

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MIAMI INTERNATIONAL HOLDINGS, INC., MIAMI
INTERNATIONAL SECURITIES EXCHANGE, LLC, MIAx PEARL,
LLC, and MIAMI INTERNATIONAL TECHNOLOGIES, LLC,
Petitioner,

v.

FTEN, INC.,
Patent Owner.

Case CBM2018-00020
Patent 8,386,371 B2

Before TONI R. SCHEINER, MEREDITH C. PETRAVICK, and
KRISTI L. R. SAWERT, *Administrative Patent Judges*.

SAWERT, *Administrative Patent Judge*.

FINAL WRITTEN DECISION

Determining Claims 1–30 Unpatentable in
Covered Business Method Review
35 U.S.C. § 328(a) and 37 C.F.R. § 42.73

Denying Petitioner’s Motion to Exclude
37 C.F.R. § 42.64(c)

I. INTRODUCTION

This is a Final Written Decision in a covered business method (“CBM”) patent review challenging the patentability of claims 1–30 (“the challenged claims”) of U.S. Patent No. 8,386,371 B2 (“the ’371 patent,” Ex. 1001). We have jurisdiction under 35 U.S.C. § 6, and enter this Decision pursuant to 35 U.S.C. § 328(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we determine that Petitioner has shown, by a preponderance of the evidence, that the challenged claims are unpatentable under 35 U.S.C. § 101 as patent-ineligible subject matter. In addition, we deny Petitioner’s Motion to Exclude.

Claims Challenged	Statutory Basis	Claims Shown Unpatentable
1–30	35 U.S.C. § 101	1–30

*A. Procedural History*¹

Miami International Holdings, Inc., Miami International Securities Exchange, LLC, MIAX Pearl, LLC, and Miami International Technologies, LLC (collectively, “Petitioner”) filed a Petition requesting CBM patent review under § 18 of the Leahy-Smith American Invents Act (“AIA”). Paper 1 (“Pet.”). Petitioner supported its Petition with the Declaration of Terrence Hendershott, Ph.D. (Ex. 1003). FTEN, Inc. (“Patent Owner”) timely filed a Preliminary Response opposing institution of review. Paper 7.

¹ This procedural history narrative does not include papers and exhibits filed in connection with Patent Owner’s Motion to Disqualify Petitioner’s Counsel (Paper 14).

On October 15, 2018, pursuant to 35 U.S.C. § 324² and § 18(a) of the AIA, we instituted trial. Paper 15 (“Institution Decision” or “Inst. Dec.”). On our authorization (Paper 25), Petitioner filed a Motion to File Supplemental Information Pursuant to 37 C.F.R. § 42.123 (Paper 29) and Patent Owner filed an Opposition to that Motion (Paper 37). We granted Petitioner’s Motion on January 8, 2019 (Paper 44).

Patent Owner filed a Response (Paper 46, “PO Resp.”). Patent Owner supported its Response with a Declaration of Peter Vinella (Ex. 2028). Petitioner filed a Reply (Paper 66, “Reply”), and Patent Owner filed a Sur-reply (Paper 73, “Sur-reply”).

Petitioner filed a Motion to Exclude (Paper 75, “Pet. Mot.”). Patent Owner filed an Opposition (Paper 79, “PO Opp.”), and Petitioner filed a Reply in Support of its Motion to Exclude (Paper 80, “Pet. Opp. Reply”).

An oral hearing was held on July 18, 2019. Paper 78. A transcript of the hearing is included in the record. Paper 83 (“Tr.”).

B. Related Matters

The parties identify *Nasdaq, Inc. v. Miami International Holdings, Inc.*, No. 3:17-cv-06664 (D.N.J.), as a related matter under 37 C.F.R. § 42.8(b)(2). Pet. 5; Paper 5, 1. Additionally, Patent Owner provides the following table indicating patents involved in the above-referenced litigation for which Petitioner has submitted petitions:

² Section 18(a)(1) of the AIA, Pub. L. No. 112-29, 125 Stat. 284, 329–30 (2011) provides that the transitional program for covered business method patents will be regarded as a post-grant review under chapter 32 of title 35 of the U.S. Code, and will employ the standards and procedures of a post-grant review, subject to certain exceptions.

Proceeding No.	U.S. Patent No.	Petition Filing Date
CBM2018-00021	6,618,707	March 27, 2018
CBM2018-00028	7,599,875	March 27, 2018
CBM2018-00029 ³	7,747,506	March 27, 2018
CBM2018-00030	7,921,051	March 29, 2018
CBM2018-00031	7,246,093	March 30, 2018
CBM2018-00032	7,988,827	April 2, 2018

Paper 5, 2.

C. The '371 patent

The '371 patent, titled “Method and System for Canceling Orders For Financial Articles of Trades,” issued on February 26, 2013. Ex. 1001, (45), (54). The '371 patent relates to a process for canceling a pending order for financial trade. *Id.*, Abstract. Generally, the process involves terminating a communication session between a trading entity and a liquidity destination when a condition in the trading market has been identified. *Id.* The termination “caus[es] a process at the corresponding liquidity destination to cancel pending or outstanding orders for financial articles of trades from the entity.” *Id.*

As background, the '371 patent states that a trading entity—such as an individual or a broker—often trades financial articles with a plurality of liquidity destinations (e.g., NYSE, NASDAQ, etc.). *Id.* at 1:19–42, 6:22–27. Many trading entities use algorithmic programs for executing instructions on those markets. For example, “some sophisticated algorithmic programs

³ This proceeding was terminated. See *Miami Int’l Holdings, Inc. v. Nasdaq, Inc.*, CBM2018-00029, Paper 10 (PTAB Sept. 5, 2018).

include instructions to cancel pending trading orders.” *Id.* at 1:29–35. The ’371 patent also states that “[i]t is imperative that cancellation of these pending trading orders occurs within the least amount of time.” *Id.* at 1:35–37. “As more time elapses after a decision is made to cancel trading orders,” the ’371 patent continues, “the potential to fill pending trading orders that were slated for cancellation increases, which is the opposite to what the trading entity desires within the context of its trading strategy.” *Id.* at 1:37–42. The ’371 patent states, however, that “cancellation of pending orders or transactions . . . can be a burdensome process,” especially for a trading entity trading with multiple liquidity destinations. *Id.* at 1:43–53. The ’371 patent purports to solve the problem of time-to-market for cancellation requests by facilitating the cancellation of orders. *Id.* at 1:34–2:2.

In one embodiment, the process of the ’371 patent involves canceling pending orders based on “matching” certain pre-defined conditions with market events. Specifically, data is collected from multiple liquidity destinations. *Id.* at 2:8–9. The ’371 patent states that “the data comprises disparate data corresponding to associated liquidity destinations.” *Id.* at 2:10–11. The collected data is “normalized into a standardized form, and a condition of a trading market is defined comprising one or both submitted and executed transactions of financial articles of trade over the plurality of liquidity destinations.” *Id.* at 2:11–15. Once an event in the trading market matching the condition is identified, “at least one communication session between the entity and a corresponding liquidity destination is terminated, and pending orders from the entity are canceled.” *Id.* at 2:18–21. The ’371 patent states that this “cancel-on-disconnect process” can occur “at the corresponding liquidity destination.” *Id.* at 2:38–40.

Figure 1 of the '371 patent, reproduced below, provides an example of “a data processing system 100 that is capable of monitoring market transaction activity data from a plurality of liquidity destinations 150 and quickly executing cancellation instructions on pending orders for financial articles of trade with one or more liquidity destinations.” *Id.* at 6:8–13.

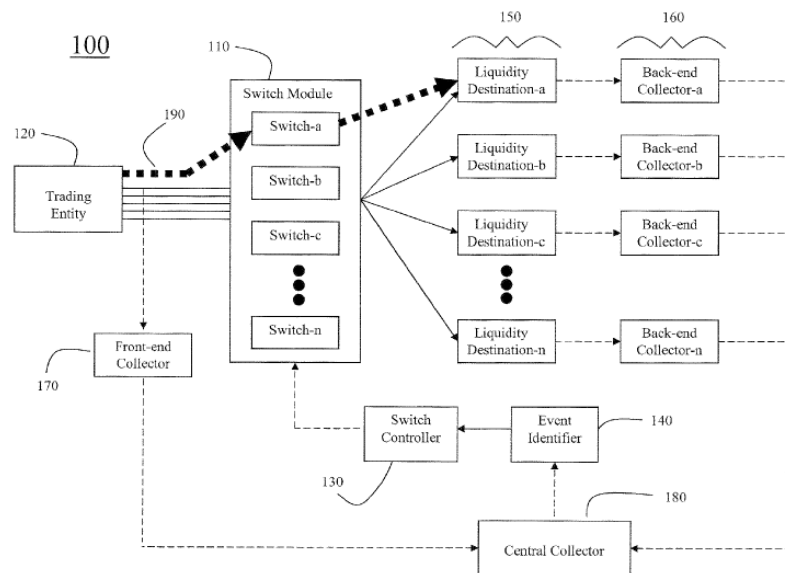


Figure 1 illustrates a data processing system for canceling a pending order for a financial trade, in accordance with one embodiment disclosed in the '371 patent. Ex. 1001, 4:14–17.

According to the '371 patent, the trading entity 120 is “associated with financial articles of trade being processed and executed through” multiple liquidity destinations a–n 150. *Id.* at 6:19–21, 39–43. The trading entity establishes one or more communication sessions with the liquidity destination(s) to “place orders for the purchase, sale, and/or other type of transactions of securities, commodities, and other financial articles of trade.” *Id.* at 6:61–65. For example, one communication session occurs over connection 190 between the trading entity and liquidity destination a. *Id.* at

7:38–42. The connection may be either a physical or logical connection. *Id.* at 7:49–52.

As shown in Figure 1, the connection may include a “switch module/device 110” for terminating the connection by switch components a–n. *Id.* at 7:58–61. Switch-a, for example, “acts as a gateway” between the trading entity and liquidity destination-a shown in Figure 1. Like the connection itself, the switch may be either logical, such as a network switch, or physical, such as a mechanical device that severs a physical link. *Id.* at 7:65–8:2. A “switch controller” 130 provides the instruction to one or more switches to terminate the connection between the trading entity and one or more liquidity destinations. *Id.* at 8:46–63. “By terminating a communication session” between the trading entity and the liquidity destination, “the corresponding liquidity destination is forced . . . to initiate a process that cancels pending orders of financial articles of trade delivered over the communication session.” *Id.* at 8:64–9:5.

The ’371 patent states that, in one example, this process takes advantage of a “Cancel Upon Disconnect” procedure already existing at liquidity destinations. Specifically, “[l]iquidity destinations typically have in place a process generally referred to as ‘Cancel Upon Disconnect’ for protecting against unintended disconnects of a connection in which event all open orders for the impacted trading entity are automatically cancelled upon termination of the connection.” *Id.* at 9:20–28. “Thus, in non-limiting, example embodiments, the ‘Cancel Upon Disconnect’ process already existing for another purpose is exploited and invoked by the technology described here to as part of a risk management strategy as well as an investment strategy.” *Id.* at 9:37–41.

