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**UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
WESTERN DIVISION**

The CALIFORNIA INSTITUTE OF
TECHNOLOGY,

Plaintiff,

v.

HUGHES COMMUNICATIONS
INC., HUGHES NETWORK
SYSTEMS LLC, DISH NETWORK
CORPORATION, DISH NETWORK
L.L.C., and DISHNET SATELLITE
BROADBAND L.L.C.,

Defendants.

Case No. 2:13-cv-07245-MRP-JEM

**ORDER DENYING
DEFENDANTS' MOTION FOR
SUMMARY JUDGMENT ON
35 U.S.C. § 101 INELIGIBILITY**

I. Introduction

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2 Plaintiff California Institute of Technology (“Caltech”) has asserted U.S. Patent
3 Nos. 7,116,710 (“the ’710 patent”), 7,421,032 (“the ’032 patent”), 7,916,781 (“the
4 ’781 patent”), and 8,284,833 (“the ’833 patent,”) against Defendants Hughes
5 Communications, Inc., Hughes Network Systems, LLC, DISH Network
6 Corporation, DISH Network L.L.C., and dishNET Satellite Broadband L.L.C.
7 (collectively, “Hughes”). The Court issued a claim construction order on August
8 6, 2014. *See Cal. Inst. of Tech. v. Hughes Commc’ns Inc.*, No. 2:13-cv-07245,
9 2014 WL 3866129 (C.D. Cal. Aug. 6, 2014).

10 Hughes moves for summary judgment on the grounds that the asserted claims
11 are not patentable under 35 U.S.C. § 101.¹ The asserted claims focus on a
12 particular form of error correction code, but the concerns underlying the
13 patentability of these claims are the same concerns underlying the patentability of
14 software generally. Having considered the parties’ briefs and the papers filed
15 therewith, the Court concludes that all asserted claims are patentable. Therefore,
16 the Court denies Hughes’ motion for summary judgment.

II. Background

17
18 The asserted claims are method and apparatus claims relating to error
19 correction.² In modern electronic systems, data are stored in the form of bits
20 having the value “1” or “0.” During data transmission, a random or irregular
21 fluctuation (known as noise) can occur in the signal and corrupt data. For
22 example, a transmitter may send a bit with the value “1,” but noise may corrupt
23 this bit and cause the receiver to read the value as “0.” To mitigate this problem,
24

25 ¹ In this order, the Court uses the term “patentable” to refer to subject matter eligibility under
§ 101.

26 ² All four patents share a common specification and claim priority to the same patent application
27 U.S. Serial Application No. 09/861,102. The parties briefed this motion before Caltech’s final
28 election of asserted claims on Oct. 31, 2014. *See* Final Election of Asserted Claims, Dkt. No.
153. This order addresses the election of asserted claims filed Sept. 12, 2014, which includes all
claims in the final election of asserted claims. *See* Election of Asserted Claims, Dkt. No. 125.

1 electronic systems use error correction. Error correction depends on redundancy,
2 which refers to “extra” bits that may be duplicates of original information bits³ and
3 are transmitted along with the original bits. These extra bits are not necessary, in
4 the sense that the original information exists without them, but they serve an
5 important purpose. Using these extra bits, the receiver can ensure that the original
6 information bits were not corrupted during transmission.

7 Caltech’s patents are directed to a form of error correction code called an
8 irregular repeat and accumulate (“IRA”) code. An IRA code operates as follows:
9 the code can introduce redundancy by repeating (i.e., duplicating) different original
10 bits irregularly (i.e., a different number of times). These information bits may then
11 be randomly permuted and combined to form intermediate bits, which are
12 accumulated to form parity bits. Parity bits reflect the values of a selection of
13 original information bits. These parity bits are transmitted along with the original
14 information bits. The receiver ensures that the received original information bits
15 were not corrupted during transmission. It can do this by modulo-2 (“mod-2”)
16 adding the original information bits and parity bits.⁴ The receiver knows whether
17 this sum is supposed to be odd or even. If the sum is supposed to be odd but is
18 instead even, the receiver will know that an error occurred and can perhaps correct
19 the error using other information it has received.

20 The benefit of an IRA code is that not all bits are repeated the same number of
21 times. The repetition of certain bits provides redundancy. Although greater
22 repetition of every bit would allow for better error correction, it would also force
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26 _____
27 ³ The ’032 patent uses the term “message bits” rather than “information bits.” This Court will
generally use the term “information bits” when discussing error correction.

28 ⁴ For an explanation of mod-2 arithmetic, see *Modular Arithmetic – An Introduction*, Rutgers
University, <http://www.math.rutgers.edu/~erowland/modulararithmetic.html>.

1 the transmitter to send more bits, decreasing the coding rate and increasing data
 2 transfer time.⁵ IRA codes balance competing goals: data accuracy and efficiency.
 3 The asserted claims recite generally encoding and decoding bits in accordance with
 4 an IRA code.

5 III. Standard for Summary Judgment

6 The Court shall grant summary judgment if there is no genuine dispute as to
 7 any material fact, as supported by facts on the record that would be admissible in
 8 evidence, and if the moving party is entitled to judgment as a matter of law. Fed.
 9 R. Civ. P. 56; *see Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986); *Anderson v.*
 10 *Liberty Lobby, Inc.*, 477 U.S. 242, 250 (1986). Ineligibility under § 101 is a
 11 question of law.⁶ *In re Comiskey*, 554 F.3d 967, 975 (Fed. Cir. 2009). The Court
 12 may appropriately decide this issue at the summary judgment stage.

13 ⁵ Coding rate is calculated through the following equation: Coding Rate = (Original information
 14 bits) / (Original information bits + Extra bits). The closer the coding rate is to 1, the more
 15 efficient it is.

16 ⁶ The Federal Circuit has noted that § 101 analysis is “rife with underlying factual issues.”
 17 *Ultramercial, Inc. v. Hulu, LLC*, 722 F.3d 1335, 1339 (Fed. Cir. 2013), *vacated sub nom.*
 18 *WildTangent, Inc. v. Ultramercial, LLC*, 134 S. Ct. 2870 (2014). If the § 101 inquiry involves
 19 asking “whether genuine human contribution is required, and that requires more than a trivial
 20 appendix to the underlying abstract idea, . . . [which was] not at the time of filing routine, well-
 understood, or conventional, factual inquiries likely abound.” *Id.* at 1339 (internal quotation
 marks omitted). Therefore, the Federal Circuit has held that a challenger must prove ineligibility
 under § 101 by “clear and convincing evidence,” even though § 101 eligibility is a question of
 law. *Id.* at 1338–39.

21 This Court believes that the clear and convincing evidence standard does not apply to § 101
 22 analysis, because § 101 eligibility is a question of law. Courts frequently make findings when
 23 deciding purely legal questions. *See, e.g., District of Columbia v. Heller*, 554 U.S. 570, 581–92
 24 (2008) (determining meaning of “keep and bear Arms” during the founding era by analyzing
 dictionary definitions and then-prevailing usage). Eligibility questions mostly involve general
 25 historical observations, the sort of findings routinely made by courts deciding legal questions.
 26 *Compare ABC, Inc. v. Aereo, Inc.*, 134 S. Ct. 2498, 2505–06 (2014) (relying on legislative
 history and context of 1976 Copyright Act to justify finding copyright liability for online
 27 television streaming service), *with Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2356
 28 (2014) (citing to historical evidence showing intermediated settlement is a longstanding
 practice). Moreover, eligibility frequently depends on a court’s interpretation of § 101. *Cf.*
Parker v. Flook, 437 U.S. 584, 588 (1978) (noting eligibility for a claimed algorithm “turn[ed]
 entirely on the proper construction of § 101”). As stated by Justice Breyer in his *i4i* concurrence,

IV. Ineligibility Under 35 U.S.C. § 101

1 Section 101 of the Patent Act defines patentable subject matter: “Whoever
2 invents or discovers any new and useful process, machine, manufacture, or
3 composition of matter, or any new and useful improvement thereof, may obtain a
4 patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C.
5 § 101. Section 101 defines four broad categories of patentable inventions:
6 processes, machines, manufactures, and compositions of matter. “Congress took
7 this permissive approach to patent eligibility to ensure that ingenuity should
8 receive a liberal encouragement.” *Bilski v. Kappos*, 561 U.S. 593, 601 (2010)
9 (internal quotation marks omitted). But § 101 does not encompass all products of
10 human effort and discovery. Laws of nature, physical phenomena, and abstract
11 ideas are not patentable. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).
12 These exceptions are well established. *See, e.g., Chakrabarty*, 447 U.S. at 309;
13 *Diamond v. Diehr*, 450 U.S. 175, 185 (1981); *Parker v. Flook*, 437 U.S. 584, 599
14 (1978) (Stewart, J., dissenting); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972);
15 *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948); *Le Roy v.*
16 *Tatham*, 55 U.S. 156, 175 (1853).

18 On occasion, the Federal Circuit has described § 101 as a “coarse eligibility
19 filter,” barring only “manifestly abstract” inventions and leaving §§ 102, 103, and
20 112 as the finer sieves. *See Ultramercial, Inc. v. Hulu, LLC*, 722 F.3d 1335, 1341,
21 1354 (Fed. Cir. 2013), *vacated sub nom., WildTangent, Inc. v. Ultramercial, LLC*,

22 the clear and convincing evidence standard “applies to questions of fact and not to questions of
23 law.” *Microsoft Corp. v. i4i Ltd. P’ship*, 131 S. Ct. 2238, 2253 (2011) (Breyer, J., concurring).
24 Tellingly, the Supreme Court has never mentioned the clear and convincing evidence standard in
25 its post-*i4i* § 101 decisions.

26 Regardless, the Court must follow binding precedent. The Court notes that the parties have
27 identified no material disputed facts. The parties primarily dispute legal conclusions drawn from
28 undisputed facts, such as the conventionality of claim elements or the relevance of certain claim
elements to the § 101 issue. Inasmuch as the parties dispute the characterization of certain
elements of the technology, the Court is unconvinced that these are factual questions, and in any
case, the Court’s analysis does not turn on the characterization of these elements.

