No. 13-298

IN THE

Supreme Court of the United States

ALICE CORPORATION PTY., LTD.,

Petitioner,

v.

CLS BANK INTERNATIONAL AND CLS SERVICES LTD.,

Respondents.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

BRIEF FOR RESPONDENTS

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QUESTION PRESENTED

An abstract idea, including a fundamental economic concept, is not eligible for patenting under 35 U.S.C. § 101. *Bilski* v. *Kappos*, 130 S. Ct. 3218, 3231 (2010). Adding conventional elements to an abstract idea does not render it patent-eligible. *Mayo Collaborative Servs.* v. *Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1298 (2012). The asserted claims of the patents-in-suit recite the fundamental economic concept of intermediated settlement, implemented using conventional computer functions. The question presented is:

Whether the courts below correctly concluded that all of the asserted claims are not patent-eligible.

PARTIES TO THE PROCEEDING AND RULE 29.6 STATEMENT

All parties to the proceeding are identified in the caption.

CLS UK Intermediate Holdings Ltd. is a publicly held corporation that owns 10% or more of the stock in CLS Bank International and CLS Services Ltd. In addition, CLS UK Intermediate Holdings Ltd. is owned (100%) by CLS Group Holdings AG.

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INTRODUCTION

Respondents CLS Bank International and CLS Services Ltd. built and operate, at a cost to date of more than $1 billion, a global network that safely and efficiently settles over $5 trillion in foreign exchange transactions each day. CLS Bank is a systemically important financial institution that is critical to the stable functioning of the worldwide currency market.

Petitioner Alice Corporation Pty., Ltd. contends that the CLS system infringes "business method" patents that broadly claim a computerized form of intermediated settlement. Although Alice does not practice this method itself, it seeks damages and other relief against CLS.

Alice's patents were issued under a permissive standard for patent eligibility that was abrogated in *Bilski* v. *Kappos*, 130 S. Ct. 3218 (2010), and *Mayo Collaborative Services* v. *Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012). The asserted claims recite the basic economic concept of intermediated settlement or escrow. Thus, like the ineligible claims in *Bilski*, they purport to monopolize "a fundamental economic practice" of "protecting against risk." 130 S. Ct. at 3231. The inclusion of routine and conventional computer functions does not transform Alice's ineligible claims into eligible ones. Just as "one must do more than simply state [a fundamental principle] while adding the words 'apply it'" (*Mayo*, 132 S. Ct. at 1294), it is not enough to recite a basic economic concept and say "compute it." Yet, that is all Alice has done.

Allowing patent claims like these would effectively foreclose the productive use of economic concepts

and other fundamental principles in our increasingly computerized Information Age, in contravention of the Constitution and the Patent Act. Accordingly, the judgments below, which correctly concluded that all of the asserted claims are not patent-eligible, should be affirmed.

STATEMENT

Alice alleged that CLS infringes several claims of four related patents. D.C. Dkt. Nos. 6, at 4–12 & 90, at 4–14. The district court entered summary judgment for CLS on the ground that all of the asserted claims are not patent-eligible under 35 U.S.C. § 101. Pet. App. 238a. The Federal Circuit, sitting en banc, affirmed the district court's judgment. Pet. App. 1a–2a.

1.a. Alice is the owner of U.S. Patent Nos. 5,970,479, 6,912,510, 7,149,720, and 7,725,375. These patents have largely overlapping specifications (Pet. Br. 7; Pet. App. 154a), which describe multiple inventions that are covered by two distinct sets of claims. Most of the original specification, and the great majority of the drawings, relates to claims 1–32 and 35–39 of the '479 patent, which involve the formation of certain multi-party contracts. Alice has *not* asserted these claims against CLS.

The asserted claims—claims 33 and 34 of the original '479 patent and all claims of the follow-on '510, '720, and '375 patents (Pet. App. 4a)—recite "a form of escrow" (*id.* at 28a), or intermediated settlement, designed to mitigate the risk that only one party to a transaction will perform its contractual obligations at settlement. The '479 and '510 patents contain method claims; the '720 patent contains system claims; and the '375 patent contains both

system claims and media claims. *Id.* at 4a. Only a limited portion of the specification pertains to the asserted claims. BIO 5–6; *see* App., *infra*, 1a–6a (excerpts from the '479 specification showing column and line designations).

Method claim 33 of the '479 patent is representative, as Alice concedes (Pet. Br. 8) and the courts below recognized (Pet. App. 26a, 80a, 134a, 176a–77a). *See* J.A. 383–84. In Alice's method, a third-party middleman stands between counterparties to one or more transactions. Pet. App. 25a–27a. This intermediary maintains "shadow" accounts for each counterparty and, so long as these accounts have adequate value, adjusts them according to the terms of the parties' agreement(s). *Id.* at 26a–27a. At some point in the day, the middleman sends final instructions so that real-world accounts reflect the changes to the shadow accounts. *See id.* at 164a–65a.

There is no indication that Alice has ever put the patents to any productive use. So far as the record discloses, Alice has never built a computer system capable of settling transactions according to the claimed method, has never written instructions to program any computer to perform the method, and has never practiced any of the asserted claims. Rather, Alice's business apparently consists of asserting these patents in litigation. Alice is thus what is commonly known as a non-practicing entity or a patent-assertion entity. Alice selected CLS as its first target.

b. CLS "may be the most important bit of the financial infrastructure you have never heard of." *Special FX*, The Economist, Sept. 21, 2013, at 81. CLS Bank was chartered as an Edge Corporation

under Section 25A of the Federal Reserve Act, 12 U.S.C. § 611, and is subject to cooperative oversight by central banks from around the world pursuant to an arrangement coordinated by the Federal Reserve. *See* Peter Hoflich, *Banks at Risk: Global Best Practices in an Age of Turbulence* 174–76 (2011). CLS Services is located in London and provides support and technology-related services to CLS Bank. CLS, Corporate Governance, www.cls-group.com/About/CG/Pages/default.aspx.

The mission of both CLS entities is to mitigate settlement risk—*i.e.*, the risk that one counterparty will perform and the other will fail to do so—in global currency transactions by ensuring that certain payment obligations have been fulfilled under CLS's rules before directing the transfer of entitlement.

CLS was decades in the making. *See* Alexandra Schaller, *Continuous Linked Settlement: History and Implications* 32–55 (Dec. 5, 2007) (unpublished dissertation, University of Zurich), *available at* http://opac.nebis.ch/ediss/20080261.pdf. Spurred by the 1974 failure of Bankhaus Herstatt and other crises affecting the foreign exchange market (*see id.* at 33–38), the international banking community, including both private institutions and regulators, began investigating a world-wide system that would apply established techniques of financial intermediation on a global scale to ensure the settlement of foreign exchange transactions across borders and time zones. *Id.* at 38–45; *see also*, *e.g.*, Comm. on Payment Settlement Sys. of the Cent. Banks of the Grp. of Ten Countries, *Settlement Risk in Foreign Exchange* (1996). This effort ultimately led the Group of Twenty to create CLS. Schaller, *supra*, at 47–55.

The basic concept of intermediated settlement was well-known, having long been used by both central banks and private-sector clearing houses. Schaller, *supra*, at 48–49. The "new development" that CLS brought to the marketplace when it began operating in 2002 (*see* Pet. Br. 11) was not this underlying concept but, rather, the complex legal, financial, technological, and political solution that CLS put in place. *See generally* Schaller, *supra*, at 69–70. Creating this global network to securely, accurately, and efficiently process a huge number of foreign exchange transactions from around the world has cost well over $1 billion to build and operate.

Today, CLS processes over $5 *trillion* of foreign exchange transactions per day. CLS plays a critical role in the safety of the global currency exchange market, which is the largest financial market in the world. Foreign exchange facilitates international trade and enables central banks to manage monetary policy.

CLS's role in securing and stabilizing the foreign exchange market is critical, as recent financial dislocations have illustrated. *See* CLS, History, www.cls-group.com/About/Pages/History.aspx. In July 2012, CLS Bank was one of the eight entities initially designated by the Financial Stability Oversight Council (FSOC), chaired by the Secretary of the Treasury, as a "systemically important" component of the U.S. financial system. *See* FSOC, 2012 Annual Report, Appendix A at 145. As the FSOC explained, a "long-term disruption to CLS Bank may significantly increase settlement risk and liquidity demands in the [foreign exchange] market," in turn disrupting "the flow of funds in U.S. and foreign financial markets and to the broader economy." *Id.*

at 154; *see also* Determination of Foreign Exchange Swaps and Foreign Exchange Forwards Under the Commodity Exchange Act, 77 Fed. Reg. 69,694, 69,701 (Nov. 20, 2012) (recognizing CLS's importance in securing the foreign exchange market).

2. After Alice threatened a patent-infringement suit, CLS Bank initiated the underlying declaratory judgment action. D.C. Dkt. No. 1, at 1. Alice counterclaimed for infringement against both CLS Bank and CLS Services. D.C. Dkt. Nos. 6, at 4–12 & 90, at 4–14. Alice seeks damages as well as unspecified further relief. D.C. Dkt. No. 90, at 14.

CLS and Alice filed cross-motions for summary judgment on the question whether the asserted claims are patent-eligible under 35 U.S.C. § 101. D.C. Dkt. Nos. 43, 54, 94, 95. The district court held the motions pending this Court's decision in *Bilski* v. *Kappos*, 130 S. Ct. 3218 (2010), and, after additional briefing, issued an exhaustive opinion analyzing every asserted claim. Pet. App. 172a–238a.

"For the purpose of deciding patent eligibility at the district court, the parties agreed to a broad claim construction that was favorable to Alice. The district court concluded that each [asserted] claim … requires computer implementation." Pet. App. 155a. No other claim limitations were disputed for purposes of the Section 101 analysis.

The district court held that the method claims are not patent-eligible because they recite the "abstract idea of employing an intermediary to facilitate simultaneous exchange of obligations in order to minimize risk," which the court determined to be "a basic business or financial concept much like" the hedging method deemed unpatentable in *Bilski*. Pet. App. 214a. The court held that because financial

transactions "are increasingly likely to be monopolized by electronic and computer implementation and storage, the fact these claims are implemented electronically fails to limit the methods." *Id.* at 221a.

The district court further held that the system claims likewise "represent merely the incarnation of this abstract idea on a computer" and "would preempt the use of the abstract concept … on any computer, which is, as a practical matter, how these processes are likely to be applied." Pet. App. 231a. The court explained that Alice's claims do not recite "software or program code." *Id.* at 227a n.21. As Alice's expert acknowledged, the system could comprise any "personal computer[] [or] mini- or mainframe computer[]." *Id.* at 225a.