Figure 1 also illustrates an embodiment where the decision to terminate a communication session for a trading entity is made by the data processing system 100 “based on market activity of all liquidity destinations,” including both general market data and data specific to the trading entity. *Id.* at 10:16–22. As shown in Figure 1, a central collector 180 collects and normalizes real-time data from one or more back-end collectors 160 (which collect transaction information directly from each liquidity destination) and a front-end collector 170 (that collects information related to the underlying trading system). *Id.* at 10:22–34, 10:50–59, 11:21–42.

In another embodiment, the data processing system may include an “event identifier” 140. *Id.* at 11:43–47. The ’371 patent states that a user may identify or pre-select “a condition of a trading market.” *Id.* at 11:43–47. The event identifier monitors and processes the real-time market data to “identify an event that matches the condition.” *Id.* at 11:47–51. Once identified, “the event identifier 140 notifies the switch controller 130 of its occurrence, upon which the controller 130 sends out the instruction to terminate the communication sessions that are associated with and/or utilized by the trading entity 120.” *Id.* at 11:51–56. The ’571 patent identifies conditions as those, for example, “relating to risks, trends, outages, uses, etc. that are important to and reflective of that trading entity’s 120 position within the market.” *Id.* at 11:62–65.

D. Illustrative Claim

Of the challenged claims 1–30, claims 1, 17, 20, 23, and 28 are independent. Claims 1, 17, and 20 relate to methods of canceling pending orders for financial articles of trade, claim 23 relates to a system configured

for canceling pending orders, and claim 28 relates to an apparatus for doing the same. *See* Ex. 1001, 23:15–26:46. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method for cancelling pending orders for financial articles of trade, comprising:
 - collecting, by one or more collection controllers, data from a plurality of liquidity destinations trading at least one financial article of trade, wherein the data comprises disparate data corresponding to associated liquidity destinations;
 - normalizing, by one or more processors, the collected data into a standardized form;
 - defining, by one or more processors, a condition of a trading market comprising one or both submitted and executed transactions of financial articles of trade over the plurality of liquidity destinations;
 - associating, by one of more processors, the defined condition with an entity;
 - identifying, by one or more processors, an event in the trading market matching the condition from the normalized data;
 - based on the matching, terminating, by one or more switches, at least one communication session between the entity and a corresponding liquidity destination; and
 - cancelling, by one or more processors, pending orders from the entity.

Ex. 1001, 23:15–37.

E. Instituted Ground of Unpatentability

We instituted review on the sole asserted ground: that claims 1–30 of the '371 patent are unpatentable as being directed to patent-ineligible subject matter under 35 U.S.C. § 101. Inst. Dec. 32.

II. ANALYSIS

A. Claim Construction

In a CBM patent review filed before November 13, 2018, the Board interprets claims using the “broadest reasonable construction in light of the specification of the patent.” 37 C.F.R. § 42.300(b) (2017); *see* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.300(b) effective November 13, 2018). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as they would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). In this proceeding, neither party proposes claim terms to be construed. *See* Pet. 20–21; PO Resp. 18 n.2. We determine that no claim term requires express construction to resolve any controversy in this proceeding. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

B. Covered Business Method Patent Review Eligibility

Section 18(d)(1) of the AIA defines a “covered business method patent” as a patent that “claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service, except that the term does not include patents for technological inventions.” *See also* 37 C.F.R. § 42.301 (defining “[c]overed business method patent” and “[t]echnological invention”). We must “examine *the claims* when deciding

whether a patent is a CBM patent.” *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1340 (Fed. Cir. 2016). A patent need have only one claim directed to a covered business method to be eligible for review. *See* Transitional Program for Covered Business Method Patents—Definitions of Covered Business Method Patent and Technological Invention; Final Rule, 77 Fed. Reg. 48,734, 48,736 (Aug. 14, 2012); *see also Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1239 n.6 (Fed. Cir. 2016).

1. Standing

Section 18(a)(1)(B) of the AIA requires that Petitioner, or its real party in interest or privy, “has been sued for infringement of the patent.” Petitioner asserts that it has been sued for infringing the ’371 patent in civil action No. 3:17-cv-06664 in the United States District Court for the District of New Jersey. Pet. 15. Patent Owner does not challenge that it has sued Petitioner. *See generally* PO Resp.; Sur-reply. Thus, we determine that Petitioner has established standing to file a petition for a CBM patent review of the ’371 patent.

2. Financial Product or Service

A CBM patent can be interpreted to encompass patents claiming activities that are financial in nature. 77 Fed. Reg. at 48735; *see also Blue Calypso*, 815 F.3d at 1338–41 (determining that a patent was a CBM patent because it claimed activities that are financial in nature); *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 1376, 1382 (Fed. Cir. 2016) (“CBM patents are limited to those with claims that are directed to methods and apparatuses of particular types and with particular uses ‘in the practice, administration, or management of a financial product or service.’” (quoting AIA § 18(d))); *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1324–25 (Fed. Cir.

2015) (“[The statute] on its face covers a wide range of finance-related activities.”).

Petitioner contends that every claim of the ’371 patent relates to the practice, administration, or management of a financial product or service. Pet. 16–17. Specifically, Petitioner contends that each claim is directed to “collecting market information (described as data corresponding to liquidity destinations), identifying the occurrence of an event (relating to transactions of financial articles of trade at the liquidity destinations) from the collected market information, and cancelling pending orders (described as financial transactions).” *Id.* at 16. In our Institution Decision, we agreed with Petitioner that the claims of the ’371 patent are financial in nature because they are directed to the methods, systems, and apparatuses for the management of a financial product. Inst. Dec. 10–12. We note that Patent Owner does not challenge this aspect of the inquiry as to whether the ’371 patent is covered business method patent. *See generally* PO Resp.; Sur-reply.

Based on the complete record, we reaffirm our determination that at least one claim of the ’371 patent is directed to “a method . . . for performing data processing or other operations used in the practice, administration, or management of a financial product or service.” AIA § 18(d)(1). For example, claim 1 recites a “method for cancelling pending orders for financial articles of trade.” Ex. 1001, 23:15–16. The ’371 patent defines “financial articles of trade” as “securities, commodities, options or futures.” *Id.* at 5:3–9. Given this definition, the claimed “financial articles of trade” are a “financial product” within the meaning of the CBM statute. Moreover, all claims of the ’371 patent are also directed to the methods, systems, and

apparatuses for the management of those financial products. Specifically, independent claims 1, 17, and 20 recite methods for canceling pending orders for financial articles of trade, independent claim 23 recites a system configured to cancel pending financial articles of trade orders, and independent claim 28 recites an apparatus configured to cancel pending orders for financial articles of trade. *See id.* at 23:15–26:46.

Finally, the claimed methods, systems, and apparatuses are not merely “incidental to” or “complementary to” a financial activity, because all the claims are directed to the trading of financial instruments. *See Unwired Planet*, 841 F.3d at 1382 (holding “that the Board’s reliance on whether a patent claims activities ‘incidental to’ or ‘complementary to’ a financial activity as the legal standard to determine whether a patent is a CBM patent was not in accordance with law”); *see also Versata*, 793 F.3d at 1325 (describing a CBM patent as encompassing patents “directly affecting the activities of financial institutions such as . . . brokerage houses”).

For these reasons, we determine that at least one claim of the ’371 patent (e.g., claim 1) is directed to “a method . . . for performing data processing or other operations used in the practice, administration, or management of a financial product or service.” AIA § 18(d)(1).

3. Technological-Invention Exception

The CBM statute explicitly excludes from review those patents that are “for technological inventions.” AIA § 18(d)(1); *see also* 37 C.F.R. § 42.301(a). Thus, even if a patent includes claims that would otherwise be eligible for treatment as a CBM, review of the patent is precluded if the claims cover only technological inventions. 37 C.F.R. § 42.301(a). To determine whether a patent is for a “technological invention,” the Board

applies a two-prong test: “whether the claimed subject matter as a whole [(1)] recites a technological feature that is novel and unobvious over the prior art; and [(2)] solves a technical problem using a technical solution.” 37 C.F.R. § 42.301(b). Both prongs of the technological-invention exception test must be satisfied in order to exclude the patent as a technological invention. *Apple*, 842 F.3d at 1240; *see also Versata*, 793 F.3d at 1326–27.

The following claim-drafting techniques typically do not render a patent a technological invention:

- (a) Mere recitation of known technologies, such as computer hardware, communication or computer networks, software, memory, computer-readable storage medium, scanners, display devices or databases, or specialized machines, such as an ATM or point of sale device.
- (b) Reciting the use of known prior art technology to accomplish a process or method, even if that process or method is novel and non-obvious.
- (c) Combining prior art structures to achieve the normal, expected, or predictable result of that combination.

Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,763–64 (Aug. 14, 2012). The Federal Circuit has explained that a claim is not directed to a “technological invention” if its “elements are nothing more than general computer system components used to carry out the claimed process.” *Blue Calypso*, 815 F.3d at 1341; *see also Versata*, 793 F.3d at 1327 (stating that “the presence of a general purpose computer to facilitate operations through un inventive steps does not change the fundamental character of an invention”).

(a) Technological feature that is novel and unobvious over the prior art

With respect to the first prong of the technological-invention exception test, Petitioner argues that “[t]he claims of the ’371 [p]atent fail to recite novel and unobvious technology.” Pet. 18 (citing Ex. 1003 ¶¶ 97–137); *see also* Reply 4–11. Specifically, Petitioner argues that the independent claims of the ’371 patent recite only generic computer-related components such as “controllers,” “processors,” and “switches,” which “do[] not make a patent a technological invention.” *Id.*; *see also* Reply 4. Petitioner also argues that the claims “do not describe any improvement on a computer, network component, or any other technology that could potentially constitute a technological invention.” *Id.* (citing Ex. 1003 ¶¶ 97–109, 119–137). As an example, Petitioner points out that the ’371 patent describes the claimed methods as “implemented using one or more computer-implemented software programs for processing data through a computer system,” and that the “computer system” may be “one or more personal computers, notebook computers, server computers, mainframes, networked computers (e.g., routers), handheld computers, personal digital assistants, workstations, and the like.” *Id.* at 18–19 (quoting Ex. 1001, 5:22–42).

Patent Owner responds that Petitioner has failed to provide any evidence “that a switch *as claimed* existed before the ’371 patent, that is, a switch with the ability to terminate a communication session based on event matching.” PO Resp. 22. Relying on Mr. Vinella’s testimony, Patent Owner argues that “such a switch was not conventional at the time of the invention.” *Id.* (citing Ex. 2028 ¶¶ 71–82).

Based on the complete record, we are persuaded that Petitioner has shown by a preponderance of the evidence that the claims, as a whole, do not recite a novel or non-obvious technological feature, and thus fail the first prong of the technological-invention exception test recited in § 42.301(b). We focus on claim 1. The express language of claim 1 recites a method using “collection controllers,” “processors,” and “switches.” Ex. 1001, 23:15–37.