1 134 S. Ct. 2870 (2014). But in its last few terms, the Supreme Court has indicated
2 that patentability is a higher bar. See *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134
3 S. Ct. 2347, 2354–55 (2014); *Ass'n for Molecular Pathology v. Myriad Genetics,*
4 *Inc.*, 133 S. Ct. 2107, 2116 (2013); *Mayo Collaborative Servs. v. Prometheus*
5 *Labs., Inc.*, 132 S. Ct. 1289, 1293–94 (2012); *Bilski*, 561 U.S. 609–13. As noted
6 by Judge Mayer of the Federal Circuit, a “robust application” of § 101 ensures
7 “that patent protection promotes, rather than impedes, scientific progress and
8 technological innovation.” *I/P Engine, Inc. v. AOL Inc.*, 576 F. App'x 982, 996
9 (Fed. Cir. 2014) (nonprecedential) (Mayer, J., concurring).

10 Courts must evaluate patent eligibility using a two-part test. First, a court must
11 ask if the claim is “directed to one of those patent-ineligible concepts”—a law of
12 nature, physical phenomenon, or abstract idea. *Alice*, 134 S. Ct. at 2355. Second,
13 if the claim is directed to one of these concepts, the court must ask “[w]hat else is
14 there in the claims before us?” *Mayo*, 132 S. Ct. at 1297. This second step
15 determines whether there is an “inventive concept” that “ensure[s] that the patent
16 in practice amounts to significantly more than a patent upon the [ineligible
17 concept] itself.” *Alice*, 134 S. Ct. at 2355.

18 These steps are broadly stated and, without more, would be difficult to apply.
19 Fortunately, although the two-part test was created in *Mayo*, pre-*Mayo* precedents
20 offer some guidance in applying these two steps. Briefly, these precedents suggest
21 the following methodology: **(1)** At step one, the court ascertains the purpose of the
22 claimed invention. The court then analyzes whether this purpose is abstract. If the
23 purpose is abstract, the court moves to the second step. **(2)(A)** At step two, the
24 court tries to identify an inventive concept by considering the claim elements both
25 individually and as an ordered combination. **(2)(B)** When viewing claim elements
26 individually, the court must remember that recitation of conventional, routine, or
27 well-understood activity will not save an abstract claim. See, e.g., *Alice*, 134 S. Ct.
28 at 2358 (reciting generic computer does not save an abstract idea because

1 computers are ubiquitous). But a claim element is not conventional just because it
2 appears in prior art. (2)(C) When viewing claim elements as an ordered
3 combination, the court should not ignore the presence of any element, even if the
4 element, viewed separately, is abstract. If the ordered combination of elements
5 constitutes conventional activity, the claim is not patentable, but courts should
6 remember that a series of conventional elements may together form an
7 unconventional, patentable combination.

8 **A. Supreme Court Decisions on § 101**

9 The Supreme Court decisions on § 101 often confuse more than they clarify.
10 The cases appear to contradict each other on important issues, such as the role of
11 prior art in § 101 analysis. Although these cases provide some clues to applying
12 § 101, they leave open the question of when, if ever, computer software is
13 patentable. A basic principle about computer technology is that algorithms
14 comprise computer software and computer codes. *See* J. Glenn Brookshear,
15 *Computer Science: An Overview 2* (6th ed. 2000) (“A machine-compatible
16 representation of an algorithm is called a **program**. Programs, and the algorithms
17 they represent, are collectively referred to as **software**.”); *see also id.* at 168–77
18 (discussing further algorithms and their form). Supreme Court cases show
19 skepticism toward patenting algorithms, though not an outright rejection of
20 patentability.

21 Given the state of § 101 case law, this Court finds it useful to trace the
22 evolution of the Supreme Court’s views through the six most relevant cases:
23 *Gottschalk v. Benson*, *Parker v. Flook*, *Diamond v. Diehr*, *Bilski v. Kappos*, *Mayo*
24 *Collaborative Services v. Prometheus Laboratories, Inc.*, and *Alice Corp. Pty. Ltd.*
25 *v. CLS Bank International*.

26 **i. *Gottschalk v. Benson*: Mathematical Formula Is Abstract**

27 In *Gottschalk v. Benson*, 409 U.S. 63 (1972), the Supreme Court invalidated
28 method claims for converting binary-coded decimal (“BCD”) numerals into pure

1 binary numerals.⁷ *Benson*, 409 U.S. at 71–72. The Supreme Court reaffirmed the
 2 principle that “while a scientific truth, or the mathematical expression of it, is not
 3 patentable invention, a novel and useful structure created with the aid of
 4 knowledge of scientific truth may be.” *Id.* at 67 (internal quotation mark omitted).
 5 The Court declined to hold that “a process patent must either be tied to a particular
 6 machine or apparatus or must operate to change articles or materials to a ‘different
 7 state or thing.’” *Id.* at 71. Nonetheless, the Supreme Court found that the claims
 8 addressed the abstract idea of converting BCD numerals into binary numerals. The
 9 claims were so broad that they would “cover both known and unknown uses,”
 10 effectively preempting the mathematical formula and constituting “a patent on the
 11 algorithm itself.” *Id.* at 68, 72.

12 **ii. *Parker v. Flook: The Rise of Point-of-Novelty Analysis***

13 The Supreme Court again found process claims using mathematical formulas
 14 unpatentable in *Parker v. Flook*, 437 U.S. 584 (1978). The case involved a method
 15 for updating alarm limits in catalytic chemical conversions.⁸ In his majority
 16 opinion, Justice Stevens adopted a point-of-novelty approach, evaluating only the

17 _____
 18 ⁷ Conversion of BCD to binary is relatively simple. The Supreme Court explained that

19 [t]he BCD system using decimal numerals replaces the character for each component
 20 decimal digit in the decimal numeral with the corresponding four-digit binary numeral
 21 Thus decimal 53 is represented as 0101 0011 in BCD, because decimal 5 is equal to
 22 binary 0101 and decimal 3 is equivalent to binary 0011. In pure binary notation, however,
 23 decimal 53 equals binary 110101.

24 *Benson*, 409 U.S. at 66–67.

25 ⁸ The Supreme Court explained the technology as follows:

26 During catalytic conversion processes, operating conditions such as temperature,
 27 pressure, and flow rates are constantly monitored. When any of these “process variables”
 28 exceeds a predetermined “alarm limit,” an alarm may signal the presence of an abnormal
 condition indicating either inefficiency or perhaps danger. Fixed alarm limits may be
 appropriate for a steady operation, but during transient operating situations, such as start-
 up, it may be necessary to “update” the alarm limits periodically.

Flook, 437 U.S. at 585.

1 claim's novel elements for patent eligibility and ignoring elements found in prior
2 art. The claim's only novel element was a mathematical formula, which an
3 operator could use to update an alarm limit by inputting values for a number of
4 variables. *Id.* at 586–87. The patent did not explain how to select any values for
5 variables. *Id.* at 586. All other elements of the claim were in the prior art. *Id.* at
6 586–87. Justice Stevens noted that “[w]hether the algorithm was in fact known or
7 unknown at the time of the claimed invention, as one of the ‘basic tools of
8 scientific and technological work,’ it is treated as though it were a familiar part of
9 the prior art.” *Id.* at 591–92 (internal citation omitted). Because the Court treated
10 the mathematical formula as “prior art” along with the claim's other elements, the
11 “application . . . contain[ed] no claim of patentable invention.” *Id.* at 594.

12 **iii. *Diamond v. Diehr: The Fall of Point-of-Novelty Analysis***

13 *Benson* and *Flook* created a strict test for eligibility that meshed § 102 novelty
14 concerns with § 101 eligibility factors. But the Supreme Court changed direction
15 in *Diamond v. Diehr*, 450 U.S. 175 (1981), which found patentable a claim for
16 curing synthetic rubber. The Supreme Court retreated from its point-of-novelty
17 analysis, clarifying that “[i]t is inappropriate to *dissect the claims into old and new*
18 *elements* and then to ignore the presence of the old elements in the analysis.”
19 *Diehr*, 450 U.S. at 188 (emphasis added). Further, courts should consider, rather
20 than ignore, the presence of a mathematical algorithm when determining
21 patentability. *Id.* at 189 n.12. In a process claim, “a new combination of steps in a
22 process may be patentable,” even if the constituent elements are well known. *Id.* at
23 188. Thus, “the ‘novelty’ of any element or steps in a process . . . is of no
24 relevance” in § 101 analysis. *Id.* at 188–89. The Supreme Court determined that
25 the claim did not preempt the use of “a well-known mathematical equation” but
26 foreclosed use of that equation only in conjunction with other steps, including
27 “installing rubber in a press, closing the mold, constantly determining the
28 temperature of the mold, constantly recalculating the appropriate cure time through

1 the use of the formula and a digital computer, and automatically opening the press
2 at the proper time.” *Id.* at 187. These steps in the claim “transform[ed] or reduc[ed]
3 an article to a different state or thing,” making the claim the kind of invention
4 deserving protection. *Id.* at 192. The Supreme Court read *Flook* as holding that an
5 abstract idea does not become patentable merely because it is limited “to a
6 particular technological environment” or because the claim recites “insignificant
7 postsolution activity.” *Id.* at 191, 192 n.14. Justice Stevens dissented, faulting the
8 majority for mischaracterizing the invention as “a method of constantly measuring
9 the actual temperature inside a rubber molding press.” *Id.* at 206 (Stevens, J.,
10 dissenting). Justice Stevens characterized the invention as the abstract idea of an
11 “improved method of calculating the time that the mold should remain closed
12 during the curing process.” *Id.* at 207.