Finally, the court held that the media claims "are also directed to the same abstract concept despite the fact they nominally recite a different category of invention under § 101." Pet. App. 237a.

The district court found that all of Alice's asserted claims would "effectively preempt the use of an electronic intermediary to guarantee exchanges across an incredible swath of the economic sector" and "an infinite array" of transactions. Pet. App. 218a–20a, 232a, 234a. The court rejected Alice's contention that the asserted claims could be "limited to 'specific applications' of a[] fundamental concept"; to the contrary, examining them "as a whole" confirmed that "they would serve to patent the fundamental and abstract concept itself." *Id.* at 220a–21a.

3. After a divided panel of the Federal Circuit reversed (Pet. App. 132a–71a), the court of appeals granted CLS's petition for rehearing en banc, vacated the panel decision, and requested additional briefing. *Id.* at 239a–41a. Following argument, the

en banc court issued a per curiam order affirming the district court's judgment. *Id.* at 1a–2a. The participating judges voted 7-3 to affirm the district court's judgment as to the method and media claims, while the judgment as to the system claims was affirmed by an equally divided court. *See id.* at 3a n.1. The judgment order was accompanied by six separate opinions, none of which commanded a majority.

a. Judge Lourie, writing for a five-member plurality, explained that none of the asserted claims are patent-eligible under *Bilski* and the intervening decision in *Mayo Collaborative Services* v. *Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012).

Alice's method claims are ineligible, the plurality concluded, because they are founded on the "abstract idea" of "reducing settlement risk by facilitating a trade through third-party intermediation." Pet. App. 28a. Under the *Mayo* methodology, "adding generic computer functions to facilitate performance provides no substantial limitation and therefore is not 'enough' to satisfy § 101." *Id.* at 31a.

The media and system claims fared no better, the plurality determined. Although formally drawn to physical objects, these claims "provide for computer implementation" at a "striking level of generality." Pet. App. 37a. They "recite a handful of computer components in generic, functional terms that would encompass any device capable of performing" the computer-implemented methods. *Ibid.*

b. Chief Judge Rader and Judge Moore dissented in part. They agreed with the plurality that the method claims, as well as the media claims, are ineligible because they recite an abstract idea. Pet. App. 80a–84a. But they viewed the system claims as

patent-eligible on the ground that "tangible" computer components, such as a "data storage unit," could not be "abstract." *Id.* at 70a–71a, 86a–87a, 97a–99a.

c. Judges Linn, O'Malley, and Newman dissented; they would have held all of the asserted claims patent-eligible. Judges Linn and O'Malley believed that Alice's computer implementation alone sufficed to confer eligibility. Pet. App. 123a–26a. Judge Newman maintained that "when the subject matter is within the statutory classes in section 101, eligibility is established." *Id.* at 111a; *see also id.* at 101a.

SUMMARY OF ARGUMENT

Laws of nature, natural phenomena, and abstract ideas are not patent-eligible under this Court's established construction of 35 U.S.C. § 101. The asserted claims of Alice's patents are ineligible under that standard because they attempt to monopolize the abstract idea of intermediated settlement.

I. In *Bilski* v. *Kappos*, 130 S. Ct. 3218 (2010), this Court unanimously concluded that hedging, a fundamental principle of risk management, was an "abstract idea." The risk-management principle at issue here—intermediated settlement or escrow—is conceptually no different and thus similarly ineligible for patent protection under Section 101. Alice tries to avoid this conclusion by advancing a constricted reading of *Bilski* under which the prohibition against patenting abstract ideas would reach only mathematical formulas. But Alice's redefinition does not square with this Court's longstanding understanding of abstract ideas and, indeed, would have led to a different result in *Bilski* itself. Under *Bilski*, the asserted claims recite a patent-ineligible abstract idea.

II. The claims asserted by Alice do not include "significantly more" than the abstract idea of intermediated settlement, such that they could be patent-eligible under *Mayo Collaborative Services* v. *Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012). Alice fails to come to grips with the analytical approach this Court articulated in *Mayo*, which requires an "inventive concept." Alice's claims do not satisfy this requirement. They recite only off-the-shelf computer components performing routine and conventional functions, which neither add to nor subtract from patent eligibility. The claim elements, considered separately and as an ordered whole, do not contain enough to transform the underlying ineligible abstract idea into an eligible invention.

III. Unless the Court is prepared to renounce *Bilski* and *Mayo*—which were unanimous on the key points applicable here—the judgments below can only be affirmed: The asserted claims are not eligible for patenting under 35 U.S.C. § 101. Any other outcome would lead to severe and unwarranted disruption in the inventive community and the economy, including the foreign currency market.

ARGUMENT

As this Court has repeatedly made clear, "[l]aws of nature, natural phenomena, and abstract ideas are not patentable." *Ass'n for Molecular Pathology* v. *Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013) (quoting *Mayo Collaborative Servs.* v. *Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012)); *see also Bilski* v. *Kappos*, 130 S. Ct. 3218, 3225 (2010). In this contemporary trilogy of decisions, the Court built upon, and harmonized, a long series of earlier cases that established the framework for evaluating

patent eligibility under 35 U.S.C. § 101. *See especially Diamond* v. *Diehr*, 450 U.S. 175, 185 (1981); *Diamond* v. *Chakrabarty*, 447 U.S. 303, 309 (1980); *Parker* v. *Flook*, 437 U.S. 584, 588–89 (1978); *Gottschalk* v. *Benson*, 409 U.S. 63, 67 (1972); *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948); *O'Reilly* v. *Morse*, 56 U.S. (15 How.) 62, 113–17 (1854).

The claims asserted by Alice recite the fundamental economic practice of intermediated settlement or escrow, in which a "middleman" stands between the counterparties to a transaction and effectuates the transfer of entitlement once all conditions are satisfied. This is an "abstract idea" under *Bilski*, as both the district court (Pet. App. 214a) and a majority of the Federal Circuit (*id.* at 31a (opinion of Lourie, J.), 82a–84a (opinion of Rader, C.J.)) recognized. *See* Part I, *infra*. The plurality below (Pet. App. 29a–31a) also correctly determined that the asserted claims, while computer-implemented, lack an "inventive concept" that is a prerequisite to patent eligibility under the methodology prescribed by this Court in *Mayo*. *See* Part II, *infra*. Alice's bid for reversal would thus require the Court to critically undermine, if not overrule, both *Bilski* and *Mayo*. Doing so would harm innovation and the economy. *See* Part III, *infra*.[1]

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[1] The patentability of "software" is not presented in this case. *Cf. Bilski*, 130 S. Ct. at 3228 (plurality opinion); *Flook*, 437 U.S. at 595 & n.19. Alice's patents are not software patents—they do not explain *how* to configure a computer to perform the claimed methods. *See* Pet. App. 227a n.21. The functions recited in the asserted claims, such as receiving transactions, adjusting shadow accounts, and issuing payment instructions

I. ALICE'S CLAIMS RECITE AN ABSTRACT IDEA UNDER *BILSKI*

Section 101 of the Patent Act "defines the subject matter that may be patented" subject to the limitations of the Constitution. *Bilski*, 130 S. Ct. at 3225.

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101.

This Court has "long held that this provision contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable." *Myriad*, 133 S. Ct. at 2116 (punctuation omitted). Thus, it does not suffice for patent eligibility that under "a purely literal reading of § 101" (*Flook*, 437 U.S. at 589) a claim is facially drawn to a "process" (*see*, *e.g.*, *Bilski*, 130 S. Ct. at

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[Footnote continued from previous page]

(Pet. Br. 7, 9), are simply the steps of a business method for third-party intermediation. Although Alice now says that "the specification lays out how to program a computer system to perform these functions" (Pet. Br. 53), it cites only Figures 25 and 33–37, which illustrate certain steps of the method but disclose no programming. *See* J.A. 1023, 1031–35. Nowhere do these patents claim or disclose the inputs, actions, and outputs of the software, hardware, and firmware components of a computational system, much less how those operations would be carried out through computer code, programming instructions, or logic flows to perform the claimed method. *See* Feldman Br. 26–27.

3223–24) or a "machine," "manufacture," or other "composition of matter" (*see*, *e.g.*, *Myriad*, 133 S. Ct. at 2113). It will nonetheless be ineligible if it claims a "law[] of nature, physical phenomen[on]," or "abstract idea[]" without other significant limitations. *Bilski*, 130 S. Ct. at 3225.

The claims at issue, though formally drawn to statutory subject matter, fall squarely within that exception—which has "defined the reach of the statute as a matter of statutory *stare decisis* going back 150 years." *Bilski*, 130 S. Ct. at 3225. Section 101, as construed by this Court, performs a "screening function" (*Mayo*, 132 S. Ct. at 1303) that is an important "threshold test" for patentability. *Bilski*, 130 S. Ct. at 3225; *see also*, *e.g.*, Retailers Br. 6–10. Alice's patents fail that test.[2]

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[2] Alice argues that the requirements of 35 U.S.C. §§ 102, 103, & 112 are sufficient to "ensur[e] that claims to computer-implemented inventions are not so broad or vague that they grant unjustified monopolies over entire fields of endeavor." Pet. Br. 42. In *Mayo*, the government similarly argued that "other statutory provisions"—particularly Sections 102, 103, and 112—"can perform this screening function." 132 S. Ct. at 1303. The Court rejected that approach, "recogniz[ing]" that "the § 101 patent-eligibility inquiry ... might sometimes overlap" with the later sections, but explaining that those sections "are not equipped to do" the "work" of Section 101. *Id.* at 1304. The Court should once again reject attempts to render the established "exception to § 101 patentability a dead letter." *Id.* at 1303; *see Bilski*, 130 S. Ct. at 3225; *Flook*, 437 U.S. at 593.

A. Abstract Ideas Include Fundamental Economic Principles

1. "An idea of itself is not patentable." *Rubber-Tip Pencil Co.* v. *Howard*, 87 U.S. (20 Wall.) 498, 507 (1874). As the Court long ago explained, a "principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy* v. *Tatham*, 55 U.S. (14 How.) 156, 175 (1853). These foundational pronouncements have served as this Court's Section 101 guideposts up to the modern day. *See*, *e.g.*, *Bilski*, 130 S. Ct. at 3230.