The ’371 patent refers to these hardware components as generic computer components, thus indicating that they are conventional, and not novel and non-obvious technological features. For example, the only reference to “processor” in the written description of the ’371 patent states that “the computer system includes one or more processors coupled to a bus and memory storage coupled to the bus.” *Id.* at 5:36–39. Similarly, the ’371 patent refers to “switches” as “various network devices,” that can be logical or physical—again indicating that there is nothing technologically new about the switch itself. *Id.* at 3:48–49, 7:14–18.

Moreover, according to the ’371 patent, the claimed methods can be implemented using generic computer systems that were known and available. For example, as Petitioner points out, the ’371 patent states that computer systems may be “one or more personal computers, notebook computers, server computers, mainframes, networked computers (e.g., routers), handheld computers, personal digital assistants, workstations, and the like.” *Id.* at 5:22–28; Pet. 18–19. And, although the ’371 patent states that “example embodiments may be implemented through specialized hardware,” the patent provides no information on the makeup of that hardware. *See* Ex. 1001, 5:28–32; *see also* Ex. 1003 ¶ 101

(Dr. Hendershott’s testimony that the ’371 patent teaches only that the “specialized hardware” can be “an embedded system, or similar electronic computing device, or other suitable electronic circuitry” (quoting Ex. 1001, 5:65–67)).

Thus, the ’371 patent itself evidences that the elements recited in claim 1 do not amount to a novel and non-obvious technological feature. *See Blue Calypso*, 815 F.3d at 1341 (stating that a claim does not include a “technological feature” if its “elements are nothing more than general computer system components used to carry out the claimed process”).

We now turn to Patent Owner’s argument that “a switch [that] terminates a communication session based on event matching” meets the first prong of the technological-invention exception test. *See* PO Resp. 21–25; *see also* Sur-reply 3–14. Upon review of the entire record, however, we are persuaded that Petitioner has shown that the switch, as claimed, is not a novel and non-obvious technological feature. Specifically, we are persuaded—based on the written description of the ’371 patent and other evidence of record—that the claimed “switch” is a conventional piece of technology well known in the art before the ’371 patent.

To begin, we credit Dr. Hendershott’s testimony, as supported by the ’371 patent, that the claimed switch encompasses both physical and logical configurations. *See* Ex. 1003 ¶ 103. Specifically, the ’371 patent teaches that the switch may be “a logical switching element that logically disconnects the connection, or a physical switching element that physically disconnects the connection.” Ex. 1001, 15:14–20; *see also id.* at 3:48–49

(disclosing a “logical” and “physical switch”).⁴ We also observe that the ’371 patent defines “a communication session” as “a logical connection between two parties” that “includes a sequence of communication messages (e.g., requests and responses) between the two parties participating in the communication session.” Ex. 1001, 7:4–8.

We find that the ’371 patent supports Petitioner’s argument that mechanisms for canceling pending orders after terminating a communication session between two parties already existed in the art, in the form of a “cancel-on-disconnect” process. Specifically, the ’371 patent explains that “[l]iquidity destinations *typically have in place* a process generally referred to as ‘Cancel Upon Disconnect’ for protecting against unintended disconnects of a connection in which event *all open orders for the impacted trading entity are automatically cancelled upon termination of the connection.*” *Id.* at 9:24–28 (emphases added). The ’371 patent explains that the claimed invention “takes advantage of this process to terminate a connection (whether physically or logically).” *Id.* at 9:28–31. Put differently, “the ‘Cancel upon Disconnect’ process *already existing* for another purpose *is exploited and invoked . . .* as part of a risk management strategy as well as an investment strategy.” *Id.* at 9:36–41 (emphases

⁴ In its Reply and Sur-reply, Patent Owner argues that “the fact that a switch could be implemented in software is immaterial to the CBM eligibility.” Sur-reply 5; *see also* PO Resp. 23. We agree, generally, that there is no *per se* rule that a technical feature cannot be embedded in software. That the switch can be a logical switch, however, is relevant to whether that switch was conventional in the art. It is for this purpose that we analyze a switch implemented in software.

added); *see also id.* at 15:21–25 (referring to “a cancel-upon-disconnect process *already in place* at the liquidity destination” (emphasis added)).

Beyond the ’371 patent, Petitioner submitted additional credible and sufficient evidence that the prior art routinely used “switches” to terminate a connection between a trader and a corresponding liquidity destination. For example, we credit Petitioner’s evidence that a trader who committed a “fat-fingered” mistake (e.g., placed an order for one-million shares rather than the intended 1000 shares due to inadvertently hitting the wrong keys on a keyboard) would “hit a panic button to invoke a *kill-switch*,” “thereby terminating the information exchange” between the trader and the liquidity destination. Pet. 52–53; Ex. 1019 (describing implementation of a “kill switch” to allow banks and brokerage firms “the ability to block erroneous trades” (emphasis added)); *see also* Ex. 1003 ¶¶ 82–86.

In response, Mr. Vinella, Patent Owner’s expert, testifies that Petitioner’s evidence does not show that “an underlying communication session is terminated.” Ex. 2028 ¶ 122. We disagree. Given the broad definition of “communication session” set forth in the ’371 patent, Ex. 1001, 7:4–8, a “kill switch” that “block[s] erroneous trades” terminates a communication session because it “effectively shut[s] down *all* trading by [a particular] firm,” Ex. 1019 (emphasis added). Other record evidence supports Petitioner’s position that it was routine in the art to cancel pending orders when communication between the trader and the liquidity destination was terminated—either intentionally (e.g., from a log-out or “connection kill”) or unintentionally (e.g., from equipment failure). *See* Ex. 1022, 16 (describing mass order cancel procedure).

We also credit Dr. Hendershott’s testimony, as supported by a preponderance of record evidence, that “[b]y the time of the earliest effective filing date of the ’371 patent, network switches were widely used to drive the Internet and trading networks.” Ex. 1003 ¶ 104. In this regard, Dr. Hendershott points to several “switches” made by Cisco for communication over a trading network. See Ex. 1029 (describing a “content services switch”); Ex. 1030 (describing an “Ethernet switch”); Ex. 1031 (describing switches used in “trading floor architecture”). In its Sur-reply, Patent Owner argues that prior-art switches merely “blocked” a communication session, which is different from “terminating” a communication, and that there is “no evidence of any switch that terminates a communication session at all.” Sur-reply 7. Again, we disagree, as Patent Owner’s argument is contrary to its own expert’s testimony. Specifically, Mr. Vinella expressly states in his declaration that:

It is also true that logical and physical “switches” *used to terminate a communication session* generically existed before the ’371 Patent, nor do the inventors claim to have invented such switches.

Ex. 2028 ¶ 126 (emphasis added). Thus, contrary to Patent Owner’s arguments, we find that Petitioner has submitted sufficient evidence that switches having the capability to terminate a communication session were conventional in the art before the ’371 patent.

Finally, we observe that Patent Owner’s argument is premised on a “switch” that is neither described, nor claimed, in the ’371 patent. In this regard, Patent Owner argues that, in the prior art, a switch “typically operated at the packet level,” a communication session “conventionally operated at another, higher layer,” and “event matching was conventionally

done on [sic] by an application program at still a higher level.” PO Resp. 8–9. The claimed switch is inventive, Patent Owner argues, because “[w]hat the inventors did was architect a switch (then typically operating at layers 2 and 3 and unaware of the meaning of data it passed at the higher layers) to terminate a communication session (typically a service provided by layer 5) based on event matching (typically a service provided by layer 7).” *Id.*; see also Sur-reply 8 (arguing that the claimed switch is unconventional because prior-art switches “lacked knowledge of the higher network layers where communication sessions are managed”).

But the ’371 patent provides only a general location and description of the switch—i.e., that the switch is located on the communication path between the trading entity and the liquidity destination, Ex. 1001, 8:6–10, and functions to “add[] little or no latency to time-to-market values” because it “merely passes through any messages delivered in the corresponding communication session,” *id.* at 7:58–8:8. Thus, the written description of the ’371 patent does not support Patent Owner’s implication that the switch is “aware” of the meaning of the data—instead, the switch is “merely pass[ing] through” (or not passing through) that data. *Id.*

Moreover, claim 1 is clear that the function of the switch is to terminate “at least one communication session.” Ex. 1001, 23:30–37. And the ’371 patent is clear that either the trading entity or the data processing system—not the switch—makes the decision to terminate the communication session. See *id.* at 10:1–15 (describing embodiment where “using switch module 110 . . . enhances the capability of the *trading entity 120 to control its actions*” (emphasis added)); *id.* at 10:16–34 (describing embodiment where “[t]he decision to terminate a communication session for

a trading entity 120 may also be made by the data processing system 100 of FIG. 1.”); *see also* Ex. 1067, 20:18–24, 24:1–9 (deposition testimony of Mr. Vinella that, as recited in the claim, the “switch terminates at least one communication session between the entity and the corresponding liquidity destination,” that “[t]he claim just says that [the switch] has to terminate the session,” and that “[t]here’s no specification how that has to be done”).

Although the communication session is terminated based on that matching, the specification does not support a reading of the claim that the switch is somehow acting differently than a conventional switch. This is because the switch is instructed by *other components* of the processor to do what switches conventionally do—i.e., terminate a communication session either physically or logically. Specifically, the ’371 patent teaches that an “event identifier 140” monitors the market data, and “identif[ies] a market event that matches the condition.” Ex. 1001, 11:43–51. Then, the “event identifier 140 notifies the switch controller 130 of [the condition’s] occurrence, upon when the controller 130 sends out the instruction to terminate the communication session.” *Id.* at 11:51–56. “The instruction to terminate a communication session is provided by the switch controller 130, which controls the functions of one or more corresponding switch components a–n.” *Id.* at 8:49–52; *see also id.* at 10:16–18 (“The decision to terminate a communication session for a trading entity 120 may also be made by the data processing system 100 of FIG. 1.”).

Mr. Vinella confirms these separate roles for the event identifier, the switch controller, and the switch. *See* Ex. 2028 ¶ 90 (“Event identifier 140 ‘identif[ies] an event that matches [a] condition.’ When event identifier 140 identifies a market event that matches a condition, event identifier 140

notifies a switch, through another device called a switch controller. In response to the notification, the switch terminates the connection.” (citing Ex. 1001, 11:49–50)).

In its Sur-reply, Patent Owner acknowledges that the processor identifies the market event and that the switch terminates the communication session. Sur-reply 6. Patent Owner argues, however, that “antecedent basis connects the two steps”—i.e., “matching” and “the matching.” *Id.* But Patent Owner’s arguments, at most, suggest that *using* a switch to terminate a communication session based on event matching is a novel process. Even so, the switch itself is nothing more than a well-known logical or physical switch, and thus, is not a technological feature that is novel and unobvious over the prior art. Ex. 1001, 3:48–49, 7:14–18; *see also* Office Patent Trial Practice Guide, 77 Fed. Reg. at 48,763–64 (stating that a patent “typically” does not cover a “technological invention” if it recites “the use of known prior art technology to accomplish a process or method, *even if that process or method is novel and non-obvious*” (emphasis added)).

For all these reasons, we agree with Petitioner that the ’371 patent does not claim a technological feature that is novel and unobvious over the prior art.