13 **iv. *Bilski v. Kappos*: Longstanding Business Method Is Abstract**

14 Following *Diehr*, the Supreme Court did not revisit § 101 for more than a
15 quarter of a century. This period saw the Federal Circuit adopt an expansive view
16 of eligibility in *State Street Bank & Trust Co. v. Signature Financial Group*, 149
17 F.3d 1368 (Fed. Cir. 1998), where the court said § 101 allowed claims on
18 mathematical algorithms that produced a “useful, concrete, and tangible result.”
19 *Id.* at 1373. The Federal Circuit then significantly limited process claim eligibility
20 in *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008), *rev’d*, 561 U.S. 593 (2010).
21 When the Supreme Court granted certiorari in *Bilski v. Kappos*, 561 U.S. 593
22 (2010), it did so for a seemingly modest reason: to clarify that a process could be
23 patentable even if it was not tied to a machine or did not transform an article. *Id.* at
24 601–04. But significantly, the Supreme Court invalidated claims that captured the
25 concept of hedging. *Id.* at 611–12. It noted that hedging was “a fundamental
26 economic practice long prevalent in our system of commerce.” *Id.* at 611. The
27 representative claims either described this practice or reduced it to a mathematical
28 formula, and other claims merely limited the concept to a technological area or

1 added conventional postsolution components. *Id.* at 611–12. Regardless of the
2 form of these claims, they did nothing more than recite an ineligible concept. *Id.*

3 **v. *Mayo Collaborative Services v. Prometheus Laboratories, Inc.:***

4 **Conventional Activity Does Not Make Abstract Ideas Patentable**

5 The Supreme Court returned again to § 101 in *Mayo Collaborative Services v.*
6 *Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012). This instructive decision
7 provided a perspective on *Benson* and the seemingly conflicting *Flook* and *Diehr*
8 decisions. *Mayo* invalidated a claim setting forth “relationships between
9 concentrations of certain metabolites in the blood and the likelihood that a dosage
10 of a thiopurine drug will prove ineffective or cause harm.” *Id.* at 1297. Writing
11 for a unanimous court, Justice Breyer noted that § 101 attempts to reconcile two
12 competing concerns. Although allowing patents on abstract ideas and natural laws
13 would “impede innovation more than it would tend to promote it,” the Supreme
14 Court recognized that “all inventions at some level embody, use, reflect, rest upon,
15 or apply laws of nature, natural phenomena, or abstract ideas.” *Id.* at 1293. As
16 such, “too broad an interpretation of this exclusionary principle could eviscerate
17 patent law.” *Id.* Thus, the Supreme Court emphasized that ““an application of a
18 law of nature or mathematical formula to a known structure or process may well be
19 deserving of patent protection.”” *Id.* at 1293–94 (quoting *Diehr*, 450 U.S. at 187).
20 But “stat[ing] the law of nature while adding the words ‘apply it’” does not
21 transform unpatentable subject matter into patentable subject matter. *Id.* at 1294.

22 The Supreme Court engaged in a first step of analysis, in which it determined
23 that the claims set forth laws of nature, a § 101 ineligible concept. *Id.* at 1296–97.
24 The Supreme Court then engaged in a second step of analysis, in which it analyzed
25 whether “the claims do significantly more than simply describe these natural
26 relations.” *Id.* at 1297. The Supreme Court determined that the claim elements
27 “inform a relevant audience about certain laws of nature; any additional steps
28 consist of well understood, routine, conventional activity already engaged in by the

1 scientific community.” *Id.* at 1298. These other elements were insignificant and
2 could not save the claim from ineligibility. Either they merely limited the law of
3 nature to a technological area or constituted “[p]urely conventional or obvious
4 [pre]solution activity.” *Id.* (internal quotation marks omitted). The Supreme Court
5 said its holding was consistent with *Flook* and *Diehr*, treating both as binding. It
6 distinguished *Diehr* from *Flook* because in *Diehr* the Supreme Court never stated
7 that the claimed “steps, or at least the combination of those steps, were in context
8 obvious, already in use, or purely conventional.” *Id.* at 1299.

9 **vi. *Alice Corp. Pty. Ltd. v. CLS Bank International: A Missed***
10 ***Opportunity to Clarify Computer Software Patentability***

11 *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S. Ct. 2347 (2014),
12 presented the Supreme Court with the opportunity to clarify when computer
13 software is patentable, but the Supreme Court left the question mostly unanswered.
14 Admittedly, the Supreme Court clarified some aspects of the doctrine. First, the
15 Supreme Court determined that the two-step test in *Mayo* governed all eligibility
16 questions. *Id.* at 2355. Second, it clarified that a claim cannot satisfy step two of
17 *Mayo* by reciting a generic computer. *See id.* at 2358 (“[T]he mere recitation of a
18 generic computer cannot transform a patent-ineligible abstract idea into a patent-
19 eligible invention. . . . Stating an abstract idea while adding the words ‘apply it
20 with a computer’ . . . [creates a] deficient result.”) Third, the Supreme Court
21 clarified that reframing a method claim as an apparatus claim does not avoid
22 eligibility issues, when the apparatus claimed is a generic computer. *Id.* at 2360.
23 Fourth, and perhaps most significantly, it left open the possibility that claims
24 which “improve the functioning of the computer itself” or “any other technology”
25 are patentable. *Id.* at 2359.

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1 Yet *Alice* did not answer the bigger questions, only incrementally clarifying
2 § 101.⁹ Perhaps the patent in *Alice* was the improper vehicle for clarifying the law:
3 the patent claimed the age-old business method of mitigating settlement risk by
4 using a third party intermediary, and the role of the computer in the claims was
5 limited to generic functions like creating electronic records and tracking multiple
6 transactions. *Id.* at 2359. *Alice* held only that abstract business methods do not
7 become automatically patentable when implemented on a computer. *Id.* *Alice*
8 failed to answer this: when, if ever, do computer patents survive § 101?

9 **B. Is Computer Software Patentable?**

10 Although the Supreme Court has never declared that software is patentable
11 subject matter, software must be eligible under § 101. A bright-line rule against
12 software patentability conflicts with the principle that “courts should not read into
13 the patent laws limitations and conditions which the legislature has not expressed.”
14 *Bilski*, 561 U.S. at 602 (internal quotations marks omitted). One could argue that
15 eliminating software patents is desirable public policy, but Congress has spoken on
16 the patentability of software. The America Invents Act (“AIA”) contemplates the
17 existence of software patents explicitly in Section 14, which states in relevant part:

18 (a) IN GENERAL.--For purposes of evaluating an invention under section 102
19 or 103 of title 35, United States Code, any strategy for reducing, avoiding,

20
21 ⁹ Regardless of *Alice*'s actual holding, *Alice* has brought about a wave of decisions finding
22 software patents ineligible. *See, e.g., Eclipse IP LLC v. McKinley Equip. Corp.*, No. 8:14-cv-
23 742-GW(AJWx), 2014 WL 4407592 (C.D. Cal. Sept. 4, 2014) (finding unpatentable claims
24 reciting methods for communications); *Tuxis Techs v. Amazon.com, Inc.*, No. 13-1771, 2014 WL
25 4382446 (D. Del. Sept. 3, 2014) (finding unpatentable claims on upselling); *Loyalty Conversion*
26 *Sys. Corp. v. American Airlines, Inc.*, No. 2:13-cv-655, 2014 WL 4364848 (E.D. Tex. Sept. 2,
27 2014) (Bryson, J.) (finding unpatentable claims on converting one vendor's loyalty credits into
28 another's). This Court has found few district court decisions finding software claims patentable
post-*Alice*. *See, e.g., Card Verifications Solutions, LLC v. Citigroup Inc.*, No. 13 C 6339, 2014
WL 4922524, at *5 (N.D. Ill. Sept. 29, 2014) (refusing to find unpatentable claims at motion to
dismiss stage but allowing defendant to renew its challenge at a later time); *Helios Software,*
LLC v. SpectorSoft Corp., No. 12-081, 2014 WL 4796111, at *16–18 (D. Del. Sept. 18, 2014)
(finding eligible claims directed to “remotely monitoring data associated with an Internet session
and controlling network access”).

1 or deferring tax liability, whether known or unknown at the time of the
2 invention or application for patent, shall be deemed insufficient to
3 differentiate a claimed invention from the prior art. . . .

4 (c) EXCLUSIONS.--This section does not apply to that part of an invention
5 that--

6 (1) is a method, apparatus, technology, *computer program product*, or
7 system, that is used solely for preparing a tax or information return or other
8 tax filing, including one that records, transmits, transfers, or organizes data
9 related to such filing; or

10 (2) is a method, apparatus, technology, *computer program product*, or
11 system used solely for financial management, to the extent that it is
12 severable from any tax strategy or does not limit the use of any tax strategy
13 by any taxpayer or tax advisor.

14 Leahy-Smith America Invents Act, 112 P.L. 29, § 14, 125 Stat. 284, 327–28
15 (2011) (emphasis added); see Mark J. Patterson & M. Andrew Pitchford, *First to*
16 *File*, 47 Tenn. B.J. 14, 16 (November 2011) (“[T]ax strategies are no longer
17 patentable, but . . . computer implemented methods and computer
18 program products (e.g., software) have been implicitly affirmed as patentable
19 subject matter.”). By excluding computer programs from subsection (a), Congress
20 contemplated that some computer programs were eligible for patent protection.
21 Courts should not read § 101 to exclude software patents when Congress has
22 contemplated their existence. Similar reasoning was used in *Bilski* with regard to
23 business method patents. In pre-AIA § 273(b)(1), an alleged infringer of a method
24 in a patent could assert a defense of prior use, where for this defense, method was
25 defined as “a method of doing or conducting business.” See 35 U.S.C. § 273(a)(3)
26 (2006). Thus, the Supreme Court determined a categorical exclusion against
27 business method patents would “violate the canon against interpreting any

28

1 statutory provision in a manner that would render another provision superfluous.”
2 *Bilski*, 561 U.S. at 595.