Thus, for more than 150 years, the Court has recognized and applied the rule that the Patent Act contains "no authority to grant a patent for a '*principle*' or a 'mode of operation,' or an *idea*, or *any other abstraction*." *Burr* v. *Duryee*, 68 U.S. (1 Wall.) 531, 570 (1864) (emphases added). The Court has not endeavored to "define further" the scope of this exception, relying instead on its "precedents on the unpatentability of abstract ideas." *Bilski*, 130 S. Ct. at 3231.

Accordingly, the Court has applied a common-law approach to questions of patent eligibility, analyzing particular claims by reasoning from its precedents in view of the language and purpose of the Constitution's Progress Clause and the Patent Act. *See*, *e.g.*, *Mayo*, 132 S. Ct. at 1299 ("The claim before us presents a case for patentability that is weaker than the (patent-eligible) claim in *Diehr* and no stronger than the (unpatentable) claim in *Flook*"); *Bilski*, 130 S. Ct. at 3229 ("Rather than adopting categorical rules that might have wide-ranging and unforeseen impacts, the Court resolves this case

narrowly on the basis of this Court's decisions in *Benson*, *Flook*, and *Diehr*").

a. In the past half-century, the Court has decided four cases involving the eligibility of patent claims that recite abstract ideas. In *Benson*, the Court ruled that a computer-implemented algorithm for converting numbers in one form to another was a patent-ineligible abstract idea. 409 U.S. at 67–68. In *Flook*, the Court found, based on *Benson*, that a claimed method that employed a computer-implemented algorithm to calculate an alarm limit was likewise patent-ineligible. 437 U.S. at 586, 594. *Diehr* held that a particular method of using the well-known Arrhenius equation to determine the cure time of rubber (450 U.S. at 177 & n.2, 184) was eligible: The applicant had added to the equation a technological advancement (measuring the temperature inside the rubber-curing press) that "the industry ha[d] not been able to" achieve previously. *Id.* at 178 & n.3. And *Bilski*, the Court's most recent decision on abstract ideas, held that "the concept of hedging risk" was ineligible because "[h]edging is a fundamental economic practice long prevalent in our system of commerce." 130 S. Ct. at 3229, 3231.

As these cases establish, abstract ideas are not patentable because—just like laws of nature and natural phenomena—"they are the basic tools of scientific and technological work." *Benson*, 409 U.S. at 67–68. Exclusive use of these building blocks would "foreclose[] more future invention than the underlying discovery could reasonably justify." *Mayo*, 132 S. Ct. 1301–03. So they must remain "part of the storehouse of knowledge of all men … free to all men and reserved exclusively to none." *Bilski*, 130 S. Ct. at 3225 (quoting *Funk Bros.*, 333

U.S. at 130). "[N]o one can claim" an "exclusive right" to such fundamental principles. *Le Roy*, 55 U.S. at 175.

"[M]onopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it." *Mayo*, 132 S. Ct. at 1293. The historical exception to Section 101, a "limitation consistent with the statutory text" (*Bilski*, 130 S. Ct. at 3229 (plurality opinion)), thus enforces the constitutional limit on governmental actions that "enlarge the patent monopoly without regard to the innovation … gained thereby" or "restrict free access to materials already available." *Graham* v. *John Deere Co.*, 383 U.S. 1, 6 (1966).[3]

As the Court explained in *Mayo*, the prohibition on patenting natural laws, physical phenomena, and abstract ideas is "a somewhat more easily administered proxy for the underlying 'building-block' concern"—*i.e.*, the concern that patents not "foreclose[]" too "much future innovation" "relative to the contribution of the inventor." 132 S. Ct. at 1303.

Morse provides an early example of the foreclosure concern. *See Mayo*, 132 S. Ct. at 1300. There,

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[3] The Progress Clause is both a "grant" of and "limitation" on Congress's power. *Graham*, 383 U.S. at 5. The Legislature may not "authorize the issuance of patents whose effects are to remove existent knowledge from the public domain." *Id.* at 6. Concomitantly, the Executive (through the Patent and Trademark Office) may not issue such a patent. *See ibid.* The Judiciary's power and obligation is to police both applications and issued patents in order to ensure that they do not transgress this core limitation. *Ibid.*; *see also*, *e.g.*, *Brenner* v. *Manson*, 383 U.S. 519, 534–35 (1966).

the Court sustained several claims that recited particular applications of the use of electro-magnetic signals for telegraphic communication, but declared ineligible a claim on "electro-magnetism, however developed for marking or printing intelligible characters." *Morse*, 56 U.S. at 112 (internal quotation marks omitted). *Morse* thus held that an inventor may not patent a "principle." *Flook*, 437 U.S. at 592; *see also Mayo*, 132 S. Ct. at 1301–02 (explaining that "the grant of patents that tie up" such building blocks "will inhibit future innovation premised upon them").

Because the same concern animates all three aspects of the Court's tripartite exception for natural laws, phenomena of nature, and abstract ideas, the Court treats them as "equivalent." *Mayo*, 132 S. Ct. at 1293, 1298. Regardless of what kind of principle is at issue, the key point is that the patent system cannot withdraw from public use the building blocks of innovation and advancement in the useful arts. *Id.* at 1303.

b. The Court has already held that the prohibition on patenting abstract ideas is fully applicable to the building blocks of economics. The claims at issue in *Bilski* "described" in a series of steps "the basic concept of hedging, or protecting against risk." 130 S. Ct. at 3231. The Court explained that "[h]edging is a fundamental economic practice" and therefore "an unpatentable abstract idea." *Ibid.* This common-sense proposition did not require extensive discussion or debate: "[A]ll members of the Court agree[d]" that Bilski's claims involved "an abstract idea." *Id.* at 3230; *see also id.* at 3235 (Stevens, J., concurring in the judgment); *id.* at 3258 (Breyer, J., concurring in the judgment).

In revising its guidelines for patent examiners in the wake of *Bilski*, the PTO recognized that the presence in a patent claim of a "general concept," including an economic concept, is an important indicator that the claim is drawn to an abstract idea. Manual of Patent Examining Procedure (MPEP) § 2106.II.B.1(d)(f) (8th ed. Rev. 9, Aug. 2012); *see also* Memorandum: Interim Guidance for Determining Subject Matter Eligibility for Process Claims in View of *Bilski* v. *Kappos* from Robert W. Bahr, Acting Assoc. Comm'r for Patent Examination Policy, to Patent Examining Corps (July 27, 2010). The PTO went on to explain, echoing the core holding of *Bilski*, that "[e]xamples of general concepts include … [b]asic economic practices or theories (e.g., hedging, insurance, financial transactions, marketing)." MPEP § 2106.II.B.1(d)(f).[4]

The economic concept of intermediated settlement is an abstract idea under the approach taken in *Bilski* and subsequently endorsed by the PTO.

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[4] The plurality below used the term "disembodied concept" as a synonym for "abstract idea." Pet. App. 28a (internal quotation marks omitted); *see also* MPEP § 2106.II ("In addition to the term[] … abstract ideas, judicially recognized exceptions have been described using various other terms, including … disembodied concepts"). Alice suggests that a truly incorporeal principle would be non-statutory. Pet. Br. 27–28; *cf. Microsoft Corp.* v. *AT&T Corp.*, 550 U.S. 437, 449 (2007) ("Abstract software code is an idea without physical embodiment"). Because that issue is not presented by the asserted claims, we will use the term "abstract idea." Alice's suggestion that this term has only "two … meanings"—*viz.*, "disembodied concepts" as distinguished from "fundamental truths" (Pet. Br. 29)—presents a false dichotomy.

2. Alice's effort to avoid the fatal import of *Bilski* turns on its contention that the abstract idea doctrine has no force unless "the claims recite a mathematical formula, a 'fundamental economic practice' that can be 'reduced to a mathematical formula,' or any other form of fundamental truth that 'exists in principle apart from any human action.'" Pet. Br. 44 (internal citations omitted). Alice's proposed redefinition cannot be squared with this Court's precedents.

a. Fidelity to *Bilski* requires rejecting Alice's effort to redefine the abstract idea doctrine. Indeed, under the approach now advocated by Alice, *Bilski* would have come out the other way: The broadest claim in Bilski's application—independent claim 1—involved no mathematical formula or principle that exists apart from human action, yet the Court held it ineligible.

The method recited in Bilski's independent claim 1 involved a series of three steps, none of which was formulaic: taking a risk position, identifying a counter position, and balancing the two positions. *Bilski*, 130 S. Ct. at 3223–24. The Court held this claim ineligible because it "described" the "fundamental economic practice" of hedging risk. *Id.* at 3231. Since claim 1 neither included nor depended upon any mathematical formula, the holding of *Bilski* destroys Alice's effort to conflate "abstract ideas" with "mathematical formulas."

Contrary to Alice's repeated assertion, Bilski's dependent claim 4—a narrowed variant of claim 1—did not reduce the entire method to a mathematical formula. *See*, *e.g.*, Pet. Br. 16. Rather, the formula of claim 4 provided only one way of calculating certain inputs for the method of hedging described in

independent claim 1. *See Bilski* J.A. 19–20. Claim 4 and the other "remaining claims" were ineligible not because they included a formula, but because they added mere "token" limitations to the abstract idea of risk hedging recited in the broader independent claim 1. 130 S. Ct. at 3231.

Moreover, the concept of hedging in *Bilski* did not exist "apart from any human action." Pet. Br. 26. Hedging has been "long prevalent in our system of commerce" (*Bilski*, 130 S. Ct. at 3231) but it does not "preexist[]" humankind, as Alice apparently would require (Pet. Br. 22). The sole basis for monetary hedging is financial uncertainty, a peculiarly human condition. *See Bilski*, 130 S. Ct. at 3223–24. So, too, for intermediated settlement.

The PTO's post-*Bilski* guidelines, likewise, describe a number of other clearly human actions as abstract ideas. These include "[b]asic legal theories," "[i]nterpersonal interactions or relationships," "[t]eaching concepts," "[h]uman behavior," and "[i]nstructing 'how business should be conducted.'" MPEP § 2106.II.B.1(d)(f). None of these would fit into Alice's rigid taxonomy of mathematical formulas or fundamental truths. Alice's newly minted approach to abstract ideas cannot be reconciled with the PTO's guidance, which, in turn, is based on *Bilski*. That is undoubtedly why Alice's brief does not even mention this post-*Bilski* guidance.

b. Alice relies heavily on the fact that mathematical formulas were at issue in *Benson* and *Flook*. Pet. Br. 24–25. But the Court held the claims in those cases ineligible not because they included mathematical formulas but because their "algorithms"—which the Court defined as "procedure[s] for solving a given type of mathematical problem"

(*Benson*, 409 U.S. at 65; *Flook*, 437 U.S. at 585 n.1)—qualified as building blocks of future innovation. If patented, they would have broadly preempted use of the underlying ideas.