(b) Technical problem using a technical solution

Given our determination the ’371 patent does not claim a technological feature that is novel and unobvious over the prior art, we need not reach the second prong of the technical-invention exception test. *See Apple*, 842 F.3d at 1240 (“We need not address this argument regarding whether the first prong of 37 C.F.R. § 42.301(b) was met, as we affirm the Board’s determination on the second prong of the regulation—that the

claimed subject matter as a whole does not solve a technical problem using a technical solution.”). Nevertheless, we also find that the ’371 patent does not solve a technical problem using a technical solution.

First, we find that the written description of the ’371 patent supports Petitioner’s position that the claimed subject matter, as a whole, attempts to solve a business—rather than a technical—problem. Pet. 16–20; Reply 11–12; *see also* Ex. 1003 ¶¶ 37–39, 117. The ’371 patent states that “cancellation of pending orders or transactions of a trading entity can be a burdensome process,” especially for a trading entity trading with multiple liquidity destinations. Ex. 1001, 1:43–53. The ’371 patent also states that “[i]t is imperative” that pending orders are canceled in the least amount of time, because “[a]s more time elapses after a decision is made to cancel trading orders, the potential to fill pending trading orders that were slated for cancellation increases.” *Id.* at 1:36–42. The ’371 patent purports to solve the problem of time-to-market for cancellation requests (i.e., “the time necessary to send all desired cancellation messages for all applicable orders”) by facilitating the cancellation of orders. *Id.* at 1:34–2:2.

In our view, decreasing the time-to-market for cancellation requests is more of a business or financial problem than a technical problem. Indeed, the ’371 patent explains that fulfilling trade orders slated for cancellation “is the opposite of what the trading entity desires *within the context of its trading strategy*.” *Id.* at 1:41–42 (emphasis added). The ’371 patent also states that decreasing the “time-to-market *is critical in gaining an advantage over competing trading entities*.” *Id.* at 1:54–55 (emphasis added). Thus, we agree with Petitioner that the claimed subject matter, as a whole, attempts to lessen a trading entity’s exposure to financial risk, i.e., that trade

orders slated for cancellation will nevertheless be fulfilled against the trading entity's wishes, and to provide the trading entity with other competitive advantages. See Ex. 1001, 9:37–41 (stating that the “cancel upon disconnect” process is used “as part of a *risk management strategy* as well as an *investment strategy*” (emphases added)); see also *Trading Techs. Int’l, Inc. v. IBG LLC*, 921 F.3d 1084, 1091 (Fed. Cir. 2019) (agreeing with the Board that helping a trader gain a market advantage relates to the practice of a financial product, rather than a technological invention); Reply 15 (“To ease the ‘burdensome process’ of cancelling pending orders, the ’371 [patent] proposes the use of the recited generic computer components, to exploit and invoke an ‘already existing’ cancel-upon-disconnect process.” (citing Ex. 1001, 1:12–2:2, 9:24–41, 15:21–25)).

Second, even if the claimed subject matter attempts to solve a technical problem, we find that the solution presented in the ’371 patent is not a technical one because it utilizes well-known technology—i.e., the “‘Cancel Upon Disconnect’ process already existing.” Ex. 1001, 9:37–38. Patent Owner argues that the ’371 patent solves a technical problem using a technical solution because it reduces latency, which Patent Owner characterizes as time-to-market, by “identify[ing] events that cause a switch to terminate a communication session.” PO Resp. 26–27. We find, however, that the preponderance of the evidence does not support Patent Owner’s argument that the claimed subject matter improves the functionality of the computer itself. Instead, as Petitioner persuasively contends, “[t]he claims do not describe any improvement on a computer, network component, or any other technology that could potentially constitute a technological invention.” Pet. 18 (citing Ex. 1003 ¶¶ 97–109, 119–137).

This is because, as explained in detail above, the switch itself is a conventional piece of technology. *Supra* § II.B.3.(a).

Finally, we also observe that the '371 patent refers to “latency” only in the context of a switch “*adding* little or no latency to time-to-market values,” rather than a switch *reducing* latency in time-to-market values. Ex. 1001, 8:2–6. Given that such switches were known in the art, it is unclear how the claimed switch improves the functioning of a computer. Indeed, as Dr. Hendershott points out, the written description of the '371 patent refers once to “specialized hardware,” but otherwise fails to describe or claim that hardware. Ex. 1001, 5:30; *see also* Ex. 1003 ¶ 101. *See Versata*, 793 F.3d at 1327 (determining that method using “no specific, unconventional software, computer equipment, tools or processing capabilities” did not recite a technical solution to a technical problem).

4. Conclusion for CBM Eligibility

We find that Petitioner has been sued for infringement of the '371 patent, and has demonstrated sufficiently that at least one claim of the '371 patent is directed to a financial activity and that the '371 patent is not exempt from CBM review based on the “technological invention” exception of 37 C.F.R. § 42.301(b). Accordingly, we find that the '371 patent is a covered business method patent under AIA § 18(d)(1).

C. Asserted Ground of Unpatentability

Petitioner asserts that claims 1–30 of the '371 patent are unpatentable under 35 U.S.C. § 101. Pet. 21–94. Petitioner argues that the challenged claims are directed to an abstract idea, and when considering the elements of each claim individually and as an ordered combination, there are no additional elements that transform the abstract idea into a patent-eligible

application. *Id.* at 26. Patent Owner disagrees with Petitioner’s contentions. *See generally* PO Resp.; Sur-Reply.

1. Principles of Law

An invention is patent-eligible if it is a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. The Supreme Court, however, has interpreted § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is “directed to.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, i.e., the use of a third party to mitigate settlement risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”). “[W]hen considering claims purportedly directed to ‘an improvement of computer functionality,’ we ‘ask whether the focus of the claims is on the specific asserted improvement in computer capabilities or, instead, on a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.” *Smartflash LLC v. Apple, Inc.*, 680 Fed. Appx. 977, 982 (Fed. Cir. 2017) (nonprecedential) (quoting *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016)).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the

elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221. “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

To address the growing body of precedent, the USPTO recently published revised guidance on the application of § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 50 (Jan. 7, 2019) (“2019 Guidance”). The 2019 Guidance seeks to improve the clarity of the subject matter eligibility analysis and improve consistency of this analysis across the USPTO. *Id.*

Under the 2019 Guidance, we first look to whether the claim is directed to a judicial exception because:

- (1) the claim recites a law of nature, natural phenomenon, or abstract idea; the latter of which includes certain groupings, identified a mathematical concepts, certain methods of organizing human activity and mental processes; and
- (2) the claim as a whole fails to recite additional elements that integrate the judicial exception into a practical application.

See 84 Fed. Reg. at 51–55 (citation omitted). Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

- (3) adds a specific limitation beyond the judicial exception that are not “well-understood, routine, conventional” in the field; or

- (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See id. at 56 (citation omitted).

We follow the framework set forth in the *2019 Guidance* for our analysis. We focus our analysis on independent claim 1 as representative of all independent claims of the '371 patent (i.e., claims 1, 17, 20, 23, and 28), because all these claims recite substantially similar subject matter and steps for canceling pending orders for financial articles of trade. *See* Ex. 1001, 23:15–26:46; *see also* Pet. 27 (treating claim 1 as representative); PO Resp. 20 (stating that “this [Patent Owner Response] focuses on claim 1 and shows that [Petitioner] has failed to meet its burden with respect to that claim”).

2. Step 1

Under the *2019 Guidance*, we first determine “whether the claimed subject matter falls within the four statutory categories of patentable subject matter identified by 35 U.S.C. § 101: Process, machine, manufacture, or composition of matter.” 84 Fed. Reg. at 53–54. Neither party appears to address this step. *See* PO Resp. 29; Reply 13–14.

Independent claim 1, 17, and 20 recite a statutory process, namely a “method” for canceling pending orders for financial articles of trade. *See* Ex. 1001, 23:15–25:36. Thus, we determine that these claims and their dependent claims (i.e., claims 2–16, claims 18–19, and claims 21–22, respectively) recite subject matter falling within one of the categories of statutory subject matter set forth in § 101 (i.e., process). Independent claim 23 recites a “system” configured to cancel pending orders for financial articles of trade, while independent claim 28 recites an “apparatus” for the same. *Id.* at 25:37–26:46. Thus, we determine that these claims and their

dependent claims (i.e., claims 24–27 and claims 29–30, respectively) recite subject matter falling within one of the categories of statutory subject matter set forth in § 101 (i.e., machine).

3. Step 2A, Prong 1: Whether the Claim Recites a Judicial Exception

Under the next step in the *2019 Guidance* (Step 2A, Prong 1), we must determine “whether the claim recites a judicial exception, i.e., an abstract idea, a law of nature, or a natural phenomenon.” 84 Fed. Reg. at 54. As part of this inquiry, we examine the relevant limitations in the context of the claim language as a whole. *Alice*, 573 U.S. at 218 n.3. “The § 101 inquiry must focus on the language of the [a]sserted [c]laims themselves.” *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1149 (Fed. Cir. 2016); *Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1345 (Fed. Cir. 2013) (admonishing that “the important inquiry for a § 101 analysis is to look to the claim”); *see also Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343, 1346 (Fed. Cir. 2014) (“We focus here on whether the claims of the asserted patents fall within the excluded category of abstract ideas.”). “An abstract idea can generally be described at different levels of abstraction.” *Apple, Inc.*, 842 F.3d at 1240. Yet our reviewing court has cautioned that characterizing claims at a “high level of abstraction and untethered from the language of the claims all but ensures that the exceptions to § 101 swallow the rule.” *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1337 (Fed. Cir. 2016).

Petitioner contends that the limitations of claim 1 cover the functional process of:

- (1) collecting data from various liquidity destinations trading at least one financial article of trade, (2) standardizing the collected

data, (3) defining a market condition, (4) associating the defined condition with an entity, (5) identifying an event matching the defined condition from the standardized data, (6) terminating communication between the entity and a liquidity destination, and (7) cancelling pending orders from the entity.

Pet. 27–29 (citing Ex. 1001, 23:15–37; Ex. 1003 ¶¶ 13–16, 37–49).

Considering these limitations as a whole, Petitioner contends that the process “reduces to the *abstract idea of collecting market information, identifying the occurrence of an event from the collected market information, and cancelling pending orders.*” *Id.* at 29 (emphasis added). Petitioner contends that these steps constitute “‘a fundamental economic practice long prevalent in our system of commerce,’ which was traditionally performed by human agents, and which remains a ‘building block of the modern economy.’” *Id.* at 30 (quoting *Alice*, 573 U.S. at 219; citing Ex. 1003 ¶¶ 37–97); *see also* Reply 13–14. Petitioner cites to, *inter alia*, Dr. Hendershott’s Declaration (Ex. 1003) and the books “100 Years of Wall Street” (Ex. 1006⁵), “The Art of Speculation” (Ex. 1008⁶), and “The New York Stock Exchange: Another Century” (Ex. 1010⁷), in support of its position. *See* Pet. 31–49.⁸ Petitioner also contends that certain steps (i.e., steps 3–5) of claim 1 are “steps that could be, and often were, performed mentally by brokers and/or their clients.” Pet. 44.