3 Perhaps Congress did not intend to affirm that software was patentable. Maybe
4 Congress was merely acknowledging that software patents exist without approving
5 of their existence. But this speculative reasoning was rejected by *Bilski* with
6 regard to business method patents. Compare 561 U.S. at 644–45 (Stevens, J.
7 dissenting) (arguing that Congress enacted § 273 to limit the damage caused by
8 *State Street Bank* but did not intend to adopt its holding), *with id.* at 608 (rejecting
9 Justice Stevens’ reasoning because an “established rule of statutory interpretation
10 cannot be overcome by judicial speculation as to the subjective intent of various
11 legislators in enacting the subsequent provision”).

12 Moreover, the Supreme Court has implicitly endorsed the patentability of
13 software. *Alice* seems to acknowledge that software may be patentable if it
14 improves the functioning of a computer. See *Alice*, 134 S. Ct. at 2359 (“The
15 method claims do not, for example, purport to improve the functioning of the
16 computer itself. Nor do they effect an improvement in any other technology or
17 technical field.” (internal citations omitted)). The Supreme Court could have
18 resolved *Alice* and provided clarity to patent law by declaring all software patents
19 ineligible.¹⁰ However, the Supreme Court did not do this. This is some evidence
20 of the continuing eligibility of software.

21 **C. Software Patentability After *Alice***

22 Although computer software is patentable generally, neither *Alice* nor any other
23 Supreme Court precedent defines when software is patentable. This has proven
24 detrimental to the patent system. The purpose of patents is “promote the Progress
25 of . . . useful Arts, by securing for limited Times to . . . Inventors the exclusive
26 right to their . . . Discoveries.” U.S. Const. art. I, § 8, cl. 8; see also *Siemens Med.*

27 ¹⁰ Hughes implies that in order for software claims to survive § 101, claims must recite
28 specifically designed, non-generic hardware. See, e.g., Defs.’ Mem. in Supp. of Invalidity at 22,
Dkt. No. 126. This Court does not read *Alice* to require this.

1 *Solutions United States, Inc. v. St.-Gobain Ceramics & Plastics, Inc.*, 647 F.3d
2 1373, 1375 (Fed. Cir. 2011) (“At its heart, the patent system incentivizes
3 improvements to patented technology.”). In order to best incentivize innovation,
4 however, patent law must be predictable, consistent, and uniform. *See Lighting*
5 *Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 744 F.3d 1272, 1282 (Fed. Cir.
6 2014). *Alice* does not achieve this goal, leaving the boundaries of § 101 undefined.
7 *See McRO, Inc. v. Sega of America, Inc.*, No. 2:12-cv-10327, 2014 WL 4749601,
8 at *5 (C.D. Cal. Sept. 22, 2014) (Wu, J.) (“[T]he two-step test may be more like a
9 one step test evocative of Justice Stewart’s most famous phrase [‘I know it when I
10 see it’].”).

11 If an issue is significant or complicated, the Supreme Court may not announce
12 definitive rules on its first pass at an issue. Instead, the Supreme Court may allow
13 the issue to percolate, which permits lower courts the opportunity to offer their
14 views. By allowing “a period of exploratory consideration and experimentation by
15 lower courts,” the Supreme Court can have “the benefit of the experience of those
16 lower courts” when it revisits the issue. *California v. Carney*, 471 U.S. 386, 400
17 n.11 (1985) (quoting Samuel Estreicher & John E. Sexton, *A Managerial Theory of*
18 *the Supreme Court’s Responsibilities: An Empirical Study*, 59 N.Y.U. L. Rev. 681,
19 716 (1984)). When the Supreme Court leaves questions open, lower courts have a
20 duty to offer their views and develop the law. Lower courts have endeavored to
21 fulfill this responsibility with regard to § 101, but the resulting decisions
22 demonstrate the continuing uncertainty surrounding software patentability.

23 **i. Federal Circuit’s Post-Alice Decisions**

24 The task of clarifying and developing patent law is primarily assigned to the
25 Federal Circuit. Indeed, these concerns motivated the formation of the Federal
26 Circuit. *See Lighting Ballast*, 744 F.3d at 1282 (“The purposes of consistency and
27 stability that underlie stare decisis led to the formation of the Federal Circuit, now
28 thirty years past, to provide consistency and stability to the patent law.”). Thus far,

1 the Federal Circuit has had three opportunities to clarify the application of § 101 to
2 computer software. In these cases, the Federal Circuit has taken two routes: either
3 it has said as little as possible or announced rules that are seemingly at odds with
4 judicial precedent and congressional intent.

5 In *Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d
6 1344 (Fed. Cir. 2014), the Federal Circuit first invalidated claims for a device
7 profile composed of data. *Id.* at 1349. Because the claims were directed to
8 “information in its non-tangible form,” the claims were not a machine or
9 manufacture within the meaning of § 101. *Id.*¹¹ The Federal Circuit then
10 invalidated method claims that involved generating data sets for a device profile
11 and combining the data sets, stating that the claims “recite[] an ineligible abstract
12 process of gathering and combining data that does not require input from a
13 physical device.” *Id.* at 1351. Writing for the panel, Judge Reyna stated a general
14 principle that “[w]ithout additional limitations, a process that employs
15 mathematical algorithms to manipulate existing information to generate additional
16 information is not patent eligible.” *Id.* The court passed on the question of
17 “whether tying the method to an image processor would lead us to conclude that
18 the claims are directed to patent eligible subject matter in accordance with the
19 Supreme Court’s *Mayo* test.” *Id.*

20 *Digitech* seems to set forth a bright-line rule: if a claim consists of mathematical
21 algorithms that transform data, the claim is not patentable. But that cannot be what
22 *Digitech* means. There are two problems with this interpretation of *Digitech*. The
23 first problem is that this interpretation results in the incorrect conclusion that
24 software is not patentable. The essence of software is manipulating existing data
25 and generating additional data through algorithms. *See Oplus Techs. Ltd. v. Sears*

26
27 ¹¹ Software necessarily exists in a non-tangible form, and although the court observed that the
28 claims do “not describe the device profile as a tag or any other embodiment of hardware or
software,” it is unclear why patentability depends on an explicit recitation of software. *Digitech*,
758 F.3d. at 1349.

1 *Holding Corp.*, No. 2:12-cv-5707, 2013 WL 1003632, at *12 (C.D. Cal. Mar. 4,
2 2013) (“All software *only* ‘receives data,’ ‘applies algorithms,’ and ‘ends with
3 decisions.’ That is the *only* thing software does. Software does nothing more.”);
4 *see also* *Brookshear*, *supra* at 168–70. This simplistic take on *Digitech* would
5 eviscerate all software patents, a result that contradicts Congress’s actions and the
6 Supreme Court’s guidance that software may be patentable if it improves the
7 functioning of a computer.

8 The second problem with *Digitech* relates to the first one. By passing on the
9 question as to whether the invention would be patentable if it were connected to a
10 machine, the Federal Circuit perhaps inadvertently suggested that method claims
11 need to meet the machine-or-transformation test, which is merely an “important
12 and useful clue.” *Bilski*, 561 U.S. at 603. A better reading of the Federal Circuit’s
13 statement is that some abstract ideas may become patentable if they are tied to
14 uniquely designed machines with specific purposes. But courts must remember
15 that generic recitation of hardware will not save a claim. *See Alice*, 134 S. Ct. at
16 2360 (“Put another way, the system claims are no different from the method claims
17 in substance. The method claims recite the abstract idea implemented on a generic
18 computer.”).

19 Federal Circuit panels have spoken two other times on § 101 post-*Alice*.¹² In
20 *Planet Bingo, LLC v. VKGS LLC*, 576 Fed. App’x 1005 (Fed. Cir. 2014)
21 (nonprecedential), the court invalidated claims directed to a computerized bingo
22 game, which recited “storing a player’s preferred sets of bingo numbers; retrieving
23

24 ¹² Judge Mayer, in his *I/P Engine* concurrence, expressed his view that *Alice* recited a
25 technological requirement for § 101. He wrote that “*Alice* thus made clear that abstract ideas
26 untethered to any significant advance in science and technology are ineligible for patent
27 protection.” *I/P Engine*, 576 F. App’x 982, 992 (Mayer, J., concurring). This view overstates
28 *Alice*’s holding. *Alice* held that an abstract business method remains abstract even if it is
implemented on a generic computer performing generic functions. But *Bilski* refused to hold
that business method patents are ineligible, and a technological requirement seems to contradict
this holding. At the very least, reading a technological requirement into § 101 is inconsistent
with the section’s plain language. *See Bilski*, 561 U.S. at 603.

1 one such set upon demand, and playing that set; while simultaneously tracking the
2 player's sets, tracking player payments, and verifying winning numbers." *Id.* at
3 1006. The court determined that managing a bingo game "consists solely of
4 mental steps which can be carried out by a human using pen and paper" and was
5 abstract. *Id.* at 1007. Because the computer elements recited were purely generic
6 and conventional, there were no meaningful limitations at step two of the *Mayo*
7 test. *Id.* at 1008–09. In *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350 (Fed. Cir.
8 2014), the patent claimed "methods and machine-readable media encoded to
9 perform steps for guaranteeing a party's performance of its online transaction." *Id.*
10 at 1351. The court determined that the claims recited an abstract idea because they
11 were "squarely about creating a contractual relationship—a 'transaction
12 performance guaranty'—that is beyond question of ancient lineage." *Id.* at 1355.
13 At the second step of *Mayo*, the Court determined there was no inventive concept
14 added. The computer functions were generic, because the claims recited the mere
15 use of a computer to receive and send information over a network. *Id.*

16 All three decisions reach the correct result, based on Supreme Court precedents.
17 In *Digitech*, the claims were so broad as to capture a large amount of inventive
18 activity and in effect impede innovation. In *buySafe* and *Planet Bingo*, the claims
19 were broad and directed to age-old concepts. But these decisions provide either
20 false guidance to district courts, or no guidance at all. *Digitech* risks eviscerating
21 software patents, while *Planet Bingo* and *buySAFE* provide little help because they
22 involved obvious examples of ineligibility. Although these cases reveal examples
23 of software patents that the Federal Circuit deems ineligible, the cases do not
24 explain when other kinds of software patents survive.