Although an algorithm is indeed a "process" (*Flook*, 437 U.S. at 588–89), it will nonetheless be ineligible if it is "abstract and sweeping" (*Benson*, 409 U.S. at 68). $E=mc^2$ is patent-ineligible because it is a building block, not because it is expressed using symbols. Feldman Br. 6–7; *Chakrabarty*, 447 U.S. at 309. Einstein's principle would be equally ineligible if written as: "Use a quantity of matter to obtain an amount of energy equal to the matter's mass times the square of the speed of light." *See Mayo*, 132 S. Ct. at 1297. Such a claim is ineligible because it claims "a scientific truth," not due to "the mathematical expression of it." *MacKay Radio & Tel. Co.* v. *Radio Corp. of Am.*, 306 U.S. 86, 94 (1939).

This Court has never suggested that mathematical formulas possess talismanic significance in the abstract idea inquiry. *See Rubber-Tip Pencil*, 87 U.S. at 507 (rejecting an apparatus patent because the Court found nothing unconventional added to "the idea that if a pencil is inserted into a cavity in a piece of rubber smaller than itself the rubber will attach itself to the pencil, and when so attached become convenient for use as an eraser"). Although the Court has found certain claims containing mathematical formulas ineligible (*Flook*, 437 U.S. at 595), it has never said that ineligible abstract ideas are *limited* to mathematical formulas. In fact, it has spoken in far broader terms when describing patent-ineligible principles. *See*, *e.g.*, *Benson*, 409 U.S. at 67 (explaining that abstract ideas include "mental processes and abstract intellectual concepts") (punc-

tuation omitted); *Burr*, 68 U.S. at 570; *Le Roy*, 55 U.S. at 175.

It could hardly be otherwise, for mathematics is merely a specialized language for describing other things. Mathematical formulas express or explain *relationships* between concepts, events, or observations; they are not in themselves "fundamental truths," as Alice erroneously suggests. Pet. Br. 22–23. And because math is a language like any other, virtually any process—including each step of Alice's method—can be rewritten in mathematical notation. Feldman Br. 6–9; Alan M. Turing, *Computability & λ-Definability*, 2 J. Symbolic Logic 153 (1937) (any method can be expressed as a mathematical algorithm).

Mathematical formulas neither secure nor preclude eligibility, for a "mathematical formula may describe a law of nature, a scientific truth, or an abstract idea. As courts have recognized, mathematics may also be used to describe steps of a statutory method or elements of a statutory apparatus." *Arrhythmia Research Tech.* v. *Corazonix Corp.*, 958 F.2d 1053, 1056 (Fed. Cir. 1992). Accordingly, both this Court and the Federal Circuit have held that some patents that contain formulas are eligible. *See*, *e.g.*, *Diehr*, 450 U.S. at 187; *Research Corp. Techs.* v. *Microsoft Corp.*, 627 F.3d 859, 869 (Fed. Cir. 2010); *SiRF Tech., Inc.* v. *Int'l Trade Comm'n*, 601 F.3d 1319, 1323 (Fed. Cir. 2010). Concomitantly, some patents that do not contain formulas are ineligible. Bilski's claim 1 amply demonstrates this, as do numerous Federal Circuit decisions rejecting patents to non-mathematical abstract ideas (including business methods like Alice's) as ineligible under *Bilski*. *See*, *e.g.*, *Accenture Global Servs., GmbH* v. *Guide-*

wire Software, Inc., 728 F.3d 1336, 1344 (Fed. Cir. 2013), *petition for cert. filed*, No. 13-918 (Jan. 31, 2014); *Bancorp Servs.* v. *Sun Life Assur. Co. of Can.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012), *petition for cert. filed*, No. 13-584 (Nov. 8, 2013); *Fort Props., Inc.* v. *Am. Master Lease LLC*, 671 F.3d 1317, 1322 (Fed. Cir. 2012); *Dealertrack, Inc.* v. *Huber*, 674 F.3d 1315, 1333–34 (Fed. Cir. 2012); *CyberSource Corp.* v. *Retail Decisions, Inc.*, 654 F.3d 1366, 1371–72 (Fed. Cir. 2011).

c. Alice also tries a different tack, arguing that "this Court has used the term ['abstract idea'] as a synonym for a fundamental truth." Pet. Br. 22. The only case it cites is *Diehr*, which said no such thing. Three sitting Justices have in fact said the opposite: A patent may be ineligible for claiming an "abstract idea" even if it does *not* claim a "fundamental truth." *Bilski*, 130 S. Ct. at 3235 (Stevens, J., joined by Ginsburg, Breyer, and Sotomayor, JJ., concurring in the judgment). Even Alice's friends do not agree with it on this point. *See* TTI Br. 20 (*Bilski* "can also be read as applying that exception beyond the narrow realm of such truths").

Alice gives the game away when it says that Bilski's claim 1 described the "fundamental … truth" that "risk from one fixed price transaction can be avoided by engaging in an offsetting fixed price transaction." Pet. Br. 26. If that method of mitigating risk is a "fundamental truth," then so too is the principle that the risk of one party's non-payment at settlement can be mitigated by designating an intermediary to ensure mutual compliance before directing the transfer of entitlement—the basic concept that Alice's claims address.

In short, an abstract idea is a building block of technology (*Benson*, 409 U.S. at 67), of innovation (*Flook*, 437 U.S. at 594–95), and of the economy (*Bilski*, 130 S. Ct. at 3231). Such a principle may not be patented because it would impede progress, not because it is notated in symbols instead of words. *Mayo*, 132 S. Ct. at 1303. Contrary to Alice's attempted redefinition, patent-ineligible abstract ideas simply are not limited to mathematical formulas. And Alice has no other basis to get out from under *Bilski*.

B. Alice's Patents Claim The Fundamental Economic Principle Of Intermediated Settlement

Alice's claims recite the basic principle of intermediated settlement, a building block of economics and risk management just like the concept of hedging in *Bilski*. Because hedging is a "fundamental economic practice long prevalent in our system of commerce and taught in any introductory finance class," this Court held unanimously that claims "describ[ing]" a particular form of that concept were not patent-eligible. *Bilski*, 130 S. Ct. at 3231. The concept of mitigating settlement risk through intermediation is likewise fundamental and ancient, and Alice's claims merely "describe[]" it.[5]

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[5] Alice's claims were prosecuted and allowed by the PTO before *Bilski*, based on examination guidelines that have since been superseded. Therefore, the district court properly undertook a *de novo*, post-*Bilski* determination of the eligibility question and found these patents wanting. Pet. App. 172a–238a. Contrary to Alice's unsupported assertion (Pet. Br. 43), patents are not "presumed" eligible. Section 101 challenges are

1. Both the district court (Pet. App. 215a) and a clear majority of the en banc Federal Circuit (*id.* at 28a–34a (opinion of Lourie, J.), 82a–84a (opinion of Rader, C.J.)) correctly concluded that Alice's patents rest on an abstract idea.

a. Alice does not deny that the asserted claims recite the concept of an intermediated settlement arrangement. In fact, in this Court, Alice expressly states that the claims "recite an electronic intermediary 'supervisory institution' that facilitates settlement between the parties to an executory transaction." Pet. Br. 4. In the Federal Circuit, Alice similarly explained: "The point of Alice's invention is for a computer system itself to stand between two parties to a transaction and then effect the exchange." Alice Supp. C.A. Br. 36. Or, as Alice put it to the district court, its patents claim an arrangement where a "trusted third party … operates a data processing system that exchanges both parties' obligations." Pet. App. 174a (quoting Alice's motion for summary judgment). Precisely so. Alice claims,

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decided by the reviewing court before it turns to the defenses authorized by 35 U.S.C. § 282, and thus the presumption of validity "has no application." *Microsoft Corp.* v. *i4i Ltd. P'ship*, 131 S. Ct. 2238, 2253 (2011) (Breyer, J., concurring). Indeed, *Myriad* and *Mayo* both involved issued patents, and the Court applied no such presumption. Moreover, the "rationale underlying the presumption" (*KSR Int'l Co.* v. *Teleflex Inc.*, 550 U.S. 398, 426 (2007)) does not hold in this case because the PTO applied a concededly incorrect legal standard in examining the patents-in-suit. U.S. C.A. Br. 1, 4. In any event, the clear and convincing evidence in the summary judgment record establishes that the asserted claims are ineligible, and thus any applicable presumption has been overcome.

in sum and substance, a computerized "financial intermediary." *See Oxford English Dictionary* 1115–16 (2d ed. 1989) (an intermediary is "a go-between middleman" used by parties to a transaction).

This concept of intermediated settlement is, as Judge Prost noted in her panel dissent below, "literally ancient." Pet. App. 163a; *see*, *e.g.*, Randall S. Kroszner, *Commentary*, Fed. Reserve Bank of St. Louis Rev., May/June 1998, at 117, 119 ("private clearing and settlement arrangements" have existed since at least "the nineteenth and early twentieth centuries"); Edward J. Green, *Clearing and Settling Financial Transactions*, *Circa 2000*, *in* Challenges for Central Banking 115, 127 (Anthony M. Santomero et al. eds., 2001) (use of a clearing house that holds collateral in escrow is one of the "classic examples of general risk-management technique"); Peter Temin, *Financial Intermediation in the Early Roman Empire*, 64 J. Econ. Hist. 705 (2004) (comparing history of financial intermediation in ancient times to modern practices).

Intermediated settlement is often referred to as an "escrow" arrangement, and common definitions of this age-old practice track Alice's claimed method. *See*, *e.g.*, *Black's Law Dictionary* 624 (9th ed. 2009) (describing escrow as a "security device" where "one or both parties to a transaction deposit property or an instrument with a third party until some condition has occurred" (quoting Restatement (Second) of Contracts § 103 cmt. a (1979))); Glenn G. Munn, *Encyclopedia of Banking and Finance* 296 (F.L. Garcia ed., 8th ed. 1983).

Accordingly, both of the lower courts correctly concluded, on an undisputed record, that the method of intermediated settlement claimed by Alice consti-

tutes "a form of escrow." Pet. App. 28a (opinion of Lourie, J.); *see also id.* at 30a, 34a (Lourie, J., noting that Alice claims "an escrow arrangement" or "a method of escrow"); *id.* at 82a, 83a, 84a (Rader, C.J., explaining that Alice claims "an escrow arrangement" and recites steps "inherent in the concept of an escrow" or "long used in escrows"); *id.* at 215a (district court finding that Alice's patents are "directed to the abstract and fundamental concept of using an intermediary to guarantee an exchange").

b. No coherent line can be drawn to distinguish Alice's method from Bilski's. *See* Pet. App. 31a (opinion of Lourie, J.) (observing that Alice's claims "closely resemble those in *Bilski*, which also explained a 'basic concept of … protecting against risk'") (citation omitted); *id.* at 84a (opinion of Rader, C.J.) ("Viewed as a whole, the claim is indistinguishable from the claim in *Bilski*").