⁵ Charles R. Geist, *100 Years of Wall Street* (2000) (Ex. 1006, “Geist”).

⁶ Philip L. Carret, *The Art of Speculation* (2007 reprint) (Ex. 1008).

⁷ James E. Buck, *The New York Stock Exchange: Another Century* (1999) (Ex. 1010).

⁸ Throughout this Decision, we cite to the original pagination of these books, rather than the pagination added to the exhibits by Petitioner.

The parties agree that the issue in this proceeding is whether claim 1 recites a judicial exception to patentability, namely an abstract idea. *See, e.g.*, Pet. 26–27; PO Resp. 29–30. The *2019 Guidance* identifies certain groupings of abstract ideas that have been recognized under the case law: (1) mathematical concepts, (2) certain methods of organizing human activity, and (3) mental processes. 84 Fed. Reg. at 52. As to “certain methods of organizing human activity,” the *2019 Guidance* exemplifies “fundamental economic principles or practices”—such as the concept of hedging in *Bilski* and the concept of using a third party to mediate settlement risk in *Alice*. *Id.* (citing *Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611–12). And, as to “mental processes,” the *2019 Guidance* exemplifies “concepts performed in the human mind,” such as “an observation, evaluation, judgment, opinion.” *Id.* We determine that claim 1 recites certain methods of organizing human activity and mental processes—canceling an order for trade when an event in the market is identified: “collecting market information, identifying the occurrence of an event from the collected market information, and cancelling pending orders.” Pet. 29.

Specifically, claim 1 recites a method for canceling pending orders for financial articles of trade comprising the steps of: (1) “collecting . . . data from a plurality of liquidity destinations trading at least one financial article of trade, wherein the data comprises disparate data corresponding to associated liquidity destinations”; (2) “normalizing . . . the collected data into a standardized form”; (3) “defining . . . a condition of the trading market comprising one or both submitted and executed transactions of financial articles of trade over the plurality of liquidity destinations”; (4) “associating . . . the defined condition with an entity” (e.g., trader); (5) “identifying . . . an

event in the trading market matching the condition from the normalized data”; (6) “based on the matching, terminating . . . at least one communication session between the entity and a corresponding liquidity destination”; and (7) “cancelling . . . pending orders from the entity.” Ex. 1001, 23:17–37.

(a) Methods of Organizing Human Activity

We agree with and adopt Petitioner’s arguments and evidence that the concept of canceling an order for trade when an event in the market is identified is an abstract idea, *see* Pet. 31–60, because it falls within the grouping of “certain methods of organizing human activity” as enumerated in the *2019 Guidelines*, 84 Fed. Reg. 52. Specifically, we agree with Petitioner that the limitations of claim 1 recite a fundamental economic practice, similar to the practice of hedging in *Bilski* and mediating settlement risk in *Alice*. *Alice*, 573 U.S. at 219 (“the concept of intermediated settlement is a fundamental economic practice long prevalent in our system of commerce”); *Bilski*, 561 U.S. at 611 (“Hedging is a fundamental economic practice long prevalent in our system of commerce and taught in any introductory finance class.” (quotation omitted)). A fundamental economic practice is an example of a certain method of organizing human activity, and thus is an abstract idea. *2019 Guidelines*, 84 Fed. Reg. at 52. In this regard, claim 1 is consistent with the ’371 patent’s disclosure of a method to monitor real-time market data “for purposes of canceling orders for financial articles of trade” when a certain market event is identified. Ex. 1001, Abstract; *see also id.* at 23:15–16 (reciting “[a] method for cancelling pending orders for financial articles of trade”).

Patent Owner disputes that the alleged ineligible concept is a method of organizing human activity, and argues that Petitioner has failed to show a real-world analogy. PO Resp. 40–46 (citing *Data Engine Techs. LLC v. Google LLC*, 906 F.3d 999, 1011 (Fed. Cir. 2018) (“It is not enough, however, to merely trace the invention to some real-world analogy.”)); Sur-reply 18–19. In essence, Patent Owner argues that, because Petitioner fails to show that anyone has ever performed the claimed method, it is not abstract. *Id.* Patent Owner’s reliance on *Data Engine* is misplaced.

Contrary to Patent Owner’s argument, in *Data Engine*, the court stated:

It is not enough, however, to merely trace the invention to some real-world analogy. The eligibility question is not whether anyone has ever used tabs to organize information. That question is reserved for §§ 102 and 103. The question of abstraction is whether the claim is “directed to” the abstract idea itself We must consider the claim as a whole to determine whether the claim is directed to an abstract idea or something more.

Data Engine, 906 F.3d at 1011. “The abstract idea itself cannot supply the inventive concept, no matter how groundbreaking the advance.” *Trading Techs. Int’l, Inc. v. IBG LLC*, 921 F.3d 1084, 1093 (Fed. Cir. 2019) (“*IBG I*”) (quotation omitted).

Courts have found similar fundamental economic practices to be abstract ideas. See 2019 *Guidance*, 84 Fed. Reg. at 52 n.13; see also *IBG I*, 921 F.3d at 1092 (determining that graphing or displaying bid and offers to assist a trader to send an order to be a fundamental economic practice, and an abstract idea); *Trading Techs. Int’l, Inc. v. IBG LLC*, 921 F.3d 1378, 1384–85 (Fed. Cir. 2019) (“*IBG II*”) (also determining that graphing or displaying bid and offers to assist a trader to send an order to be a fundamental economic practice, and an abstract idea); *Inventor Holdings*,

LLC v. Bed Bath & Beyond, Inc., 876 F.3d 1372, 1378–79 (Fed. Cir. 2017) (holding that concept of “local processing of payments for remotely purchased goods” is a “fundamental economic practice, which *Alice* made clear is, without more, outside the patent system.”); *Enfish*, 822 F.3d 1355 (“fundamental economic and conventional business practices are often found to be abstract ideas, even if performed on a computer”); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) (concluding that claimed concept of “offer-based price optimization” is an abstract idea “similar to other ‘fundamental economic concepts’ found to be abstract ideas by the Supreme Court and this court”).

In any event, we credit and rely on Dr. Hendershott’s testimony that claim 1 embodies “a longstanding practice that is fundamental to financial trading,” as supported by the preponderance of the record evidence. Ex. 1003 ¶¶ 48–68.

As to “collecting . . . from a plurality of liquidity destinations trading at least one financial article of trade, wherein the data comprises disparate data corresponding to associated liquidity destinations,” Geist shows that the ticker tape “was the first method brokers had of checking stock prices on a regular basis.” Ex. 1006, xxvi–xxvii, 41 (showing and describing brokers checking stock prices from a ticker tape), 95 (“New computers aided price reporting in the 1960s”), 165–167 (“Brokers compare prices on the ticker tape in 1900, while contemporary brokers do the same electronically in 1997”). With the onset of the computing age, the ticker tape was replaced with electronic displays, which collect data on stock prices from a plurality of liquidity destinations. See Ex. 1010, 49 (“Today, the NYSE continues to gather transaction data and distributes it to independent vendors through the

Consolidated Tape Association, formed in 1975. . . . Today’s ‘tape’ is, in fact a high-speed electronic display that reports transactions almost simultaneously to investors worldwide.”); *id.* at 163 (“Ticker symbols are assigned on a first-come, first-served basis . . . Each marketplace—the NYSE, the American Stock Exchange and others—allocates symbols for companies within its purview, working with the others to avoid duplication”); *see also* Ex. 1003 ¶¶ 53–55. Given this evidence, we credit Dr. Hendershott’s testimony that the record “irrefutably demonstrate[s] the well-known nature of collecting data from various liquidity destinations.” Ex. 1003 ¶ 55.

As to “normalizing . . . the collected data into a standardized form,” we credit Dr. Hendershott’s testimony that brokerage houses “began to prosper in the 1920s,” and functioned to “display, to clients, data collected from exchanges.” Ex. 1003 ¶¶ 56–59 (citing Ex. 1006, 16, 69, 78–79; Ex. 1008, 23–24). As Dr. Hendershott further explains and supports with evidence, the data was in “standardized form.” *Id.* ¶ 60 (citing Ex. 1010, 48–49 (“In 1885, the [NYSE] began employing reporters who gathered the prices and turned them over to the ticker companies, assuring the *consistency* and accuracy of all quotes” (emphasis added)), 114 (“For each sale, [NYSE reporters] wrote the name of the stock, price and number of shares on a slip of paper and transmitted the slip to the ticker room”), 83 (“As sales came in over tickers, a clerk posted current prices on the quotation boards”), 163 (“Ticker symbols [were] assigned on a first-come, first-served basis . . . [e]ach marketplace—the NYSE, the American Stock Exchange and others— allocates symbols for companies within its purview, working with the others to avoid duplication”), 114–117, 132, 158–159).

Again, this evidence demonstrates the fundamental economic nature of this claimed step.

As to the next three steps: “defining . . . a condition of the trading market comprising one or both submitted and executed transactions of financial articles of trade over the plurality of liquidity destinations”; “associating . . . the defined condition with an entity”; and “identifying . . . an event in the trading market matching the condition from the normalized data,” we again credit Dr. Hendershott’s testimony that these limitations recite well-known steps long practiced in the art of financial trading. Ex. 1003 ¶¶ 61–65. In particular, the evidence shows that “clients at remote locations [would] monitor standardized data from various liquidity destinations via ticker tape and/or board, and [would] then contact their broker by phone to place or cancel an order.” *Id.* ¶ 62 (citing Ex. 1010, 158–59, 181; Ex. 1006, xx); *see also id.* ¶ 61 (describing how “brokers at . . . desks would ‘talk to clients by phone,’ and some were even then provided with ‘megaphones at their desks’ to enable them to ‘shout orders to clerks’ on the floor.” (quoting Ex. 1006, 53)).

Finally, as to the steps of “based on the matching, terminating . . . at least one communication session between the entity and a corresponding liquidity destination”; and “cancelling . . . pending orders from the entity,” we credit and rely on Dr. Hendershott’s testimony these steps are fundamental to financial trading. Ex. 1003 ¶¶ 66–67, 73–74. As the evidence shows, liquidity destinations, such as the NYSE, “commonly employed their own telephone operators” to connect the market and the trading entity. *Id.* ¶¶ 64–65 (citing Ex. 1006 (showing pictures of NYSE telephone operators)). And, as Dr. Hendershott describes, telephone

operators would disconnect calls between a broker and client, and the broker “would then attract the attention of brokers on the floor, to ensure execution of the instruction to cancel prior to the pending order being officially recorded by the liquidity destination.” *Id.* ¶ 66 (citing Ex. 1006, 82–83); *see also* Ex. 1010, 158–59 (“Clerks updated last-sale prices on the quote board, taking the information from the ticker, while traders telephoned customers’ orders to the Stock Exchange floor”). Moreover, as the ’371 patent explains, the “cancel-upon-disconnect [was] already in place at the liquidity destinations” Ex. 1001, 15:21–25; *see also id.* at 9:36–41 (describing the cancel upon disconnect process as “already existing”).

