in the battery sub-module recited in the independent claims. *See Liebel–*
27 *Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (“The presence of a dependent
28 claim that adds a particular limitation raises the presumption that the limitation in question is not

1 found in the independent claim.”). But I do not read a limitation from dependent claims into an
 2 independent claim; I find that the *independent claim* recites a necessary *function* and the dependent
 3 claims merely help show that the BMS can perform that function. The dependent claims at issue
 4 recite BMSs to show they also perform *other* functions. *See, e.g.*, ‘328 Patent, Cl. 3 (reciting that
 5 the BMS performs fault indication). This reading also comports with the canon of claim
 6 construction that, ordinarily, an independent claim has a broader scope than a claim that depends
 7 from it. *See, e.g., Free Motion Fitness, Inc. v. Cybex, Int’l. Inc.*, 423 F.3d 1343, 1351 (Fed. Cir.
 8 2005).

9 On the switch, Archer has even less to say, arguing only that it does not appear in the claim
 10 language. *See* Resp. 14. But, again, the claims do recite the *function* that a switch would perform.

11 There is no extrinsic evidence that alters this conclusion. Archer points out that another
 12 Wisk patent (unrelated to these patents) discloses battery sub-modules connected to an *external*
 13 BMS and a switch residing in the path for power and not in the battery sub-module itself. *See* Resp.
 14 18, n.6 (citation omitted). But it is immaterial that Wisk claimed different structures in an unrelated
 15 patent.

16 **C. “discharge-related fault”**

Wisk’s Construction	Archer’s Construction	Court’s Construction
Plain and ordinary meaning	“a fault related to discharge of the battery sub-module (as opposed to temperature or voltage)”	Plain and ordinary meaning

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 18
 19
 20 Several claims of the ‘328 Patent use the term “discharge-related fault.” *See* ‘328 Patent,
 21 Cl. 1, 6, 11. The ‘328 Patent concerns charging of battery sub-modules. The specification explains,
 22 and the parties agree, that a “fault” condition “is a safety check to ensure none of the battery sub-
 23 module will be damaged and/or cause damage if charged.” *Id.* at 6:60–63; *see* Open. 16 (adopting
 24 this definition); Resp. 15 (same). A “discharge” is when the battery sub-module releases its charge.
 25 *See, e.g.*, ‘328 Patent at 3:60–65; Open. 16 (adopting this definition); *cf.* Resp. 15 (relying on this
 26 portion of the specification).

27 Wisk argues that this term should be construed by its plain and ordinary meaning, which
 28

1 Wisk takes to mean any fault “related to” a discharge, no matter its direct cause. *See* Open. 15.
2 Archer argues that the term should be construed as a fault “related specifically to a discharge,” which
3 Archer takes to exclude faults related to temperature or voltage. *See* Resp. 15. For the reasons that
4 follow, the term does not include the limitation Archer would impose on it. But I clarify that
5 something is not a “discharge-related” fault merely because it is *detected during* discharge (as
6 opposed to caused during discharge or causally connected to discharge).

7 As the summary above shows, both parties lay claim to the term’s plain and ordinary
8 meaning. By its plain meaning, though, a discharge-related fault simply means a fault related to a
9 discharge. The plain meaning of “related” is “associated” or “connected.” *See, e.g., Morales v.*
10 *Trans World Airlines, Inc.*, 504 U.S. 374, 383 (1992) (“The ordinary meaning of [‘relating to’] is a
11 broad one—‘to stand in some relation; to have bearing or concern; to pertain; refer; to bring into
12 association with or connection with.’” (quoting Black’s Law Dictionary (5th ed. 1979))); *Related*,
13 Oxford English Dictionary (11th ed. 2019) (“belonging to the same family, group or type” and
14 “associated with the specified item or process, especially causally”); *Related*, Cambridge English
15 Dictionary (4th ed. 2013) (“connected”); *cf. Related*, Merriam-Webster Dictionary (11th ed. 2020)
16 (listing multiple definitions involving things being “connected” or having a “connection”). From
17 that plain meaning, a discharge-related fault would not need to be caused *solely* by a discharge, nor
18 is there anything about it that excludes faults *also* related to other conditions, such as in temperature
19 or voltage. I take this plain and ordinary meaning as a starting point, *see Vitronics*, 90 F.3d at 1582,
20 and discuss below whether Archer has shown that other intrinsic evidence undermines it.