A side-by-side comparison of Alice's representative method claim with Bilski's illustrates this point:

Bilski claim 1	Alice claim '479:33
"(a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumers; (b) identifying market participants for said commodity having a counter-risk position to said consumers; and (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions."	"(a) creating a shadow credit record and a shadow debit record for each stakeholder party to be held independently by a supervisory institution from the exchange institution; (b) obtaining from each exchange institution a start-of-day balance for each shadow credit record and shadow debit record; (c) for every transaction resulting in an exchange obligation, the supervisory institution adjusting each respective party's shadow credit record or shadow debit record, allowing only these [sic] transactions that do not result in the value of the shadow debit record being less than the value of the shadow credit record at any time, each said adjustment taking place in chronological order; and (d) at the end-of-day, the supervisory institution instructing ones [sic] of the exchange institutions to exchange credits or debits to the credit record and debit record of the respective parties in accordance with the adjustments of the said permitted transactions, the credits and debits being irrevocable, time invariant obligations placed on the exchange institutions."

2. Although Alice and its *amici* devote many pages to discussing the general contours of the abstract idea doctrine, they say precious little about the actual claims at issue here. *See only* Pet. Br. 43–53; ABL Br. 35–38; IEEE Br. 22–24; SSBG Br. 21–22. And what they do say fails to establish the eligibility of those claims under Section 101.

a. Alice suggests that its claims do not meet its chosen dictionary's definition of escrow because they "do not *prescribe* that the electronic intermediary (or any other third party) receives any money or property." Pet. Br. 47 (emphasis added). Of course, Alice's claims do not *preclude* the receipt of money or property and thus would cover such activity. In any event, nothing in the concept of intermediated settlement requires the physical exchange of money or tangible property.

A critical feature of escrow and other forms of intermediated settlement is that transfer of entitlement does not take place "until the fulfillment of the condition." *Webster's New International Dictionary* 872 (2d ed. 1949); *accord* American Bankers Association, *Banking Terminology* 104 (1981) (in escrow, property is "delivered on a certain contingency or on the occurrence of a certain event"). Moreover, most financial instruments are traded today using "notional" (or, in Alice's terminology, "shadow") accounts rather than the underlying property. *See* Mark Rubinstein, *Rubinstein on Derivatives* 1–3, 394 (1999). Alice's method fits easily within these parameters.

b. Alice also contends that the asserted claims do not monopolize the entire concept of intermediated settlement, just "specific *ways* of accomplishing third-party intermediation." Pet. Br. 49. To that

end, Alice hypothesizes—for the first time in this Court—several alternatives for specific limitations that appear in some but not all of its claims. *Id.* at 49–50.

It is conceivable that a "differently designed system" (Pet. Br. 49) could avoid direct infringement of at least some of the asserted claims. But a patent need not foreclose every conceivable application of an abstract idea to be ineligible. After all, there were many ways of hedging risk not claimed by Bilski: Even his broadest claim covered only situations where customers purchase commodities "at a fixed rate based upon historical averages" (130 S. Ct. at 3223–24), and some of the dependent claims were narrower still (*Bilski* J.A. 19–22). But that did not stop the Court from declaring each of his claims ineligible. 130 S. Ct. at 3231.

As the Court has explained, "the underlying functional concern here is a *relative* one: how much future innovation is foreclosed relative to the contribution of the inventor." *Mayo*, 132 S. Ct. at 1303. Even a narrow law of nature or abstract idea is ineligible because patenting such principles still "inhibit[s] future" development—and in return the patentee contributes a "creative value" that is "considerably smaller." *Ibid.* Broad or narrow, a patent that "forecloses more future invention than the underlying discovery could reasonably justify" (*id.* at 1301) impedes progress, rather than promotes it.

The alternatives tossed up by Alice relate to details, such as adjusting the tracking accounts "based on the size rather than timing of the transactions" or "only at specified times rather than for every transaction." Pet. Br. 50. Many of the independent claims

(including representative claim 33) literally cover a single transaction, rendering such details irrelevant.

Even taking into account such details, the asserted claims would foreclose, or at minimum implicate, intermediated transactions in most sectors of the economy. At least one of Alice's proposed alternatives—transactional as distinguished from periodic settlement—proves this point, as these are the two principal ways that intermediated settlement is performed in the real world. *See* Part II.B.1.d, *infra*.

The district court recognized the breathtaking sweep of the asserted claims. "The abstract idea claimed by Alice's methods … [would] effectively preempt the use of an electronic intermediary to guarantee exchanges across an incredible swath of the economic sector." Pet. App. 218a; *see also id.* at 219a ("If patentable, these claims could preempt the use of an electronic intermediary, using a shadow credit and/or debit records, as a manner in which to exchange an infinite array of tangible and intangible representations of value"). The plurality too found that Alice's "broad" "claims to methods of financial intermediation 'would pre-empt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea.'" *Id.* at 31a (quoting *Bilski*, 130 S. Ct. at 3231). Alice does not challenge (indeed, it does not even mention) these conclusions, which are unaffected by the possibility that there may be other "ways" of effectuating an intermediated settlement.

Thus, even assuming that the asserted claims are "narrower" than *all* instances of intermediated settlement (Pet. Br. 50), that does not mean they are patent-eligible. This Court made clear in *Mayo* that even a "narrow and specific" law of nature—and,

equivalently, abstract idea—may be ineligible for patenting. 132 S. Ct. at 1302–03. For that reason, the potential availability of alternatives does not allow Alice to claim an abstract idea. *Diehr*, 450 U.S. at 192 n.14.

Alice's claims, just like those rejected in *Bilski*, cover "a fundamental economic practice" designed for "protecting against risk." 130 S. Ct. at 3231. Like Bilski's, they "can be rejected under [this Court's] precedents on the unpatentability of abstract ideas." *Ibid.*

II. ALICE'S CLAIMS DO NOT ADD "SIGNIFICANTLY MORE" UNDER *MAYO*

"[T]he Court's precedents … insist" that a claim "that focuses upon the use of a natural law [or other fundamental principle] also contain other elements or a combination of elements, sometimes referred to as an 'inventive concept.'" *Mayo*, 132 S. Ct. at 1294 (quoting *Flook*, 437 U.S. at 594); *see Quanta Computer, Inc.* v. *LG Elecs., Inc.*, 553 U.S. 617, 635 (2008) (referring to the "inventive aspect" of a patent). Just last Term, this Court confirmed that a claim is not eligible if the patentee "did not create anything." *Myriad*, 133 S. Ct. at 2117. Even if what an issued patent claims and discloses is "important and useful," there must be "an act of invention." *Ibid.* The claims asserted by Alice add no inventive concept to the abstract idea of intermediated settlement.

A. A Computer Used For Its Routine Functions Is A Conventional Element

1. The *Mayo* Court used the word "inventive" (132 S. Ct. at 1294, 1299, 1300) as shorthand for the requirement that a claim contain elements that "in terms of patent law's objectives ha[ve] significance"

(*id.* at 1299). Mere "well-understood, routine, conventional activity" (*ibid.*) does not serve these objectives, for it is not "new and useful," as Section 101 demands. *See Bilski*, 130 S. Ct. at 3225 (the eligibility exception is "consistent with the notion that a patentable process must be 'new and useful'").

To permit patents on claims reciting an abstract idea and only conventional steps would "inhibit further discovery by improperly tying up the future use" of foundational building blocks in innovation while contributing very little to the development of those inventions. *Mayo*, 132 S. Ct. at 1301; *accord* Mark A. Lemley et al., *Life After* Bilski, 63 Stan. L. Rev. 1315, 1317 (2011) (cited thrice in *Mayo*) ("what really matters" in the Section 101 analysis is "whether the scope of the patentee's claims is commensurate with the invention's practical, real-world contribution").

To ensure that a claim based on an abstract idea provides "an inventive application" of that idea (132 S. Ct. at 1299), *Mayo* articulates a particular methodology for applying Section 101. Under *Mayo*, a court identifies the abstract idea and then asks: "What else is there in the claim[] before us?" *Id.* at 1297. To answer that question, the Court examines each element of the claim beyond the abstract idea—first individually and then "as an ordered combination"—to determine if it is "sufficient to transform the nature of the claim." *Id.* at 1297–98.[6]

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[6] As Alice notes (Pet. Br. 30-32), *Diehr* prohibits dissecting the claims into old and new elements and then *ignoring claim elements* upon determining that they are non-novel. 450 U.S. at 188. The approach articulated in *Mayo*—which this Court

In this analysis, mere "well-understood, routine, conventional activity previously engaged in by" the industry is not "*enough*." *Mayo*, 132 S. Ct. at 1294, 1297. Thus, in *Mayo*, reciting "well known" methods of determining metabolite levels did not "transform" the natural law into an eligible patent claim. *Id.* at 1298. Reciting "steps that must be taken" to apply an abstract idea is also insufficient. *Id.* at 1299. "[P]ost-solution activity" and "pre-solution activity," including "gather[ing] data," do not confer eligibility either. *Id.* at 1298 (punctuation omitted). Nor does it suffice to "narrow" the principle at issue, or "limit" it "to one field of use" or "to a particular technological environment." *Id.* at 1297, 1300–01, 1303; *Bilski*, 130 S. Ct. at 3230–31 (citation omitted). None of these "additional features" adequately "provide[s] practical assurance that the process is more than a drafting effort designed to monopolize" the abstract idea. *Mayo*, 132 S. Ct. at 1297.

This methodology was central to *Mayo*'s holding. Yet, Alice simply whistles past the requirement that a patent drawn to an abstract idea must *also* contain

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carefully squared with *Diehr*—focuses attention on *all* claim elements, asking whether individually or "as a whole" they are "sufficient to transform the nature of the claim." 132 S. Ct. at 1294, 1297–98; *see also Flook*, 437 U.S. at 594 (such an approach is "not at all inconsistent with the view that a patent claim must be considered as a whole"). This methodology has analogues in other areas of patent law, such as whether an accused infringer has performed all elements of a claim (*see Warner-Jenkinson Co.* v. *Hilton Davis Chem. Co.*, 520 U.S. 17, 29, 40 (1997)) or whether a claim is anticipated in the prior art (*see*, *e.g.*, *Net MoneyIN, Inc.* v. *VeriSign, Inc.*, 545 F.3d 1359, 1370–71 (Fed. Cir. 2008)).