(b) Mental Processes

We also agree with and adopt Petitioner’s argument and evidence that that certain steps of claim 1 (i.e., “defining . . . a condition of the trading market comprising one or both submitted and executed transactions of financial articles of trade over the plurality of liquidity destinations”; “associating . . . the defined condition with an entity”; and “identifying . . . an event in the trading market matching the condition from the normalized data”) are “steps that could be, and often were, performed mentally by brokers and/or their clients.” Pet. 44–45. Specifically, defining a condition of a trading market, associating the condition, and identifying events in the trading market matching the condition, are mental steps that “can be performed in the human mind, or by a human using a pen and paper,” and thus represent an abstract idea. *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011).

For example, the evidence supports Dr. Hendershott’s testimony that “[c]lients could define, for themselves, market conditions relating to stock

transactions, and then contact their broker upon identification of an event matching that condition” by, for example, observing stock-market price fluctuations from real-time quotations of stock prices. Ex. 1003 ¶ 63 (citing Ex. 1008, 23–24); *see also* Ex. 1010, 224 (“For instance, an investor might want to buy 200 shares of XYZ, but only if the price drops as low as \$58.”); *see also* Ex. 1010, 224 (describing a “limit” order (i.e., an order to buy a stock at a certain price) that is left “with the specialist for execution if and when that price is met”).

(c) Response to Patent Owner’s Arguments

Patent Owner argues that “[n]one of the claims recite an abstract idea.” PO Resp. 29. Specifically, Patent Owner argues that Petitioner’s proffered abstract idea fails because it “does not capture what the inventor claimed to invent”—i.e., the ability of a switch to terminate a communication session based on event matching. PO Resp. 30–31. This key feature, Patent Owner argues, “allows for order cancellation to occur more efficiently,” and thus represents an improvement over the prior art that is not reflected in Petitioner’s statement of the abstract idea. *Id.* at 31–34.

We disagree with Patent Owner that Petitioner’s characterization of the abstract idea is insufficient. As an initial matter, not every limitation of claim 1 must be accounted for in Petitioner’s overall characterization of independent claim 1 as: “collecting market information, identifying the occurrence of an event from the collected market information, and cancelling pending orders.” Although some limitations are part of the focus of the claim and should be accounted for in how the overall claim is characterized, other limitations are considered “additional elements” that are addressed elsewhere in the subject matter eligibility inquiry. *See 2019*

Guidance, 84 Fed. Reg. at 55 n.24 (“USPTO guidance uses the term ‘additional elements’ to refer to claim features, limitations, and/or steps that are recited in the claim beyond the identified judicial exception.”); *see also* *BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018) (after formulating the concept the claims are “directed to,” the inquiry under *Alice* step two is to determine whether claim limitations *other than the steps for executing the formulated concept* are “well-understood, routine, and conventional”).

Nevertheless, in this proceeding and on this record, we are persuaded that Petitioner’s characterization of claim 1 is sufficient, because it is consistent with the preamble of claim 1, which is clear that the claim is directed to “[a] method for cancelling orders for financial articles of trade.” Ex. 1001, 23:15–16. Petitioner’s characterization is also consistent with the written description of the ’371 patent, which is clear that the “cancel upon disconnect” feature “already exist[ed],” and is invoked as part of an overall “risk management strategy” and “investment strategy.” *Id.* at 9:36–41. Although it is true that claim 1 also recites “one or more collection controllers,” “one or more processors,” and “one or more switches” for carrying out the claimed steps, these elements do not form the focus of the claim (or the improvement over the prior art) because those components are described in the ’371 patent as generic computer components that were known and available. *See, e.g.*, Ex. 1001, 5:22–28; Pet. 18–19.

(d) Summary for Step 2A, Prong 1

For all the above reasons, we are persuaded that Petitioner has met its burden of showing, by a preponderance of the evidence, that independent claim 1, which concerns canceling an order for trade when an event in the

market is identified (i.e., collecting market information, identifying the occurrence of an event from the collected market information, and canceling pending orders), recites a fundamental economic practice (one of the certain methods of organizing human activity identified in *2019 Guidance*) and mental–process steps. Specifically, we agree with Dr. Hendershott that “defining a market condition and associating the market[] condition with an entity” are fundamental aspects of financial trading, and that “condition defining” and “event identification” were “routinely performed mentally by brokers and/or their clients.” Ex. 1003 ¶¶ 71–72.

We also determine that the Petition analyzes the limitations of the remaining claims in a similar manner as independent claim 1. Pet. 82–94. Thus, we are persuaded that Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 1–30 of the ’371 patent recite an abstract idea. *See 2019 Guidance*, 84 Fed. Reg. at 52. Accordingly, we now proceed “to investigate whether the claim integrates the abstract idea into a practical application.” *Id.*

4. Step 2A, Prong 2: Whether the Judicial Exception Is Integrated into a Practical Application

The Supreme Court has long distinguished between abstract ideas themselves (which are not patent eligible) and the integration of those abstract ideas into practical applications (which are patent eligible). *See, e.g., Alice*, 573 U.S. at 217 (explaining that “in applying the § 101 exception, we must distinguish between patents that claim the ‘buildin[g] block[s]’ of human ingenuity and those that integrate the building blocks into something more” (quoting *Mayo*, 566 U.S. at 89)); *id.* (stating that *Mayo* “set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-

eligible applications of those concepts”); *Mayo*, 566 U.S. at 80, 84 (noting that the Court in *Diehr* found “the overall process patent eligible because of the way the additional steps of the process integrated the equation into the process as a whole,” but the Court in *Benson* “held that simply implementing a mathematical principle on a physical machine, namely a computer, was not a patentable application of that principle”); *Bilski*, 561 U.S. at 611 (“*Diehr* explained that while an abstract idea, law of nature, or mathematical formula could not be patented, ‘an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.’” (quoting *Diehr*, 450 U.S. at 187)); *Diehr*, 450 U.S. at 187, 192 n.14 (explaining that the process in *Flook* was ineligible not because it contained a mathematical formula, but because it did not provide an application of the formula). The Federal Circuit likewise has distinguished between claims that are “directed to” a judicial exception (which require further analysis to determine their eligibility) and those that are not (which are therefore patent eligible). *See, e.g.*, MPEP § 2106.06(b) (summarizing *Enfish*, *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016), and other cases that found claims eligible as improvements to technology or computer functionality instead of abstract ideas).

In agreement with Supreme Court and Federal Circuit precedent, the *2019 Guidance* provides that if a claim recites an abstract idea, it must be further analyzed to determine whether the recited judicial exception is integrated into a practical application. 84 Fed. Reg. at 53. Specifically, under Step 2A, Prong 2, a claim reciting an abstract idea is not “directed to” the abstract idea if the “claim as a whole integrates the recited judicial exception into a practical application of that exception.” *Id.* Step 2A, Prong

2 is evaluated by “(a) [i]dentifying whether there are any additional elements recited in the claim beyond the judicial exception(s); and (b) evaluating those additional elements individually and in combination to determine whether they integrate the exception into a practical application.” *Id.* at 54–55. “A claim that integrates a judicial exception into a practical application will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception.” *Id.* at 54.

Thus, to begin, we identify whether there are any additional elements recited in the claim beyond the abstract idea. *Id.* at 54–55. The “additional elements” that the parties focused on during trial relate to the “termination steps.” *See, e.g.*, PO Resp. 36; Reply 20–22. Patent Owner characterizes those steps as “recit[ing] a switch terminating a communication session on purpose, based on event matching, which can invoke a cancel-on-disconnect feature to cancel orders *en masse*.” PO Resp. 36. Patent Owner asserts, because of these the termination steps, “the claim is integrated into a practical application.” *Id.*

Next, we “evaluat[e] those additional elements individually and in combination to determine whether they integrate the exception into a practical application.” *2019 Guidelines*, 84 Fed. Reg. at 55. The termination steps, as recited in claim 1, are: “based on the matching, terminating, by one or more switches, at least one communication session between the entity and a corresponding liquidity destination;” and “cancelling, by one or more processors, pending orders from the entity.” Ex. 1001, 23:33–37. Upon consideration of the parties’ respective arguments and evidence, we determine that these additional elements, considered

individually and as a whole, do not integrate the abstract idea into a practical application. Instead, the additional elements merely invoke computers as a tool and do not reflect an improvement to the functioning of a computer or other technology. *See 2019 Guidance*, 84 Fed. Reg. at 55.

Specifically, we find that claim 1 is not directed to a specific improvement to the way a computer operates or an unconventional technological solution to a technological problem. As explained above, claim 1 employs a generic switch to terminate the communication session between the entity and the corresponding liquidity destination. *See supra* § II.B.3; *see also* Ex. 1001, 7:65–8:2 (describing the switch as either logical, such as a network switch, or physical, such as a mechanical device that severs a physical link); Ex. 2028 ¶ 126 (testimony of Mr. Vinella that “logical and physical ‘switches’ *used to terminate a communication session* generically existed before the ’371 Patent” (emphasis added)).

And, contrary to Patent Owner’s implication otherwise, the claim language “based on the matching” does not imbue an improved functionality to the claimed switch. This is because the event identifier identifies the event matching the condition, and “notifies the switch controller,” which then instructs the switch to terminate the communication session. Ex. 1001, 8:49–58, 11:47–56. Put differently, it is only “[i]n *response* to the notification,” that “the switch terminates the connection.” Ex. 2028 ¶ 90 (emphasis added); *see also id.* at 10:16–18 (“The decision to terminate a communication session for a trading entity 120 may also be made by the data processing system 100 of FIG. 1.”).

Relying on the testimony of Mr. Vinella, Patent Owner argues that the termination steps improve the operation of a computer system in three ways:

by expediting processing of order cancellation, by reducing latency and congestion in a distributed computer system, and by providing the ability to cancel orders “en masse.” PO Resp. 36 (citing Ex. 2028 ¶¶ 141–53); *see also id.* at 24 (citing Ex. 2028 ¶¶ 88–93). Patent Owner’s arguments are not persuasive, however, because those arguments are not commensurate with the scope of claim 1.

As to the ability to cancel orders *en masse*, claim 1 recites terminating “*at least one* communication session between the entity and *a* corresponding liquidity destination,” and “cancelling . . . pending orders from *the entity*.” Ex. 1001, 23:34–37 (emphases added). Thus, by its plain terms, claim 1 requires only that one communication session is terminated between the entity and one liquidity destination. *See KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000) (“This court has repeatedly emphasized that an indefinite article ‘a’ or ‘an’ in patent parlance carries the meaning of ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising.’”); *see also* Ex. 1067, 27:19–21 (Mr. Vinella’s deposition testimony that, according to claim 1, “at least one” communication session must be terminated); *id.* at 15:11–13.

Further, the ’371 patent is clear that “each cancel instruction effectively cancels *one or more* pending orders at a corresponding liquidity destination.” Ex. 1001, 10:13–15. Thus, claim 1 does not require cancellation of multiple orders across multiple liquidity destinations (or “en masse”). Indeed, the ’371 patent repeatedly describes an “en masse” cancellation as a “non-limiting, example embodiment” that does not limit the scope of the claims. *Id.* at 23:21–45; *see also id.* at 23:12–13 (“[T]he claims should not be limited by any of the example embodiments.”).