25 **ii. *McRO v. Sega of America, Inc.***

26 District courts, too, have expressed their views on § 101 in an effort to clarify
27 this area of law. Courts in the Central District of California have been particularly
28 active in offering their views on § 101. *See, e.g., Wolf v. Capstone Photography,*

1 *Inc.*, No. 2:13-cv-09573 (C.D. Cal. Oct. 28, 2014) (Snyder, J.) (finding
2 unpatentable a computerized process of providing event photographs); *Eclipse IP*
3 *LLC v. McKinley Equip. Corp.*, No. 8:14-cv-742, 2014 WL 4407592 (C.D. Cal.
4 Sept. 4, 2014) (Wu, J.) (finding unpatentable claims reciting methods for
5 communications).

6 One Central District of California decision deserves special attention: *McRO*,
7 *Inc. v. Sega of America, Inc.*, No. 2:12-cv-10327, 2014 WL 4749601, (C.D. Cal.
8 Sept. 22, 2014) (Wu, J.). In *McRO*, the court found unpatentable claims addressed
9 to “automatically animating the lip synchronization and facial expressions of 3D
10 characters.” *Id.* at *1. The court acknowledged that at first glance the claims seem
11 tangible and “do not seem directed to an abstract idea.” *Id.* at *8. *Id.*
12 Nonetheless, the court found the claims unpatentable. The court observed that
13 *Mayo* requires it to “factor out conventional activity,” which it interpreted to
14 include all elements found in prior art. *Id.* at *10. Applying this approach, before
15 performing step one of *Mayo*, the court filtered out all tangible elements found in
16 prior art and focused on the invention’s point of novelty. *See id.* at *10. The court
17 determined that the point of novelty was “the idea of using rules, including timing
18 rules, to automate the process of generating keyframes.” *Id.* But this idea was
19 abstract. The claims merely recited “obtaining **a first set of rules** that define
20 output morph weight set stream as a function of phoneme sequence and time of
21 said phoneme sequence.” *Id.* at *8 (emphasis added). The claims did not specify
22 what the rules should be or how the user should choose the rules. *See id.* at *11
23 (“[T]he user, not the patent, provides the rules.”). As a result, the claims
24 “cover[ed] all such rules,” preempting the field of “lip synchronization using a
25 rules-based morph target approach.” *Id.* at *11. Because the claims did not recite
26 inventive concepts but only an abstract idea, the court found all asserted claims
27 unpatentable. *Id.* at *13.

28

1 *McRO* offers an interesting but problematic interpretation of § 101. *McRO*
2 reads § 101 as requiring a point-of-novelty approach, in which courts filter out
3 claim elements found in the prior art before evaluating a claim for abstractness.
4 The merit to this approach is that it provides a clear test for determining
5 patentability. But ultimately, *McRO* seems to misread the law. Despite its
6 convenience, courts should not apply the point-of-novelty approach when
7 examining claims under § 101.

8 This Court finds this methodology improper for three reasons. The first reason
9 is that the Supreme Court has held that novelty “is of no relevance” when
10 determining patentability. *See Diehr*, 450 U.S. at 189. In so noting, the Supreme
11 Court rejected *Flook*’s point-of-novelty approach.¹³ *McRO* applies this abrogated
12 form of § 101 analysis, despite the fact that the Supreme Court did not revive this
13 approach in *Bilski*, *Mayo*, or *Alice*. Admittedly, *Mayo* does require courts to ignore
14 “well understood, routine, conventional activity” at step two, 132 S. Ct. at 1298,
15 but neither *Mayo* nor any other precedent defines conventional elements to include
16 **everything** found in prior art. Rather than relying on *Flook*, courts must follow the
17 guidance of *Diehr*, which discourages courts from “dissecting a claim into old and
18 new elements” when searching for an abstract idea. *Diehr*, 450 U.S. 189 n.12.

19 The second objection to *McRO*’s methodology is that it conflates step one and
20 step two of *Mayo*. At *Mayo*’s second step, the court must determine whether there
21 is something more than an abstract idea, and conventional elements do not
22

23 ¹³ Justice Stevens’ dissent in *Diehr* is proof that the Supreme Court abandoned this methodology.
24 Justice Stevens faults the majority for not focusing on the point of novelty—that is, what the
25 patentee newly invented, as opposed to what the patentee borrowed from the prior art. *See*
26 *Diehr*, 450 U.S. at 211–12 (Stevens, J., dissenting) (“[I]f the only concept that the inventor
27 claims to have discovered is not patentable subject matter, § 101 requires that the application be
28 rejected without reaching any issue under § 102; for it is irrelevant that unpatentable subject
matter -- in that case a formula for updating alarm limits -- may in fact be novel. Proper
analysis, therefore, must start with an understanding of what the inventor claims to have
discovered -- or phrased somewhat differently -- what he considers his inventive concept to
be.”).

1 constitute something more. From this principle, the court in *McRO* determined it
2 must filter out elements found in prior art *before* performing step one. This
3 appears to be incorrect, because according to *Alice*, courts should not even
4 consider whether elements are conventional unless the court determines that the
5 invention is abstract at step one. Courts must filter out elements only at step two.¹⁴
6 *McRO* therefore conflates *Mayo*'s two steps in the face of binding precedent
7 rejecting that approach.

8 Finally, it is difficult to imagine any software patent that survives under
9 *McRO*'s approach—most inventions today build on what is known in the art, and
10 an improvement to software will almost inevitably be an algorithm or concept
11 which, when viewed in isolation, will seem abstract. This analysis would likely
12 render all software patents ineligible, contrary to Congress's wishes.

13 Although *McRO* offers valuable contributions to the discussion around § 101, it
14 ultimately appears to reach the wrong conclusion. Federal Circuit precedents
15 likewise offer little guidance for this Court to follow. As such, this Court must
16 look to Supreme Court precedents to properly apply § 101 to computer software.

17 **D. Themes in § 101 Precedents**

18 The decisions discussed above demonstrate the difficulty of interpreting and
19 applying § 101 to software inventions. Given the opacity of *Alice*, it is
20 unsurprising that courts have struggled to define the boundaries of software
21 patentability. Nonetheless, Supreme Court precedents offer broad themes on

22 ¹⁴ Judge Wu has observed that *Mayo*'s two-step inquiry is a one-step inquiry:

23
24 Describing this as a two-step test may overstate the number of steps involved. If the claim
25 is not "directed" to a patent-ineligible concept, then the test stops at step one. If the claim
26 is so directed, but we find in step two that the claim contains an "inventive concept" that
27 "transforms" the nature of the claim into something patent eligible, then it seems that
there was a categorization error in finding the claim—which is considered "as an ordered
combination"—"directed to an abstract idea" in step one.

28 *McRO*, 2014 WL 4749601 at *4. But step one does not determine whether the claim as a whole
is abstract; rather, it determines whether the claim's purpose is directed to an abstract idea.

1 software patentability and patentability generally. These themes underlie both
2 steps of the § 101 inquiry and clarify the types of inventions that courts should find
3 patentable.

4 **First**, the concern underlying § 101 is preemption. Preemption is the idea that
5 allowing a patent on the invention will impede innovation rather than incentivize it.
6 This preemption concern underlies both steps of the analysis. The court must be
7 wary about overstating this concern. By definition, every patent preempts an area
8 of technology. A patentee with a groundbreaking invention is entitled to
9 monopolize a segment of technology, subject to the limits of the Patent Act.¹⁵
10 Moreover, the court must be wary of litigants who exaggerate preemption concerns
11 in order to avoid developing innovative workarounds. *See McRO*, 2014 WL
12 4749601 at *7 (“[W]e must be wary of facile arguments that a patent preempts all
13 applications of an idea. It may often be easier for an infringer to argue that a patent
14 fails § 101 than to figure out a different way to implement an idea, especially a
15 way that is less complicated.” (internal quotation mark omitted)). Nonetheless,
16 § 101 prevents patentees from too broadly claiming a building block of research.
17 Building blocks include basic tools of mathematics, as in *Benson*, or formulas
18 describing preexisting natural relationships, as in *Mayo*. But “a novel and useful
19 structure created with the aid of knowledge of scientific truth” may be patentable.
20 *Mackay Radio & Tel. Co. v. Radio Corp. of America*, 306 U.S. 86, 94 (1939).

21 **Second**, computer software and codes remain patentable. The Supreme Court
22 approved a patent on computer technology in *Diehr* and suggested that software
23 and code remain patentable in *Alice*. The America Invents Act further
24 demonstrates the continuing eligibility of software. Moreover, *Alice* did not

25
26 ¹⁵ Justice Stevens in *Flook* expressed skepticism at the notion of preemption as a § 101 concern,
27 perhaps for this reason. *Flook*, 437 U.S. at 590 n.11 (“[T]he formula [in *Benson*] had no other
28 practical application; but it is not entirely clear why a process claim is any more or less
patentable because the specific end use contemplated is the only one for which the algorithm has
any practical application.”).

1 significantly increase the scrutiny that courts must apply to software patents. It
2 held only that an ineligible abstract idea does not become patentable simply
3 because the claim recites a generic computer. Courts must not extend the reach of
4 *Alice* too far, lest they read in § 101 limitations that do not exist. *Cf. Bilski*, 561
5 U.S. at 603 (“This Court has not indicated that the existence of these well-
6 established exceptions gives the Judiciary *carte blanche* to impose other
7 limitations that are inconsistent with the text and the statute’s purpose and
8 design.”).