"enough" other elements—and that conventional activity is not enough—even though this Court repeated it *nine times*. *Mayo*, 132 S. Ct. at 1294, 1298, 1299, 1300, 1302. Thus, while Alice purports to disagree with Judge Lourie's opinion for five members of the court below (Pet. Br. 32–33, 51–52), its real disagreement is with Justice Breyer's opinion for nine Members of *this* Court. *Mayo* fully answers Alice's methodological objections.[7]

2. This Court has long held that "simply implementing" an abstract idea "on a physical machine, namely a computer, [i]s not a patentable application of that" idea. *Mayo*, 132 S. Ct. at 1301 (citing *Benson*, 409 U.S. at 64); *see also Flook*, 437 U.S. at 593–94. This stands to reason: A computer, like any other utensil of the relevant art (be it a hammer to the carpenter, a sextant to the navigator, or a syringe to the doctor), neither adds to nor subtracts from eligibility when used conventionally. Such conventional use simply limits the claim "to a particular technological environment." *Bilski*, 130 S. Ct. at 3230 (quoting *Diehr*, 450 U.S. at 191).

In *Benson*, this Court evaluated a patent that claimed an abstract idea, implemented in "general-purpose digital computer[s]." 409 U.S. at 64. Be-

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[7] The division within the Federal Circuit was driven by a difference of opinion between Judge Lourie and Chief Judge Rader on whether and how *Mayo* applies to computer-implemented claims. *Compare* Pet. App. 20a–41a (opinion of Lourie, J.), *with id.* at 64a–65a (opinion of Rader, C.J.) *and* 128a–31a ("[a]dditional reflections" of Rader, C.J.); *compare also*, *e.g.*, *Ultramercial, Inc*. v. *Hulu, LLC*, 722 F.3d 1335, 1348 (Fed. Cir.) (opinion of Rader, C.J.), *petition for cert. filed*, No. 13-255 (Aug. 23, 2013), *with id.* at 1354 (opinion of Lourie, J.).

cause the claim was drawn to an abstract idea—there, an algorithm for converting binary-coded decimal numbers to pure binary numbers—the inventive concept had to come from "the application" of the idea. *Id.* at 65–67. But the computer implementation added nothing inventive, for the process could be "carried out in existing computers long in use, no new machinery being necessary." *Id.* at 67. Indeed, it could "also be performed without a computer" (*ibid.*), even though one claim was limited to performance on a common computer element of the day (a "reentrant shift register") (*id.* at 73). The method therefore was not patent-eligible. *Id.* at 71–73.

Similarly, the Court in *Flook* rejected a claim that used a computer to perform calculations that could "be made by pencil and paper." 437 U.S. at 586. That function—"the use of computers for automatic monitoring-alarming"—was "well known." *Id.* at 594 (internal quotation marks omitted). It therefore provided no "inventive concept" to the "application" of a mathematical formula. *Ibid.* Even though computer implementation of the algorithm "provide[d] a new and presumably better method for calculating alarm limit values," it was still not patent-eligible. *Id.* at 594–95. That was because neither the computer nor any other element in the claim added anything "inventive" to the abstract idea. *Ibid.*

In *Diehr*, by contrast, the Court confronted a computer-implemented invention that satisfied Section 101's "inventive concept" requirement. *See Mayo*, 132 S. Ct. at 1298–99. In that case, the Court held eligible a computer-implemented process for curing rubber based on the combination of elements

other than the algorithm. *Diehr*, 450 U.S. at 187. The process used a mathematical formula that was "well-known" (*ibid.*), but the other steps of the process added an inventive concept—an improvement to the existing technology. *See Mayo*, 132 S. Ct. at 1299.

The invention in *Diehr* required continual measurement of the temperature inside the press, something "the industry ha[d] not been able to" achieve before. 450 U.S. at 178 & n.3. That new use of a "thermocouple" to overcome a problem in "conventional industry practice"—not the "computations"—was Diehr's inventive contribution. *Id.* at 178 & n.3, 187. Diehr's additional steps, this Court recently explained, "added to the formula something that in terms of patent law's objectives had significance—they transformed the process into an inventive application of the formula." *Mayo*, 132 S. Ct. at 1299. Thus, the claims in *Diehr* were eligible because they contained an inventive technological improvement, not because the concept was implemented by a computer. *See also Dolbear* v. *Am. Bell Tel. Co.*, 126 U.S. 1, 534–35 (1888) (sustaining Alexander Graham Bell's claim on the telephone); IPO Br. 4.

Under these precedents, the question presented by Alice—"[w]hether claims to computer-implemented inventions … are directed to patent-eligible subject matter" (Pet. Br. i)—can only be answered, "it depends." Some computer-implemented inventions will be patent-eligible, as in *Diehr*; others will be ineligible, as in *Benson* and *Flook*. The recitation of a computer (or computing functions) neither guarantees nor precludes eligibility. Rather, the ultimate issue is whether the par-

ticular claims asserted are eligible under the "well-established standard" articulated in this Court's precedents (*Myriad*, 133 S. Ct. at 2116)—chiefly, whether they add "significantly more" to an otherwise ineligible abstract idea (*Mayo*, 132 S. Ct. at 1294). Pet. App. 29a–31a, 36a–41a (opinion of Lourie, J.); *see also*, *e.g.*, *Bancorp*, 687 F.3d at 1279–80 (articulating a workable framework for evaluating computer-implemented inventions under *Mayo*).

3. Alice maintains that, because a computer "necessarily exist[s] in the physical, rather than purely conceptual, realm," a computer cannot *itself* be an abstract idea. Pet. Br. 39. There is no dispute that a programmed computer is a "machine" or that many computer-implemented claims, including Alice's, are formally drawn to statutory subject matter. It does not follow, however, that all such claims are automatically patent-eligible, as Alice implies and some of its *amici* expressly contend. *E.g.*, IBM Br. 5. Such an approach would blow a gaping hole in the judicial exception to Section 101: An applicant could write an eligible claim reciting "a computer system configured to" perform virtually any principle of the physical or social sciences, including economic concepts such as hedging and intermediated settlement.

The question is not whether a computer is tangible, but whether—in the context of the particular patent claims asserted by Alice—computer implementation adds enough to confer eligibility. The plurality below properly answered that question in the negative. Pet. App. 29a–30a, 37a–41a; *but see id.* at 69a–80a (Rader, C.J., dissenting on this point).

Mayo explained that "[i]f a law of nature is not patentable, then neither is a process reciting a law of

nature, unless that process has additional features" that are not merely conventional. 132 S. Ct. at 1297; *accord Flook*, 437 U.S. at 588–89, 593. Thus, although a "particular process" may be patent-eligible even if it employs a fundamental principle (*Dolbear*, 126 U.S. at 535; *see Cochrane* v. *Deener*, 94 U.S. 780, 788 (1877)), the other steps of the method must add enough to ensure patentability. *See Flook*, 437 U.S. at 594.

Similarly, if an abstract idea is not patentable, then neither is an apparatus claim reciting that abstract idea, unless it contains an inventive concept. This Court has long recognized that a "machine"—like a process—cannot be claimed in terms of its "abstract effect." *Corning* v. *Burden*, 56 U.S. (15 How.) 252, 268 (1854). Hence, the precedents focus on the "practical effect" of granting a patent—in other words, what the patent "pre-empt[s]"—in determining whether it falls within the prohibition on "patent[ing] an idea." *Benson*, 409 U.S. at 71–72.

In this respect, the only real distinction between *Bilski* and this case is that the use of a computer in *Bilski* was implicit whereas here it is explicit. In *Bilski*, the applicant stated that "the practice of the invention will most likely involve both computers and modern telecommunications." *Bilski* Pet. Br. 7; *see also In re Bilski*, 545 F.3d 943, 996 (Fed. Cir. 2008) (en banc) (Newman, J., dissenting) ("any practicable embodiment would be conducted with the aid of a machine—a programmed computer"). This Court nonetheless held that, just as narrowing a claim to one "field of use" such as particular "markets" could not render the claim eligible, neither could narrowing it "to a particular technological environment." *Bilski*, 130 S. Ct. at 3230–31. Giving

all computer-implemented inventions a categorical pass under Section 101 would thus require overruling or at least mortally wounding *Bilski*.

As a matter of law, making explicit the use of a computer in the claims in *Bilski*, or for that matter adding pedestrian use of a computer to perform the correlations in *Mayo*, would not have changed the results in those cases. In each of them, a computer could have been used—and in *Bilski* would in practice have been used—to improve the speed and accuracy of the claimed process. Such a limitation, however, would not have cabined the foreclosure effect of the claims in either *Bilski* or *Mayo*, or changed the eligibility determination in those cases. The same is true here, as we show next.

B. Alice's Claims Contain No Inventive Concept

Just as the ineligible claims in *Mayo* effectively stated a "law of nature while adding the words 'apply it'" (132 S. Ct. at 1294), Alice's claims effectively state an abstract idea while adding the words "compute it." *See* Pet. App. 39a–40a (opinion of Lourie, J.). That is not enough to confer eligibility on an otherwise ineligible claim.

1. Alice contends that its "claim limitations—including in particular those requiring computer implementation"—should save the asserted claims from ineligibility. Pet. Br. 48. Those limitations, however, add at most "well-understood, routine, conventional activity" to the abstract idea of financial intermediation, as an analysis of each step of the representative method claim and all the steps taken together demonstrates. *See Mayo*, 132 S. Ct. at 1298–99.

As recited in claim 33 of the '479 patent, Alice's "method of exchanging obligations as between parties" comprises the steps of (a) creating shadow records, (b) obtaining start-of-day balances for them based on real-world accounts, (c) adjusting the shadow records in chronological order based on transactions settled, and finally (d) sending irrevocable instructions to financial institutions to exchange debits and credits in real-world accounts at the end of the trading day to reflect the shadow records. J.A. 383–84.

a. The first step involves "creating a shadow credit record and a shadow debit record" for each counterparty to a transaction. J.A. 383. As "the record" of this case shows, "bookkeepers have long kept track of accounts in this fashion as a basic form of bookkeeping." Pet. App. 82a (opinion of Rader, C.J.) (citing Richard A. Brown, *A History of Accounting and Accountants* 93 (1905)). Alice does not contend otherwise.