As to making order cancellation faster and reducing latency and congestion, we find these alleged improvements inadequate to integrate claim 1 into a practical application, because there is insufficient credible evidence that an increase in speed comes from anything other than generic computer components acting in their conventional ways. Again, the '371 patent refers to “switches” as “various network devices,” that can be logical or physical. Ex. 1001, 3:48–49, 7:14–18. And the '371 patent repeatedly refers to the “cancel upon disconnect” process as pre-existing. *Id.* at 15:21–25 (“already in place at the liquidity destination”), 9:36–41 (“already existing”), 9:20–28 (“typically have”).

In this way, claim 1 is akin to the patent-ineligible claims directed to a process for analyzing audit log data in *FairWarning IP, LLC v. Iatric Sys.*, 839 F.3d 1089 (Fed. Cir. 2016). In that case, the Federal Circuit held that the claimed process was patent ineligible even though the claimed process was faster than conventional processes: “While the claimed system and method certainly purport to accelerate the process of analyzing audit log data, the speed increase comes from the capabilities of a general-purpose computer, rather than the patented method itself.” *Id.* at 1095; *see also Bancorp*, 687 F.3d at 1278 (“[T]he fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter.”). Similarly here, we find that any increase in speed is due to the capabilities of generic computer components, and thus do not integrate the abstract idea into a practical application. *Bancorp*, 687 F.3d at 1279 (“using a computer to accelerate an ineligible mental process does not make that process patent-eligible”).

Another factor leading us to conclude that termination steps do not lead to an improvement in the functioning of a computer itself is that the originally submitted claims for the application leading to the '371 patent did not recite any computer components. Specifically, original claims 1, 17, and 20 failed to recite any machines to perform the claimed method. *See* Ex. 1002, 189 (claims initially filed on January 31, 2011). It was only later during prosecution that the claims were amended to the computer components performing each step. *See id.* at 52 (“Claims 1, 17 and 20 are amended to recite one or more machines that perform various steps.”); Ex. 1003 ¶ 97. Thus, the addition of computer components to the claims shows that these components merely limit the claims to a particular technology environment of trading networks. *Id.* ¶ 108; *see also Diehr*, 450 U.S. at 192 n.14 (stating that a claim directed to a judicial exception cannot be made eligible “simply by having the applicant acquiesce to limiting the reach of the patent . . . to a particular technological use”).

Patent Owner also argues that claim 1 is analogous to the claims in *McRO*, which the Federal Circuit held were not directed to an abstract idea. PO Resp. 31–33. We disagree. In *McRO*, “the claimed improvement [was] allowing computers to produce accurate and realistic lip synchronization and facial expressions in animated characters that previously could only be produced by human animators, . . . by improving the prior art through the use of rules, rather than artists, to set the morph weights and transitions between phonemes.” 837 F.3d at 1313. Here, however, even if the using “a switch to terminate a communication session based on event matching allows for order cancellation to occur more efficiently,” as Patent Owner asserts, PO Resp. 31–32, that effect—i.e., cancellation of the pending trade

orders—“is the abstract idea,” and the claim “merely invoke[s] generic processes and machinery” to achieve that effect. *McRO*, 837 F.3d at 1314; *see also Bancorp Servs., L.L.C. v. Sun Life Assur. Co. of Canada (U.S.)*, 687 F.3d 1266, 1279 (Fed. Cir. 2012) (“Using a computer to accelerate an ineligible mental process does not make that process patent-eligible.”).

For the above reasons, we are persuaded that Petitioner has met its burden of showing that claim 1 is directed to an abstract idea of collecting market information, identifying the occurrence of an event from the collected market information, and cancelling pending orders, and further does not integrate that abstract idea into a practical application. We also determine that the Petition analyzes the limitations of the remaining claims in a similar manner as independent claim 1. Pet. 82–94. Thus, we are persuaded that Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 1–30 of the ’371 patent recite an abstract idea that is not integrated into a practical application. *See 2019 Guidance*, 84 Fed. Reg. at 53–55.

5. Step 2B: Whether the Claim Provides an Inventive Concept

Under the second step of the *Alice* inquiry, we must “scrutinize the claim elements more microscopically” for additional elements that might be understood to “transform the nature of the claim” into a patent-eligible application of an abstract idea. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016); *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (“To save a patent at [*Alice*] step two, an inventive concept must be evident in the claims.”). That is, we determine whether the claims include an “inventive concept,” i.e., an element or combination of elements sufficient to ensure that the patent in practice

amounts to significantly more than a patent on the abstract idea itself. *Alice*, 573 U.S. at 221. Appending purely conventional steps to an abstract idea does not supply a sufficiently inventive concept. *Alice*, 573 U.S. at 219–220.

Consistent with the foregoing, under the *2019 Guidance*, if a claim has been determined to recite a judicial exception, Step 2A, we must evaluate the additional elements individually and in combination under Step 2B, to determine whether they provide an inventive concept (i.e., whether the additional elements amount to significantly more than the exception itself).⁹ Per the *2019 Guidance*, we must consider in Step 2B whether an additional element or combination of elements “[a]dds a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field, which is indicative that an inventive concept may be present,” or “simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception, which is indicative that an inventive concept may not be present.” *2019 Guidance*, 84 Fed. Reg. at 56. Upon consideration of the parties’ respective arguments and evidence, we determine that the claims of the ’571 patent do not recite an inventive concept, but instead append well-understood, routine, and conventional

⁹ The patent eligibility inquiry may contain underlying issues of fact. *Mortg. Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1325 (Fed. Cir. 2016). In particular, “[t]he question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).

activities to the abstract idea of canceling an order for trade when an event in the market is identified, for the reasons explained below.

First, as explained above, the express language of claim 1 recites a method using “collection controllers,” “processors,” and “switches.” Ex. 1001, 23:15–37. But the ’371 patent refers to these hardware components as generic computer components, thus indicating that they perform only their well understood, conventional, and routine functions. *See* Pet. 60–79; *see also* Ex. 1001, 5:36–39 (as to “processor,” stating merely that “the computer system includes one or more processors coupled to a bus and memory storage coupled to the bus”); *id.* at 3:48–49, 7:14–18 (referring to “switches” as “various network devices,” that can be logical or physical); *id.* at 5:28–32 (stating that “example embodiments may be implemented through specialized hardware,” but providing no information on the makeup of that hardware); Ex. 2028 ¶ 126 (testimony of Mr. Vinella that “logical and physical ‘switches’ *used to terminate a communication session* generically existed before the ’371 Patent” (emphasis added)). The ’371 patent also teaches that the claimed methods can be implemented using generic computer systems that were well known and available. *See* Ex. 1001, 5:22–28 (stating that the computer systems may be “one or more personal computers, notebook computers, server computers, mainframes, networked computers (e.g., routers), handheld computers, personal digital assistants, workstations, and the like”).

Second, “[f]or the role of a computer in a computer-implemented invention to be deemed meaningful in the context of this analysis, it must involve more than performance of well-understood, routine, and conventional activities previously known to the industry.” *Content*

Extraction & Transmission LLC v. Wells Fargo Bank, N.A., 776 F.3d 1343, 1347–48 (Fed. Cir. 2014) (quotation omitted). Here, we are persuaded by Petitioner’s explanation and evidence that the recited computer components are merely performing activities that are well-understood, routine, and conventional in trading and electronic trading. *See* Pet. 60–79; *see also* Ex. 1003 ¶¶ 97–118.

In particular, we are persuaded by Petitioner’s arguments and evidence that claim 1 recites “general computer and network components relating to the automation of order cancellation—a process that mimics long-standing manual trading processes.” Pet. 61. For example, as part of its migration from the SuperDot® database to the SDBKSM database, the NYSE issued a memorandum describing the new database’s “cancel on disconnect” functionality. *See* Ex. 1024, 5. The memorandum states that, “During the migration period [to the new ‘Cancel on Disconnect’ service], a firm that loses connectivity may contact our Connectivity Helpdesk at 1-888-689-7739 and have their orders canceled for stocks that have migrated to SDBK, similarly to how they handle SuperDot orders upon disconnect.” *Id.*

And, as Petitioner succinctly states, “[f]or as long as there has been trading, traders have been monitoring market information and looking out for news that is bad for their pending orders, and cancelling those pending orders when they identify that bad news.” Pet. 73. The well understood, conventional, and routine activities involved in financial trading are discussed in detail above. *See supra* § II.C.3; *see also* Ex. 1013, 31 (“Traders . . . continuously monitor the market . . . [and] can freely and reliably cancel their orders”); Ex. 1014, 11 (“Real time revision of orders is permitted on all systems, including cancellation”).

Thus, as Dr. Hendershott persuasively testifies, the process of claim 1 automates conventional processes “that were previously performed by human traders using manual means”—i.e., canceling trade orders upon disconnection. Ex. 1003 ¶¶ 97, 110.

Moreover, we agree with Petitioner that the “idea of using the termination of a communications session to trigger the cancellation” is likewise well understood, routine, and conventional. Pet. 73. The ’371 patent itself supports Petitioner’s argument, as it states that “[l]iquidity destinations typically have in place a process generally referred to as ‘Cancel Upon Disconnect’ for protecting against unintended disconnects of a connection in which event all open orders for the impacted trading entity are automatically cancelled upon termination of the connection.” Ex. 1001, 9:24–28. The ’371 patent states that the claimed invention “takes advantage of this process to terminate a connection (whether physically or logically).” *Id.* at 9:28–31. Put differently, “the ‘Cancel upon Disconnect’ process *already existing* for another purpose *is exploited and invoked* . . . as part of a risk management strategy as well as an investment strategy.” *Id.* at 9:36–41 (emphases added); *see also id.* at 15:21–25 (referring to “a cancel-upon-disconnect process *already in place* at the liquidity destination” (emphasis added)).

Thus, we agree with Petitioner that claim 1’s recitation of “cancelling . . . pending orders” after “terminating,” amounts only to “insignificant post-solution activity”—activity that occurs after the computer identifies an event. *See Flook*, 437 U.S. at 590, (“The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an

unpatentable principle into a patentable process exalts form over substance.”).

We are also persuaded by Petitioner’s arguments and evidence that using a switch to block and otherwise manage communication in financial networks (e.g., between an entity and a liquidity destination) was a routine, well-understood, and conventional activity. *See* Pet. 66–68 (citing Ex. 1003 ¶¶ 103–104; Ex. 1053; Ex. 1054); *see also* Ex. 1031, 2, 4–5 (“Trading Orders—This type of traffic carries the actual trades. It is bi-directional and very latency sensitive The network plays a critical role in the trading environment. High availability and low latency, as well as high throughput, are the most important metrics”), 30, Fig. 20 (“depicting multiple market data feeds [in which] market data is transferred to a high-speed InfiniBand low-latency compute fabric where feed handlers, order routing systems, and algorithmic trading systems reside”); Ex. 1032, 1 (“Mean Latency is reduced by 63% when using an RDMA stack (SDP) with Cisco InfiniBand compared to using TCP/IP with a Gigabit Ethernet Fabric”); Ex. 1033, 235 (“The introduction of co-location (proximity services) in the 4th quarter of 2006 allows Xetra members to place their trading infrastructure within the Deutsche Börse trading environment to further reduce network latency”).