9 **Third**, the Supreme Court has been more skeptical of bare attempts to patent
10 mathematical formulas, as opposed to algorithms generally. An algorithm is not
11 necessarily expressed as a mathematical formula. Rather, an algorithm is a series
12 of steps for accomplishing a goal. *Compare Benson*, 409 U.S. at 65, and *Flook*,
13 437 U.S. at 585 n.1 (finding patents on algorithms abstract, where Court defined
14 algorithm as a “procedure for solving a given type of mathematical problem”), *with*
15 *Diehr* 450 U.S. at 186 n.9 (finding algorithm for curing rubber patentable, where
16 Court defined an algorithm as “[a] fixed step-by-step procedure for accomplishing
17 a given result”). Mathematical formulas that describe preexisting relationships or
18 symbolize longstanding ideas create significant § 101 concerns, but not all
19 computerized procedures evoke the same concerns. *See, e.g., Mayo*, 132 S. Ct. at
20 1298 (finding unpatentable claim expressing natural relationship); *Bilski*, 561 U.S.
21 at 611–12 (finding unpatentable claim expressing hedging risk as mathematical
22 formula). The court should not ignore mathematical formulas in its § 101 analysis,
23 because a formula combined with other elements may transform an abstract idea
24 into patentable subject matter.

25 **Fourth**, a claim is more likely to be abstract if it stands for a fundamental
26 practice with a long history, like the method in *Bilski* for hedging risk. However,
27 § 101 does not preclude a claim directed to a longstanding practice that adds
28 something more. The Supreme Court left open the possibility that innovative

1 elements, rather than “token postsolution components,” could make such a claim
2 patent eligible. *See Bilski*, 561 U.S. at 612.

3 **E. Determining Patentability Post-*Alice***

4 Keeping those observations in mind, this Court must conduct § 101 analysis
5 using the two-part *Mayo* test in the following manner.

6 **i. The First Step of *Mayo***

7 First, the court must identify whether a claim is directed to an abstract idea. To
8 do this, the court must identify the purpose of the claim—in other words, what the
9 claimed invention is trying to achieve—and ask whether that purpose is abstract.
10 For example, in *Alice*, the court concluded that the claims were directed to
11 mitigating settlement risk using a third party, but the claims recited more. They
12 outlined an entire process, including creating shadow records, obtaining from an
13 exchange institution a start-of-the-day balance, and so on. *See Alice*, 134 S. Ct. at
14 2359. But these steps were meant to achieve the purpose of mitigating settlement
15 risk. The Supreme Court took the same approach in *Bilski* and *Mayo* by
16 characterizing the claims in terms of the inventions’ purposes: hedging risk and
17 applying a natural law, respectively. *See Bilski*, 561 U.S. at 611; *Mayo*, 132 S. Ct.
18 at 1296–97. As discussed above, prior art plays no role in this step.

19 The characterization of the claim is essential to the § 101 inquiry. In *Diehr*, the
20 dispute boiled down to *what* the majority and dissent were evaluating for
21 abstractness. The *Diehr* majority took the correct approach of asking what the
22 claim was trying to achieve, instead of examining the point of novelty. Courts
23 should recite a claim’s purpose at a reasonably high level of generality. Step one is
24 a sort of “quick look” test, the object of which is to identify a risk of preemption
25 and ineligibility. If a claim’s purpose is abstract, the court looks with more care at
26 specific claim elements at step two.

27 After determining the claim’s purpose, the court then asks whether this
28 purpose is abstract. Age-old ideas are likely abstract, in addition to basic

1 tools of research and development, like natural laws and fundamental
2 mathematical relationships. *See Mayo*, 132 S. Ct. at 1296–97; *Bilski*, 561
3 U.S. at 611–12; *Benson*, 409 U.S. at 71–72. In evaluating whether a purpose
4 is abstract, the court can rely on Supreme Court precedents.

5 **ii. The Second Step of *Mayo***

6 If the court finds the claim’s purpose abstract at step one, it must then
7 determine whether there is an inventive concept that appropriately limits the
8 claim such that it does not preempt a significant amount of inventive activity.
9 In performing this second step of analysis, the court must be wary of making
10 patentability “a draftsman’s art.” *See Mayo*, 132 S. Ct. at 1294. But
11 inevitably, drafting plays a key role. Patents that claim too broadly or
12 prohibit a vast amount of future inventive activity are suspect. *See Benson*,
13 409 U.S. at 68; *O’Reilly*, 56 U.S. at 113. Thus, the second step should
14 provide “additional features that provide practical assurance that the process
15 is more than a drafting effort designed to monopolize [the ineligible concept]
16 itself.” *Mayo*, 132 S. Ct. at 1297. A claim cannot avoid this preemption
17 concern by limiting itself to a particular technological environment. *See*
18 *Alice*, 134 S. Ct. at 2357–58 (limiting an abstract idea to computer
19 environment does not mitigate preemption concerns).

20 With this concern in mind, the court must disregard “well-understood,
21 routine, conventional activity” at step two. *Mayo*, 132 S. Ct. at 1299.¹⁶ A
22 conventional element may be one that is ubiquitous in the field, insignificant
23 or obvious. *See Mayo*, 132 S. Ct. at 1298 (“Purely ‘conventional or obvious’
24 ‘[pre]solution activity’ is normally not sufficient to transform an unpatentable
25 law of nature into a patent eligible application of such a law.”); *Diehr*, 450
26 U.S. at 191–92 (“Similarly, insignificant postsolution activity will not
27 transform an unpatentable principle into a patentable process.”). A

28 _____
¹⁶ This Court will refer to this concept as “conventional elements.”

1 conventional element may also be a necessary step, which a person or device
2 must perform in order to implement the abstract idea. For example, the claim
3 elements in *Mayo* were steps all doctors needed to perform in order to apply
4 the natural law. *See Mayo*, 132 S. Ct. at 1298 (“Anyone who wants to make
5 use of these laws must first administer a thiopurine drug and measure the
6 resulting metabolite concentrations, and so the combination amounts to
7 nothing significantly more than an instruction to doctors to apply the
8 applicable laws when treating their patients.”). However, as discussed above,
9 conventional elements do not constitute everything in the prior art, although
10 conventional elements and prior art may overlap. *But see McRO*, 2014 WL
11 4749601 at *9–11 (using prior art to identify conventional elements).

12 The court must also consider claim elements as a combination. A
13 combination of conventional elements may be unconventional. *See Diehr*,
14 450 U.S. at 188 (“[A] new combination of steps in a process may be
15 patentable even though all the constituents of the combination were well
16 known and in common use before the combination was made.”). For
17 example, in *Diehr*, the combination of steps, which the Supreme Court
18 characterized as unconventional, ensured the claim was patentable. Courts
19 should consider mathematical formulas as part of the “ordered combination,”
20 even though, in isolation, the formulas appear abstract. *See Diehr*, 450 U.S.
21 at 189 n.12.

22 V. Discussion

23 Caltech’s patents recite methods of encoding and decoding data in accordance
24 with an IRA code. At step one, this Court determines that all asserted claims are
25 directed to the abstract idea of encoding and decoding data for the purpose of
26 achieving error correction. Nonetheless, at step two, this Court finds that the
27 claims contain elements that provide an inventive concept. When claims provide a
28 specific computing solution for a computing problem, these claims should

1 generally be patentable, even if their novel elements are mathematical algorithms.
2 That is the case with all of Caltech’s asserted claims, which the Court has
3 concluded are patentable.

4 The Court begins by analyzing only the independent claims of the patents. If
5 the independent claims are patentable, so are the dependent claims. Logically,
6 adding additional elements to non-abstract claims will not make them abstract.

7 **A. Step One: Caltech’s Asserted Claims Are Directed to Abstract Ideas**

8 At step one, the Court finds that all the claims at issue are directed to abstract
9 ideas. First, the Court must ask what these claims are trying to achieve. The Court
10 determines that the purposes of the claimed inventions are to encode and decode
11 data to achieve error correction. The claims explicitly recite the fundamental
12 concepts of encoding and decoding data. *See, e.g.*, ’032 Patent, 9:57–58 (reciting
13 “device comprising a message-passing decoder”); ’710 Patent, 7:14 (reciting
14 “method of encoding a signal”). The concepts of encoding and decoding are
15 longstanding steps in the process of error correction. *See* Sarah J. Johnson,
16 *Iterative Error Correction: Turbo, Low-Density Parity-Check and Repeat-*
17 *Accumulate Codes* 1, 34 (Cambridge University 2010). *See generally* Robert G.
18 Gallager, *Low-Density Parity-Check Codes* (1963). A patent on these essential
19 concepts, without something more, would threaten to preempt the entire field of
20 error correction. *See* Johnson, *supra*, at 34 (describing use of “parity bits as a
21 means to detect and . . . correct errors in digital data” as theorized by Gallager in
22 1962 thesis); *id.* at 71 (discussing emerging prevalence of Gallager’s ideas).¹⁷

23 As such, the purpose of these claims—encoding and decoding data for error
24 correction—is abstract. These ideas, stated at this level of generality, existed long

25 ¹⁷ For § 101 analysis, it does not matter that certain claims recite “devices” or “coders.” Courts
26 must ignore generic recitation of hardware at step one, when the claimed hardware essentially
27 performs a method. *See Alice*, 134 S. Ct. at 2360 (“Put another way, the system claims are no
28 different from the method claims in substance. The method claims recite the abstract idea
implemented on a generic computer; the system claims recite a handful of generic computer
components configured to implement the same idea.”).

1 before the patents and were well known in the field. This fact compels the Court’s
2 conclusion. Also buttressing the Court’s conclusion is the prevalence of these
3 error correction techniques in the field. The primary method of error correction is
4 encoding and decoding data. Admittedly, this patent claims specific methods of
5 encoding and decoding data for error correction. But at step one, the Court looks
6 only to the general purpose of the claims, as the Supreme Court did in *Bilski*,
7 *Mayo*, and *Alice*. At step two, the Court focuses on specific limitations.

8 **B. Step Two: Caltech’s Asserted Claims Are Patentable Because They**
9 **Contain Inventive Concepts**

10 Despite being generally directed to abstract concepts, the asserted claims
11 contain meaningful limitations that represent sufficiently inventive concepts, such
12 as the irregular repetition of bits and the use of linear transform operations.
13 Although many of these limitations are mathematical algorithms, these algorithms
14 are narrowly defined, and they are tied to a specific error correction process.
15 These limitations are not necessary or obvious tools for achieving error correction,
16 and they ensure that the claims do not preempt the field of error correction. The
17 continuing eligibility of this patent will not preclude the use of other effective error
18 correction techniques. Therefore, all of the asserted claims are patentable.