"Shadow" or tracking accounts have been used in financial intermediation since at least the 1400s. Early banks used a "type of special deposit" involving "[f]unds … deposited by an individual to the credit of a notary to be transferred by him to a designated party or parties as soon as certain stated conditions were complied with." 1 Abbott Payson Usher, *The Early History of Deposit Banking in Mediterranean Europe* 16 (1943). As with Alice's steps of obtaining start-of-day balances and instructing the real-world accounts to reflect the completed transactions, these medieval "[t]ransfers were made from the general ledger to the ledger of special deposits and ultimately back to the general ledger again." *Id.* at 16–17.

Using the "extravagant language" of "shadow" records makes no difference. Pet. App. 30a (opinion of Lourie, J.). New labels on old concepts are not the sort of invention that the patent system protects. *Mayo*, 132 S. Ct. at 1294; *see Flook*, 437 U.S. at 585 (in rejecting a "method of updating alarm limits," observing that "[a]n 'alarm limit' is a number"). In fact, the process struck down in *Bilski* relied on this type of notional accounting. *See Bilski*, 545 F.3d at 950 (describing how the claims did not require transfer of "actual commodities").

Accounting for debits and credits is "a basic function required of any financial intermediary in an escrow arrangement—tracking each party's obligations and performance." Pet. App. 30a (opinion of Lourie, J.). Far from distinguishing Alice's claims from escrow (Pet. Br. 47), this step is "inherent in the concept of an escrow." Pet. App. 82a (opinion of Rader, C.J.).

Using a computer to maintain these shadow accounts is "purely conventional." *Mayo*, 132 S. Ct. at 1299. Recordkeeping is one of a computer's most basic functions, supplanting the "pencil and paper" that a human being otherwise would use for that purpose. *See Flook*, 437 U.S. at 586. Any generic computer storage system would suffice for this purpose; as this Court recognized over four decades ago, a computer by its very nature uses "previously stored data." *Benson*, 409 U.S. at 65. Thus, the "creating" step does not add an "inventive concept" to the claimed method. *Cf. Mayo*, 132 S. Ct. at 1297 ("administering" step not inventive because doctors had performed it "long before anyone asserted these claims").

b. The second step involves "obtaining … a start-of-day balance for each shadow credit record and shadow debit record." J.A. 384. "This generalized step is also inherent in the concept of an escrow." Pet. App. 82a–83a (opinion of Rader, C.J.). Every financial account requires a starting place from which subsequent adjustments are made. *See Bilski*, 130 S. Ct. at 3231 (claim not inventive because establishing "inputs" for equation involved "well-known" techniques).

Moreover, the "obtaining" step involves only ordinary communication with banks or other financial institutions to establish the inputs for the accounts. But data-gathering adds "nothing of practical significance." Pet. App. 30a (opinion of Lourie, J.). There is nothing inventive about establishing an opening balance. *See Mayo*, 132 S. Ct. at 1297–98 ("determining" step not inventive because doctors "routinely measured" the relevant metabolites).

Deploying a computer's communications functions to obtain the initial values is conventional too. Computers are "routinely" used for automatic communications, as anyone who has received telephone solicitations or email notifications understands all too well. *Mayo*, 132 S. Ct. at 1298–99. Alice's claims do not require any particular method of communication via computer, instead leaving it to the intermediary to use "whatever process [it] wishes to use." *Id.* at 1297.

c. The third step involves "for every transaction … adjusting each respective party's shadow credit record or shadow debit record … in chronological order." J.A. 384. This "adjusting" step is part of the idea of escrow—*i.e.*, the notion that an intermediary will tally the counterparties' respective obligations

and transfer entitlement when they have satisfied those obligations. Like "the 'wherein' clauses" of the claims in *Mayo*, the "adjusting" step "simply tell[s]" a practitioner about the abstract idea. 132 S. Ct. at 1297.

Adjusting accounts is entirely routine. Bankers, brokers, accountants, shopkeepers, and others who maintain books of account—including individuals who balance their checking accounts—routinely adjust balances over time to reflect transactions.

Making an adjustment only when both parties have "adequate value" for the transaction (Pet. Br. 7) ensures that both parties can perform the transaction before either party transfers its property, thus serving escrow's function as a "security device." Restatement (Second) of Contracts § 103 cmt. a (1979). Such a loose condition on the method is akin to the limitation of the claims in *Mayo* that they cover activities "wherein" the natural laws apply. 132 S. Ct. at 1297.

Similarly, making adjustments in chronological order adds nothing new; the running ledger is familiar to anyone with a checkbook or any other bookkeeping responsibilities. *See* Larry M. Walther & Christopher J. Skousen, *Basics of Accounting & Information Processing: The Accounting Cycle* 33 (2010) (a ledger is "a log book that contains a chronological listing of a company's transactions and events"). In banks, moreover, "transactions must be recorded as soon after their occurrence as possible." Munn, *supra*, at 81.

Likewise, use of a computer to automate the calculations involved in adjusting account balances does not save Alice's claim. Indeed, Alice's method involves the very type of computer participation reject-

ed as insufficient in *Benson* and *Flook*. In *Benson*, the Court explained that a computer "solv[es] a problem by doing arithmetic as a person would do it by head and hand." 409 U.S. at 65. In *Flook*, the computer was used for "computerized calculations producing automatic adjustments." 437 U.S. at 586. Calculation is another of the most general, basic, and routine uses of a computer. The claims do not specify a particular type of software or improvement to computer technology for the calculations. There is nothing inventive in the "adjusting" step.

d. "[A]t the end-of-day," the fourth step involves "irrevocable" "instruct[ions]" from the intermediary to "exchange credits or debits" in the parties' real-world accounts to reflect the ending balances in the "shadow" accounts. J.A. 384. As the district court recognized, sending irrevocable instructions at the conclusion of the trading period "is subsumed within the abstract idea itself, if not insignificant postsolution activity." Pet. App. 222a.

Contrary to Alice's unsupported assertion (Pet. Br. 49–50), irrevocable, and near-simultaneous, exchange instructions are inherent in escrow. *See* Restatement (Second) of Contracts § 103 cmt. b (1979) ("Where the owner of property delivers in escrow the property or an instrument of transfer, the title to the property does not pass until the condition has occurred, but the delivery is irrevocable and creates immediate conditional rights in the transferee").

Alice also makes much of the fact that the shadow accounts in its claims are reconciled with the real-world accounts each *day* whereas others could choose to adjust shadow accounts differently—for example by creating new shadow accounts which are

reconciled with real-world accounts for each *transaction*. Pet. Br. 49–50. To be sure, the Federal Reserve and a few other clearing houses use such an alternative (known as "real-time gross settlement"). *See* Alexandra Schaller, *Continuous Linked Settlement: History and Implications* 8, 17 (Dec. 5, 2007) (unpublished dissertation, University of Zurich), *available at* http://opac.nebis.ch/ediss/20080261.pdf. But this approach imposes transaction costs and other inefficiencies; for these reasons and others, including liquidity requirements, end-of-day adjustments are common across the financial services industry. *Id.* at 9, 11–12. Most banks take their "net balance[s] of purchases and sales in a foreign currency *at the end of a business day*." American Bankers Association, *supra*, at 189 (emphasis added). This is a fundamental way to perform financial intermediation. *See* Group of Experts on Payment Systems of G10 Central Banks, Report on Netting Schemes 14 (1989); Schaller, *supra*, at 9, 11.

The district court correctly recognized that the "instructing" step is mere communication, and therefore at most "conventional" "[p]ost-solution activity." *Mayo*, 132 S. Ct. at 1299. The middleman's directive after a day of trading is merely "routine, well-understood" activity, as should also be apparent to anyone who has wired money, traded stocks online, or transferred funds from one account to another using online or telephone banking. Using a computer to "instruct" is conventional for the same reasons that the use of a computer in communications in the "obtaining" step is routine. Thus, the Federal Circuit even before *Mayo* had rejected as ineligible a process involving the computerized communication of financial data. *See Dealertrack*, 674 F.3d at 1334–35.

2. The step-by-step analysis of the representative method claim in this case demonstrates that none of the elements adds anything inventive to the abstract idea of intermediated settlement or escrow. Considering the steps as an "ordered combination," as required by *Mayo*, shows that the claim as a whole "adds nothing ... that is not already present when the steps are considered separately." 132 S. Ct. at 1298; *see* Pet. App. 191a, 222a, 236a n.30 ("considered as a whole," Alice's claims are drawn to an abstract idea).

Taken together, the steps describe a process for (a) creating shadow accounts, (b) obtaining values for those accounts, (c) adjusting the accounts for transactions, and (d) sending instructions to exchange debits and credits in real-world accounts corresponding to the adjustments to the shadow accounts. J.A. 383–84. These "steps, when viewed as a whole, add nothing significant beyond the sum of their parts taken separately." *Mayo*, 132 S Ct. at 1298. Read as a whole, they simply say: "Perform an intermediated settlement arrangement."

Indeed, there is no mystery about what the ordered combination in the representative method claim means: According to the patent specification, the process entails "debiting/crediting, on a real-time basis, the relevant shadow records" and then "periodically effecting … corresponding payment instructions." J.A. 293–94; *see* Pet. Br. 29 (explaining importance of the written description).

As the plurality below correctly recognized, this is nothing other than "an escrow arrangement." Pet. App. 29a–31a. To so hold was not an impermissible "deconstruction of the claim" to find its "heart," as Alice charges (Pet. Br. 32), but rather a straightforward reading of the '479 patent. *Cf. Markman* v.

Westview Instruments, Inc., 517 U.S. 370, 384 (1996) ("construing the letters-patent, and the description of the invention and specification of claim annexed to them" is "a question of law, to be determined by the court") (quoting *Winans* v. *Denmead*, 56 U.S. (15 How.) 330, 338 (1854)).

Method claim 33 simply recites, as the accompanying disclosure confirms, intermediated settlement with the aid of an unspecified computer. In the context of these patents, that is no different than stating the abstract idea and adding, "compute it."

3. Alice's other claims are ineligible for the same reasons as its representative method claim, even though some may be "narrow[er]." *See Mayo*, 132 S. Ct. at 1295, 1302; *Bilski*, 130 S. Ct. at 3231. That is because they too add nothing of substance to the abstract idea of financial intermediation. Indeed, Alice effectively conceded at the PTO that its later-issued system and media claims were no different in terms of patentability from the method claims in the first-issued '479 patent. *See* C.A. J.A. 184–232 (recounting this history).

Alice makes no argument that its media claims should be treated any differently than the representative method claim. Pet. Br. 48–53.