For example, we credit and rely on Dr. Hendershott’s testimony that “[b]y the time of the earliest effective filing date of the ’371 [p]atent, network switches were widely used to drive the Internet and trading networks.” Ex. 1003 ¶ 104. Dr. Hendershott’s testimony is supported by the evidence, which shows several “switches” made by Cisco for managing communication over a trading network. *See* Ex. 1029 (describing a “content

services switch”); Ex. 1030 (describing an “Ethernet switch”); Ex. 1031 (describing switches used in “trading floor architecture”).

It was also well understood, routine, and conventional to select switches that added very little to no latency to the trading network, as Dr. Hendershott explains and the evidence of record supports. Ex. 1003 ¶ 104; *see also* Ex. 1031 (stating that “an ultra-low latency trading platform” that “optimiz[es] the raw throughput and message rate for both market data and FIX trading orders,” is achieved through “real-time latency monitoring and re-direction of trading traffic to the path with minimum latency”). This is consistent with the ’371 patent’s teaching that the “switch module/device 110 adds little or no latency to time-to-market values, in that the switch module/device 110 merely passes through any messages delivered in the corresponding communication session.” Ex. 1001, 8:2–6.

We are not persuaded by Patent Owner’s argument that the ’371 patent claims “do not recite just any conventional switch,” but “a switch that can terminate a communication session based on the matching of an event detected in the marketplace.” PO Resp. 48. Again, as explained above, the claim language “based on the matching” does not transform the claimed switch into an unconventional switch. *See supra* § II.C.4. The event identifier identifies the event matching the condition, notifies the switch controller, which in turn instructs the switch to terminate the communication session. Ex. 1001, 11:47–56. The switch is still acting in its well-understood, conventional, and routine manner—by logically or physically severing the connection. *Id.* at 8:54–60. We are also reminded that patent eligibility cannot “depend simply on the draftsman’s art.” *Alice*, 573 U.S. at 224.

Patent Owner also argues that the claim 1 is ultimately patent eligible because the “claims involve terminating the connection to the liquidity destination, not unintentionally, but on purpose, when a particular event occurs.” *See, e.g.*, PO Resp. 4 (citing Ex. 1001, 9:37–63). But we find that a preponderance of the evidence in the record supports Petitioner’s position that purposeful disconnection as part of a networking protocol was a well-understood, routine, and conventional activity. Pet. 74–75.

For example, we credit and rely on Dr. Hendershott’s testimony that “[i]t was standard knowledge to use a single command to terminate connections on commercial products.” Ex. 1003 ¶ 112; *see* Ex. 1039 (explaining single command to clear connection); Ex. 1040 (documenting usage of “clear conn” to “clear a specific connection or multiple connections”). The record also sufficiently supports Dr. Hendershott’s testimony that “[t]he common practice for system administrators during an exigency, such as a network intrusion, was ‘to disconnect from the Internet.’” Ex. 1003 ¶ 112 (quoting Ex. 1025, 40-9); *see also* Ex. 1018 ¶ 43 (stating that when “the trade order objects may become stale [due to disconnection,] . . . the order status module 260 can delete all the objects . . . that represent user trade”). Moreover, the ’371 patent identifies conditions as “relating to risks, trends, *outages*, uses, etc. that are important to and reflective of that trading entity’s 120 position within the market,” Ex. 1001, 11:62–65 (emphasis added), which undermines Patent Owner’s argument about the distinction between intentional and unintentional termination.

Patent Owner argues that claim 1, as an ordered combination, recites an inventive concept because the combination of the fifth and sixth steps (i.e., “identifying, by one or more processors, an event in the trading market

matching the condition from the normalized data”; and “based on the matching, terminating, by one or more switches, at least one communication session between the entity and a corresponding liquidity destination”) represent an unconventional placement of elements, similar to the claims held patent eligible in *BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016). PO Resp. 49–52. Although we have considered Patent Owner’s arguments and evidence, and find them appealing at first blush, we ultimately determine that claim 1 is not like the claims in *BASCOM*. See Pet. 77–79.

The claims at issue in *BASCOM* were directed to a “content filtering system for filtering content retrieved from an Internet computer network,” and to an “ISP server for filtering content.” 827 F.3d at 1348. Although the Federal Circuit, in step one of the *Alice* test, “agree[d] with the district court that filtering content is an abstract idea because it is a longstanding, well-known method of organizing human behavior,” *id.*, the court disagreed in step two that the “ordered combination of limitations” did not recite an inventive concept, *id.* at 1349–50. Specifically, the court found that, when considered as a whole, the claims recited the inventive concept of “the installation of a filtering tool at a specific location, remote from the end-users, with customizable filtering features specific to each end user.” *Id.* at 1350. The court explained further that “[t]his design gives the filtering tool both the benefits of a filter on a local computer and the benefits of a filter on the ISP server.” *Id.*

Of importance here, the court recognized that “the limitations of the claims, taken individually, recite generic computer, network and Internet components, none of which is inventive by itself.” *Id.* at 1349. The court

explained, however, that “an inventive concept [was] found in the non-conventional and non-generic arrangement of known, conventional pieces.” *Id.* at 1350. Specifically, by locating the filtering tool remotely from the user, the claims provided a technical solution—an improvement to the filtering tool itself—that overcame defects in the prior art. *Id.*

Here, however, the background section of the ’371 patent itself admits that “sophisticated algorithmic programs include instructions to cancel pending trading orders.” Ex. 1001, 1:33–35. The ’371 patent also admits that the “cancel upon disconnect” process already existed to cancel pending orders upon termination of the communication between a trading entity and liquidity destination. *Id.* at 9:24–28. Thus, at most, a switch that terminates a communication session has been added. But the record is clear that the switch itself operates in a well-understood, conventional, and routine manner. Ex. 2028 ¶ 126 (testimony of Mr. Vinella that “logical and physical ‘switches’ *used to terminate a communication session* generically existed before the ’371 Patent” (emphasis added)). Put differently, the improvement here is not to the switch itself, but, at most, to the abstract idea: using a switch to make the fundamental economic practice (i.e., canceling an order for trade when an event in the market is identified) faster. *See, e.g.*, Ex. 1001, 10:1–15 (“Using the switch module 110 to terminate communication sessions utilized by the trading entity 120 enhances the capability of the trading entity 120 to control its actions.”). On these facts, therefore, we conclude that the ’571 patent fails to claim to an inventive concept that “elevate[s] an otherwise abstract idea to a patentable invention.” *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1152 (Fed. Cir. 2016).

For these reasons, we are persuaded that Petitioner has met its burden of showing, by a preponderance of the evidence, that independent claims 1, 17, 20, 23, and 28 of the '571 patent are unpatentable under 35 U.S.C. § 101 as directed to patent ineligible subject matter. We are also persuaded that Petitioner has met its burden of showing, by a preponderance of the evidence, that dependent claims 2–16, 18, 19, 21, 22, 24–27, 29, and 30 of the '371 patent are unpatentable under 35 U.S.C. § 101 as directed to patent ineligible subject matter. *See* Pet. 82–94. Specifically, we agree with and adopt Petitioner's arguments and supporting evidence that dependent claims 2, 12, 15, 18, and 29 recite well-known and routine cancellation activities that fail to transform an unpatentable abstract idea, *id.* at 82–85, dependent claims 3, 13, 14, 21, 22, 26, and 27 purport to limit the contents of the monitored information or the nature of the defined condition but recite no unconventional features, *id.* at 85–87, dependent claims 4–11, 16, 24, and 25 simply recited well-known forms of termination or restoration of the communication session, *id.* at 87–93, and that dependent claims 19 and 30 merely combine recitations from previous claims, *id.* at 93–94.

6. Other Arguments

We have considered the remainder of Patent Owner's arguments and evidence but find them unpersuasive.

7. Conclusion for Subject Matter Eligibility

In view of the foregoing, based on the record before us, we are persuaded by Petitioner's arguments and supporting evidence that, when considered individually and "as an ordered combination," the claim elements of challenged claims 1–30 more likely than not are directed to the abstract idea of "collecting market information, identifying the occurrence of an

event from the collected market information, and cancelling pending orders,” and do not recite additional elements in a manner sufficient to transform that abstract idea into a patent-eligible invention. *Alice*, 134 S. Ct. at 2359–60.

III. MOTION TO EXCLUDE

Petitioner asserts that we should exclude Exhibit 2028, Mr. Vinella’s declaration, in its entirety because (1) Mr. Vinella’s declaration is “unreliable and not based on sufficient facts or data”; (2) “Mr. Vinella’s opinions rely on a bogus claim construction and must be excluded as unreliable and legally irrelevant”; and (3) Mr. Vinella “was retained on behalf of Nasdaq, a non-party, and *not* on behalf of patent owner FTEN.” Pet. Mot. 2. Petitioner also seeks to exclude Exhibit 2023 and Exhibit 2024 as irrelevant and as containing inadmissible hearsay. *Id.* at 9–10.

We decline to exclude these exhibits. Even if we consider the objected-to evidence, we determine the challenged claims of the ’371 patent are unpatentable. Thus, rather than exclude the objected-to evidence, we find the better course of action is to maintain a complete record of the evidence to facilitate public access and appellate review. Further, considering both parties’ briefs, we agree overall with Patent Owner that Mr. Vinella’s Declaration should not be excluded in its entirety because the issues identified by Petitioner go, at best, to weight, and not admissibility. *See* PO Opp. 3.

Thus, Petitioner’s motion to exclude is *denied*.

IV. CONSTITUTIONALITY ARGUMENTS

Patent Owner asserts that retroactive application of covered business method patent review to pre-AIA issued patents is unconstitutional. PO

Resp. 79–80. Patent Owner additionally contends that the proceedings are unconstitutional because “PTAB judges here are, for practical effect, principal officers” should have been, but have not been, appointed by the President and confirmed by the Senate. *Id.* at 80. We decline to consider these constitutional arguments.

Patent Owner challenges the constitutionality of congressional enactments, particularly, the constitutionality of CBM patent reviews as set forth in the AIA. Patent Owner’s constitutional arguments are not directed to a particular statutory provision. Instead, they concern the entire statutory scheme of CBM patent reviews with respect to pre-AIA issued patents. It is, however, our statutory duty to “conduct *inter partes* reviews and post-grant reviews pursuant to chapters 31 and 32.” 35 U.S.C. § 6(b)(4). Thus, Patent Owner’s arguments would have us question our statutory authority and our ability to conduct those reviews, which we decline to do.

V. CONCLUSION¹⁰

We determine that Petitioner has met its burden of showing, by a preponderance of the evidence, that the ’371 patent is eligible for covered business patent review, and that claims 1–30 of the ’371 patent are unpatentable under 35 U.S.C. § 101 as patent-ineligible subject matter.

¹⁰ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

In summary:

Claims	Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–30	101	1–30	
Overall Outcome		1–30	

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–30 of the '371 patent are unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude is *denied*;

and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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