19 **i. ’032 Patent**

20 The claims of the ’032 patent contain inventive concepts that makes them
21 patentable. Claim 1 of the ’032 patent recites generating a parity bit by
22 accumulating two values: (i) the value of the previous parity bit and (ii) the sum of
23 a number of randomly chosen irregular repeats of message bits.¹⁸ As Hughes
24 correctly notes, the claim’s other limitations recite generic steps such as receiving

25 ¹⁸ This concept is expressed in claim 1 of the ’032 patent through the mathematical formula

26
$$x_j = x_{j-1} + \sum_{i=1}^a v_{(j-1)a+i}$$

27
28 in which the first term on the right side is the “value of parity bit j-1” and the second term on the right side is the “value of a sum of ‘a’ randomly chosen irregular repeats of the message bits.”

1 and transmitting message bits. Such limitations are conventional both here and in
2 all other asserted claims, because they are necessary for achieving error correction.
3 Therefore, whether viewing the claim's elements as a combination or individually,
4 the patentability of claim 1 depends greatly on its recited formula.

5 One of Hughes' arguments deserves special attention. Hughes argues that
6 calculating parity bit values involve "mental steps [that] can be performed by a
7 person with pencil and paper." Therefore, Hughes, argues the claim is not
8 patentable. Defs.' Mem. in Supp. of Invalidity at 14, Dkt. No. 126. The Court
9 finds this mode of analysis unhelpful for computer inventions. Many inventions
10 could be theorized with pencil and paper, but pencil and paper can rarely produce
11 the actual effect of the invention. Likewise, with regard to software, a human
12 could spend months or years writing on paper the 1s and 0s comprising a computer
13 program and applying the same algorithms as the program. At the end of the
14 effort, he would be left with a lot of paper that obviously would not produce the
15 same result as the software.¹⁹

16 The problems of pencil-and-paper analysis are heightened in the context of
17 software, which necessarily uses algorithms to achieve its goals. Pencil-and-paper
18 analysis can mislead courts into ignoring a key fact: although a computer performs
19 the same math as a human, a human cannot always achieve the same results as a
20 computer. Hughes' statement is theoretically correct. A human could perform the
21 calculations that would yield the value of a parity bit. But Hughes' statement is
22 literally wrong. It states the obvious to say that a pencil and paper cannot actually
23 produce parity bits. Hughes' proposed analysis oversimplifies § 101 and ignores
24

25
26 ¹⁹ Courts should not view software as abstract simply because it exists in an intangible form. It
27 is as fruitless to say that a human could use pencil and paper to perform the same calculations as
28 a computer, as it is to say that a human could use pencil and paper to write down the chemical
structure of a DNA strand. In either case, any effort on the part of a human will only be a
symbolic representation. The effort will not produce the same effect as executing a computer
program or isolating a DNA strand.

1 the fact that the '032 patent creates an algorithmic solution for a computing
2 problem—the corruption of data during transmission.

3 The pencil-and-paper test is a stand-in for another concern: that humans
4 engaged in the same activity long before the invention of computers. *See, e.g.,*
5 *Enfish, LLC v. Microsoft Corp.*, 2:12-cv-07360 (C.D. Cal. Nov. 3, 2014) (finding
6 unpatentable claims addressed to storing information in logical tables on
7 computers). This concern is highly relevant, but courts should scan patents for this
8 concern by using a test that creates false positives. In the case at hand, it is clear
9 that Caltech's error correction codes were not conventional activity that humans
10 engaged in before computers, and the codes do not become conventional simply
11 because humans can do math. Pencil-and-paper analysis is inappropriate at least
12 for this area of technology.

13 The Court should not ask whether a human can calculate parity bit values using
14 pencil and paper. Instead, the Court must ask whether the formula in claim 1
15 constitutes an inventive concept that sufficiently limits the claim's preemptive
16 effect. It does. Hughes argues that the Supreme Court has endorsed a bright line
17 rule against patenting mathematical formulas. *See* Defs.' Mem. at 8; *see also*
18 *Mayo*, 132 S. Ct. at 1303 (“[C]ases have endorsed a bright-line prohibition against
19 patenting laws of nature, mathematical formulas and the like, which serves as a
20 somewhat more easily administered proxy for the underlying ‘building block’
21 concern.”). But this dictum is misleading. On the contrary, Supreme Court
22 precedent allows mathematical formulas to be considered in § 101 analysis. *See*
23 *Diehr*, 450 U.S. at 189 n.12. Error correction codes depend on algorithms that may
24 be reduced to mathematical formulas. Hughes' rule would make all error
25 correction codes, and much of computer software, ineligible subject matter.

26 Hughes' other cited cases are inapposite. The claims in *Benson* essentially
27 described a natural relationship between two well-known number systems, BCD
28 and pure binary, and reduced that relationship to a formula. Thus, the claim set

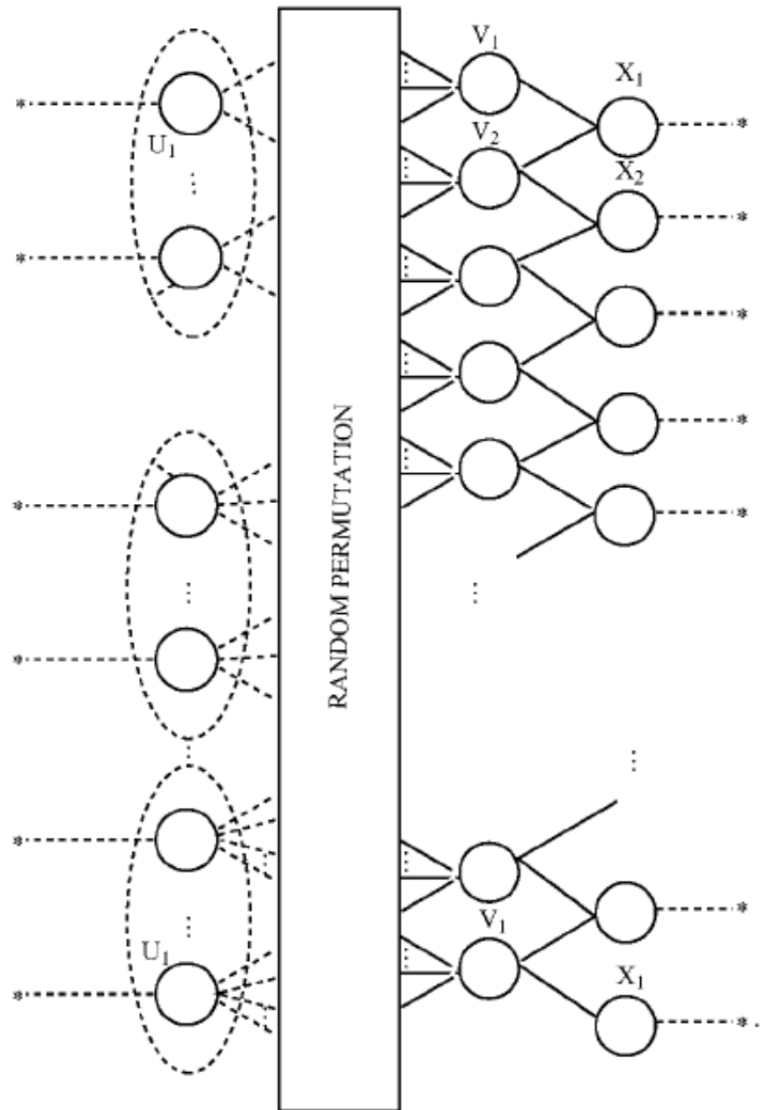
1 forth a formula for converting one well-known numerical representation to another.
2 This kind of discovery is not eligible for patent protection. *See Benson*, 409 U.S.
3 at 65 (“[The procedures] are a generalized formulation for programs to solve
4 mathematical problems of converting one form of numerical representation to
5 another.”). Likewise, the claim in *Flook* recited a formula that captured the
6 process of updating an alarm limit—a process that operators engaged in long
7 before the claims existed. The formula was written broadly as to capture a swath
8 of situations where an operator updated an alarm limit; the claim did “not purport
9 to explain how to select the appropriate margin of safety, the weighting factor, or
10 any of the other variables.” *Flook*, 437 U.S. at 586.

11 But in claim 1 of the '032 patent, the mathematical formula reflects inventive
12 concepts: namely, the irregular repetition of message bits and the use of a prior
13 parity bit for calculating a subsequent parity bit. Irregular repetition is a significant
14 benefit of this invention, as it balances the goals of efficiency and accuracy in error
15 correction. The innovative use of a prior parity bit further improves efficiency.
16 The mathematical formula in claim 1 does not describe a preexisting relationship
17 but rather sets forth unconventional steps for achieving error correction.

18 These two claim elements are not necessary for achieving error correction, and
19 Hughes has not suggested they were ubiquitous or obvious. In fact, these steps
20 greatly limit the scope of the claim. The claim does not capture many forms of
21 error correction, including turbo codes and regular repeat-accumulate codes. As
22 such, the claims do not preempt the field of error correction but capture only one
23 effective form of error correction.

24 Similar analysis applies to claim 18. Claim 18 recites a message-passing
25 decoder that decodes data encoded according to the depicted Tanner graph:
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The left side of the Tanner graph depicts subsets of information nodes (designated with the letter U on the graph). The subsets repeat a different number of times, as shown by the edges exiting the subsets. These edges enter a “Random Permutation” box, which represents the scrambling of the edges joining the information nodes and check nodes (designated with the letter V). The right side of the graph depicts parity bits (designated with the letter X) that are connected to two check nodes. Each check node has a value of 0 or 1. By summing all the bits connected to a check node, the encoder can determine the value of the next parity

1 bit.²⁰ See '032 Patent, 10:10–40. Again, this claim recites unconventional steps
2 that constitute inventive concepts—irregular repetition and the use of a prior parity
3 bit to calculate the next parity bit. Either individually or in combination with the
4 claim's other elements (including the scrambling of bits), these unconventional
5 steps sufficiently limit preemption concerns.