21 This definition of discharge-related fault also coheres with the overall purpose of the
22 invention. *See Phillips*, 415 F.3d at 1313. Each of the claims at issue describes, essentially, a system
23 for managing multiple battery sub-modules connected to one power line—a “common bus.” *See,*
24 *e.g.,* ‘328 Patent, Cl. 1. They recite a method for determining whether any given sub-module is in
25 discharge-related fault and, if so, excluding it from connecting to the common bus while the other,
26 working sub-modules do connect. *See id.* The point of that approach, the specification explains, is
27 ensuring that a failed battery does not connect to that common bus, endangering the other batteries
28 and creating a safety risk. *See id.* at 4:21–33. It would make little sense to exclude some faults

1 related to discharge merely because they *also* related to other fault-inducing conditions.

2 Archer has pointed to no intrinsic evidence that supports its argument that the term includes
3 the implicit limitation it urges. *See Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1351 (Fed.
4 Cir. 2012) (“Negative claim limitations are adequately supported when the specification describes
5 a reason to exclude the relevant limitation.”). First, it contends that the claim language differentiates
6 between “discharge-related faults” from “faults” more generally. *See* Resp. 15. But while the patent
7 does discuss “faults” without the modifier “discharge-related,” all that means is that some faults
8 may not be related to discharges; it does not imply the limitation Archer seeks.⁸ If a fault has nothing
9 to do with discharge, it does not fall within the scope of the term. Archer also points to the statement
10 in the specification that a discharge-related fault may arise “even though temperature and/or voltage
11 checks may be satisfied.” *Id.* (quoting ‘328 Patent at 6:63–7:1). But that just shows that some
12 discharge-related faults *are not* related to temperature and voltage, it does not state or imply that
13 they *cannot* be.

14 The only pieces of extrinsic evidence the parties present are the opinions of their experts.
15 Wisk’s expert opines that a POSITA would understand that Wisk is correct; Archer’s expert opines
16 that a POSITA would understand that Archer is correct. *Compare* Dkt. No. 196-10 ¶¶ 55–56, *with*
17 Dkt. No. 202-4 ¶¶ 67–76. These experts’ diametrically opposed opinions are insufficient to shift
18 the plain meaning one way or another. *See Pitney Bowes*, 182 F.3d at 1308 (holding that courts
19 should not rely on extrinsic evidence to contradict a meaning that is clear from the intrinsic
20 evidence). Consequently, the term will be construed as having its plain and ordinary meaning in
21 accordance with the discussion here.

22 That said, however, the plain and ordinary meaning of discharge-related fault may not reach
23 as far as Wisk might be understood to urge. Wisk’s expert seemed to endorse an interpretation by
24 which a fault merely being *detected* during discharge renders it a discharge-related fault. *See* Dkt.
25 No. 196-10 ¶ 55 (“because these faults are detected and occur during the discharging state, a person

26 _____
27 ⁸ Archer argues that Wisk pointed to this same language during prosecution in response to the
28 examiner’s request for clarification about support for the discharge-related fault term. *See* Resp.
15–16. But for the same reasons described in the body of the Order, that language does not
support Archer’s argument.

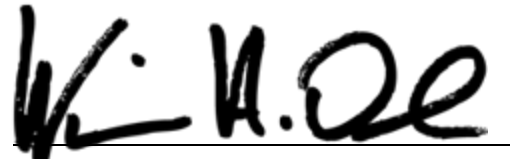
1 of skill in the art would understand they are faults that relate to discharging”). That is not the
2 position Wisk advances in its brief. I flagged this issue in my written tentative ruling, *see* Dkt. No.
3 227, but neither party took it up at the hearing. In any event, the plain and ordinary meaning of
4 “discharge-related” means a fault connected to or associated with a discharge; it does not transform
5 a fault unrelated to discharge into one merely because that unrelated fault is *detected* during the
6 discharge. Wisk has no argument, or intrinsic or extrinsic evidence, to the contrary.

7 **CONCLUSION**

8 Archer’s motion for judgment on the pleadings is GRANTED. The claims are construed
9 as discussed above.

10 **IT IS SO ORDERED.**

11 Dated: April 19, 2022

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13
14 William H. Orrick
United States District Judge

United States District Court
Northern District of California

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