6 The other asserted claims from the '032 patent are dependent on these
7 independent claims. Because the independent claims are patentable, these
8 dependent claims are patentable as well.

9 **ii. '781 Patent**

10 Claim 1 of the '781 patent contains inventive concepts that make it
11 patentable. It recites a method of encoding a signal by (i) performing a linear
12 transform operation on information bits to produce “L transformed bits,” and (ii)
13 accumulating the L transformed bits to produce at least a portion of a codeword.
14 The claim's other recited limitation is a conventional step of receiving a block of
15 data to be encoded.

16 The claim contains two elements that provide an inventive concept: a linear
17 transform operation to produce L transformed bits and the accumulation of these
18 bits to produce a codeword. Hughes does not argue that these elements alone or in
19 combination were ubiquitous in the field or obvious. Instead, Hughes argues that a
20 linear operation is a mathematical algorithm, and *Digitech* states that mathematical
21 algorithms are not patentable unless there are other limitations. But the breadth of
22 the claims at issue in *Digitech* far exceeds the breadth of this claim.²¹ The

23
24 ²⁰ To understand this concept, imagine a check node has the value 0. It is connected to three
25 information bits, all with the value 1. It is connected to two parity bits, one with the value 1 and
26 one with a value to be determined. Let us call the value of the undetermined parity bit y . To
solve for y , the encoder would use the following formula: $0=1+1+1+y$. Using mod-2 addition,
the encoder would determine that the value of y is 0.

27 ²¹ The method claim at issue in *Digitech* recited:

28 A method of generating a device profile that describes properties of a device in a digital
image reproduction system for capturing, transforming or rendering an image, said
method comprising:

1 mathematical operation here greatly limits the claim's scope. As with the claims
2 of the '032 patent, claim 1 of the '781 patent does not preempt a significant
3 number of error correction techniques.

4 The Court is not required to ignore the linear transform operation simply
5 because the operation is mathematical. *See Diehr*, 450 U.S. at 189 n.12. Again, if
6 courts could not consider mathematical operations in § 101 analysis, error
7 correction codes and most software would be unpatentable. Using a linear
8 transform operation to produce bits, which are accumulated to produce a
9 codeword, is an innovative application of a mathematical principle. *See Mackay*,
10 306 U.S. at 94 (“[W]hile a scientific truth, or the mathematical expression of it, is
11 not patentable invention, a novel and useful structure created with the aid of
12 knowledge of scientific truth may be.”). As such, claim 1 is patentable.

13 Claims 16 and 19 recite methods of encoding a signal that do not require a
14 linear transform operation but are nonetheless patentable. Claim 16 recites, in
15 part,²² a method of encoding a signal by (i) accumulating mod-2 or exclusive-OR
16 (XOR) sums of bits in subsets of information bits, to generate at least a portion of a
17 codeword, (ii) where the information bits appear in a variable number of subsets.

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20 generating first data for describing a device dependent transformation of color
21 information content of the image to a device independent color space through
22 use of measured chromatic stimuli and device response characteristic
23 functions;
24 generating second data for describing a device dependent transformation of spatial
25 information content of the image in said device independent color space
26 through use of spatial stimuli and device response characteristic functions; and
27 combining said first and second data into the device profile.

25 *Digitech*, 758 F.3d at 1351. Claim 1 of the '781 patent is not so broad. If claim 1 instead recited
26 a method of encoding a signal by performing *any* mathematical operation on data to produce a
27 codeword, the claim would be akin to the one in *Digitech*, and Hughes would have a much
28 stronger argument against patentability.

22 Claim 16 is dependent on claim 13 of the '781 patent. In this analysis of claim 16, the Court
28 first analyzes the elements of independent claim 13. If claim 13 is patentable, the Court need not
analyze the added elements in claim 16.

1 Claim 19 recites the same method, except that it specifies that two of the
2 information bits should appear in three subsets of information bits.

3 Claim 16 recites unconventional steps of using, as input, information bits from
4 a variable number of subsets and accumulating mod-2 or XOR sums of bits to
5 produce a codeword. Hughes has not shown that these steps were ubiquitous or
6 obvious but only raises the objection that the Court cannot consider mathematical
7 operations. Although mod-2 arithmetic alone is a conventional idea, the
8 accumulation of a selection of bits from a variable number of subsets is not.
9 Likewise, claim 19 recites an inventive concept of accumulating mod-2 sums of
10 bits and requiring at least two information bits to appear in three subsets. Claim 16
11 and 19 both recite inventive concepts that satisfy step two.

12 The other asserted claims from the '781 patent are dependent on claim 1.
13 Because this independent claim is patentable, the other asserted claims are
14 patentable as well.

15 **iii. '710 Patent**

16 The asserted claims of the '710 patent contain inventive concepts that make
17 them patentable. Claim 1 of the '710 patent recites a method of encoding a signal
18 by (i) partitioning a data block into sub-blocks, (ii) repeating the data elements in
19 different sub-blocks a different number of times, (iii) interleaving the repeated data
20 elements, and (iv) using an encoder to encode the data block with a rate close to 1.
21 Claim 15 of the '710 patent recites a coder that performs substantially the same
22 process. The other asserted claims from the '710 patent are dependent on the
23 above claims. As such, the patentability of all asserted claims in the '710 patent
24 rises and falls with claim 1.

25 Like the asserted claims of the '032 patent, claim 1 contains the inventive
26 concept of repeating data elements irregularly. As discussed above, the irregular
27 repetition of bits is an innovative feature that balances efficiency and accuracy.
28 Moreover, the claim requires the encoder to encode the data block with a rate close

1 to 1, which means that the encoder is restricted in the number of extra bits it can
2 produce. This coding rate requirement is a feature that ensures the code is efficient
3 and does not produce a significant number of unnecessary bits. This requirement
4 is unconventional and significantly limits the breadth of the claim. At least in
5 combination with the claim's other elements, including the irregular repetition of
6 bits, this element constitutes an inventive concept. Therefore, claim 1 is
7 patentable.

8 Claim 15 is likewise patentable. In fact, claim 15 specifically requires the
9 coding rate to be within 10 percent of a coding rate of 1.²³ This requirement
10 constitutes an inventive concept and sufficiently limits the claim's breadth. The
11 other asserted claims from the '710 patent are dependent on claims 1 and 15 and
12 therefore are also patentable.

13 **iv. '833 Patent**

14 Finally, the asserted claims of the '833 patent contain inventive concepts that
15 make them patent eligible. Claim 8 recites the elements of (i) combining²⁴ bits in
16 one set of memory locations to other bits in a second set of memory locations,
17 based on a corresponding index, (ii) accumulating these bits in the second set of
18 memory locations, and (iii) requiring a permutation module to read two or more of
19 the memory locations in the first set at different times from each other. Hughes
20 skims over these limitations and characterizes the elements as mathematical
21 processes, but as discussed above, the Court can and must consider mathematical
22 processes in § 101 analysis. Even if the Court could not consider mathematical
23 processes, Hughes makes no argument that element (iii) is conventional. Again,
24 given the claim's limitations, the claim does not have a significant preemptive
25 effect in the field of error correction. There is no basis for the Court to conclude
26 that these elements were ubiquitous or obvious in the field or are necessary for

27 ²³ For an explanation of coding rate, see section II, *supra*.

28 ²⁴ The Court has construed "combining" to mean "performing logical operations on." *Cal. Inst. of Tech.*, 2014 WL 3866129 at *10–11.

1 encoding data to achieve error correction. In sum, the recited algorithm constitutes
2 an inventive method of encoding data, making claim 8 patentable. Claim 1 of the
3 '833 patent recites an apparatus that performs the steps of claim 8 and is also
4 patentable.

5 The other asserted claims from the '833 patent are dependent on claims 1 and 8.
6 Because these independent claims are patentable, the dependent claims of the '833
7 patent are as well.

8 VI. Conclusion

9 Section 101 must strike a precise balance in the context of software patents. On
10 the one hand, patent law should not protect inventions that simply apply
11 longstanding ideas to a computer environment. On the other hand, patents should
12 encourage inventors to create new computing solutions to today's computing
13 problems. Caltech's patents improve a computer's functionality by applying
14 concepts unique to computing (like using a linear transform operation to encode
15 data) to solve a problem unique to computing (data corruption due to noise).²⁵ The
16 Supreme Court in the future may provide a clearer outline for applying § 101 to
17 software, but to this Court, it at least must be true that § 101 protects a unique
18 computing solution that addresses a unique computing problem.

19 Today, the Court decides only that the asserted claims are patentable under
20 § 101. Whether these claims survive § 102, § 103, or other requirements of the
21 Patent Act is a separate question for another day, and the Court expresses no views
22 on these issues. Because the asserted claims are patentable under § 101, Hughes'
23 motion for summary judgment is denied.

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26 ²⁵ At least one other court has recently found claims for an error correction code eligible under
27 § 101. In *France Telecom S.A. v. Marvell Semiconductor Inc.*, No. 12-cv-04967, 2014 WL
28 1478850 (N.D. Cal. Apr. 14, 2014), Judge Orrick upheld as patentable claims for a turbo code, a
type of error correction code. *See id.* at *7–12. This decision was released before the Supreme
Court's decision in *Alice* and relies in part on the Federal Circuit's language in *CLS Bank Int'l v.*
Alice Corp. Pty. Ltd., 717 F.3d 1269, 1282 (Fed. Cir. 2013), *aff'd* 134 S. Ct. 2347 (2014).

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3 IT IS SO ORDERED.

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5 DATED: November 3, 2014

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Hon. Mariana R. Pfaelzer
United States District Judge