As to its system claims, Alice stresses the "tangibility" of the computer components. Pet. Br. 52–53. Those claims recite "[a] data processing system" with "a communications controller" and "a data storage unit" with information about the two parties' accounts and "a computer" that is "configured to" perform the steps described in the method claims. *See*, *e.g.*, J.A. 954–66, 65:42–70:53; J.A. 1255–62, 65:2–68:4 (claims 1–84 of the '720 patent and claims 1–38 of the '375 patent). As Judge Lourie explained,

the claimed system "would encompass any device capable of performing the same ubiquitous calculation, storage, and connectivity functions required by the method claims." Pet. App. 37a; *accord Bancorp*, 687 F.3d at 1276–77.

The "configured to" language in the system claims simply describes the computer "in terms of what it will do." *Halliburton Oil Well Cementing Co.* v. *Walker*, 329 U.S. 1, 9 (1946), *superseded by statute*, 35 U.S.C. § 112. It "focuse[s] on the *result* of the invention," rather than the programming needed "to get there." Feldman Br. 9. The "flowcharts" included with Alice's patent drawings, insofar as they pertain to the asserted claims, merely illustrate how intermediation works. *E.g.* J.A. 168 ('479 patent, Fig. 25). The "algorithms" cited by some judges below (*see* Pet. App. 73a–76a (opinion of Rader, C.J.), 95a–97a (opinion of Moore, J.)) do not pertain to the asserted claims. BIO 5–6, 22; *cf.* Pet. Br. 7. Thus, the "configured to" language is not meaningful for Section 101 purposes. Feldman Br. 9–11; *see also* note 1, *supra*.

The much-vaunted computer implementation, according to the patent specification, "allow[s] the management of risk in an automated manner by means of programming of the computing devices." J.A. 300. Alice's own expert acknowledged that any standard desktop computer could serve as the recited "system." Pet. App. 225a.

What Alice characterizes as the "specific hardware" recitations in the system claims (Pet. Br. 53)—off-the-shelf processors, data storage units, and the like—are "generic, functional terms" (Pet. App. 37a (opinion of Lourie, J.)), drafted to "effectively cover *any device* that performs that function in any way,"

that describe "standard elements." Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 Wis. L. Rev. 905, 919–23 (2013).

Patent applicants often describe their inventions using language designed to invoke different statutory classes. *See* Robert C. Faber, *Faber On Mechanics of Patent Claim Drafting* 10-6 (6th ed. 2012) (instructing patent prosecutors to "[u]se [d]ifferent [statutory] [c]lasses of [c]laims" in a section titled "How to Write the Broad Claim"). As Judge Prost explained in her panel dissent, "[a]ny method claim that uses a general purpose computer may also be drafted as a system (containing computers) that carries out the method." Pet. App. 168–69a; *see also Quanta*, 553 U.S. at 629 ("Patentees seeking to avoid patent exhaustion could simply draft their patent claims to describe a method rather than an apparatus"); *In re Maucorps*, 609 F.2d 481, 485 (C.C.P.A. 1979) ("Labels are not determinative in § 101 inquiries ... because the form of the claim[s] is often an exercise in drafting") (internal quotation marks omitted).

Thus, this Court has long warned that a "competent draftsman" should not be able to circumvent the rigors of Section 101 through non-substantive changes to the claim language. *See Flook*, 437 U.S. at 590 ("The concept of patentable subject matter under § 101 is not 'like a nose of wax which may be turned and twisted in any direction'") (quoting *White* v. *Dunbar*, 119 U.S. 47, 51 (1886)). Changing the first noun in the claim preamble from a "method" (*see*, *e.g.*, '510 patent, claim 1, J.A. 669–70, 64:2–64:21) to a "data processing system" (*see*, *e.g.*, '720 patent, claim 1, J.A. 954–55, 65:41–61) or a "computer program product" (*see*, *e.g.*, '375 patent, claim 39,

J.A. 1262–63, 68:5–35) cannot be the sole determinant of eligibility.

An applicant that submits both method claims and system claims covering the same basic elements, using the same specification, has contributed no more to progress with his system claims than with his method claims. A system (or "machine") claim that forecloses as much innovation as a method (or "process") claim is for the same reason ineligible. *Diehr*, 450 U.S. at 188 n.11 ("the same principle" excluding abstract ideas "applies to" both "a process claim" and "a 'product' claim"). As explained above, that is true here. Alice's media and system claims fall with its method claims.

4. Alice's bid for eligibility ultimately rests on the contention that "[t]he invention *as claimed* will not function without a computer." Pet. Br. 49 (emphasis added). It is tautological that a computer-implemented claim requires a computer. But that alone will rarely if ever be sufficient for eligibility; otherwise any abstract idea (or law of nature or natural phenomenon) could be patented merely by including an off-the-shelf computer in the claims. That approach would resurrect the "machine" part of the eligibility test that this Court *rejected* in *Bilski*. 130 S. Ct. at 3226–27. It is certainly not sufficient here.

As the Court has explained, "[a] digital computer ... operates on data expressed in digits, solving a problem by doing arithmetic as a person would do it by head and hand," albeit using different physical processes than those employed by the human brain. *Benson*, 409 U.S. at 65; *see also* Pet. App. 30a (opinion of Lourie, J.) ("At its most basic, a computer is just a calculator capable of performing mental steps

faster than a human could"). To execute this task, computers store data, manipulate those data, and communicate. *Benson*, 409 U.S. at 65. Today, computers and other devices capable of performing these basic functions are ubiquitous.

Although some uses of computers might be routine only in particular fields, using a computer to record, calculate, and communicate is commonplace across all fields. Just as the use of widely available tools to "measure[] metabolites" was "routine" in *Mayo* (132 S. Ct. at 1298), so too the use of computers to make financial calculations is "routine" (and was "as of the patents' priority dates") (Pet. App. 40a (opinion of Lourie, J.)). *See*, *e.g.*, *Bilski*, 130 S. Ct. at 3231 (concluding that the "random analysis techniques" present in some claims were "well-known"); *Flook*, 437 U.S. at 586, 594 (holding that "changing alarm limits" is "conventional").

As the district court found, because financial transactions "are increasingly likely to be monopolized by electronic and computer implementation and storage, the fact these claims are implemented electronically fails to limit the methods." Pet. App. 221a. This conclusion, unchallenged by Alice, shows that Alice's computer implementation does not narrow the scope of its claims in practice.

Alice's own expert acknowledged that "the claimed methods" require only "*some type* of computing processor and memory." J.A. 128 (emphasis added). This includes *any* computer available now or in the future. Pet. App. 225a. Thus, just like the ineligible claims in *Benson*, Alice's sweeping escrow method can be "performed through any existing machinery or future-devised machinery or without any apparatus." 409 U.S. at 68.

Alice's expert further admitted that "it is possible to perform the business methods of maintaining accounts, adjusting accounts, and providing an instruction without a computer or other hardware." J.A. 128. He also conceded that the claimed "invention" could be "implemented … in a non-electronic manner using various pre-computing tools such as an abacus or handwritten ledgers." *Ibid*. These admissions—which Alice fails to mention in its merits brief—are fatal.

A method that "can be done mentally … without a computer" (*Benson*, 409 U.S. at 67), or with "pencil and paper" (*Flook*, 437 U.S. at 586), is not patent-eligible. *CyberSource*, 654 F.3d at 1372 (computer-implemented "method steps [that] can be performed in the human mind, or by a human using a pen and paper" are unpatentable); *SmartGene, Inc.* v. *Advanced Biological Labs., SA*, No. 2013-1186, 2014 WL 259824, at *5 (Fed. Cir. Jan. 24, 2014) ("familiar mental steps performed by or with a computer" are ineligible); *see* MPEP § 2106.II.B.1(d)(f).

Thus, Alice's assertion that its "claims require a substantial and meaningful role for the computer—beyond merely performing computations more quickly or accurately than a person could do with pencil and paper" (Pet. Br. 48) is as irrelevant as it is inaccurate. Because Alice's computer implementation merely instructs practitioners "do as you normally would," it "fails to limit" the claims in any meaningful way, as the district court explained. Pet. App. 221a. In the context of these patents, computer implementation adds nothing to the abstract idea of intermediated settlement. Thus, the claims at issue are not patent-eligible.

III. ALICE'S EFFORT TO UNDERMINE *BILSKI* AND *MAYO* WOULD IMPEDE INNOVATION IN VAST SECTORS OF THE ECONOMY

To hold that the claims asserted by Alice are patent-eligible, the Court would have to disavow if not overrule both *Bilski* and *Mayo*. Yet Alice has not even tried to make the significant showing that would be necessary to justify an about-face from such recent and unanimous precedents, which the Court unanimously confirmed just last Term. *Myriad*, 133 S. Ct. at 2116.

A departure from *Mayo* and *Bilski* would "disrupt the settled expectations of the inventing community." *Festo Corp.* v. *Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 739 (2002). Those cases "str[uck] a delicate balance" of incentives for research and competition by applying a "well-established standard" (*Myriad*, 133 S. Ct. at 2116) that can and should be applied here.

Patents like Alice's contribute only the "easy" task of "think[ing] of abstract ideas about what a computer or website should do," but "leave to others the truly innovative work of developing applications of the idea." Google C.A. Br. 23–24. It is one thing to conceptualize, say, a self-driving car; it is quite another to actually build and operate one. Alice's behavior is akin to that of an explorer who places his toe on the coast of Florida and then grandiosely claims, "North America for Spain!" Even if the explorer has described step-by-step, in generic terms, how to navigate rivers, forage for vegetables, set up towns, and the like, he has never actually done those things; thus, his claim—and the innovation and development he has foreclosed—is vastly disproportionate to the discovery he has contributed. *Life*

After Bilski, *supra*, at 1338 (patents like these "claim everything and contribute nothing"). The inventive community understands and expects that exclusive rights under the patent laws will be afforded to those who actually expend the necessary resources and innovate.

Alice, which has provided no service or product to the marketplace, wants to use its patents to hold hostage a systemically important financial institution that developed, at great effort and expense, a global network that makes possible the safe and efficient settlement of the vast majority of transactions in the world's major currencies. For the price of a patent application, Alice is putting at risk CLS's billion-dollar investment—and with it the largest financial market in the world. *See* FSOC, 2012 Annual Report, Appendix A at 157 (summarizing "negative effects" of disruption to CLS Bank's operations on "U.S. and global financial markets").

The potentially adverse ramifications go far beyond the foreign currency market. As the district court found, the asserted claims implicate every "credit card company," "bank," "guarantor" or other entity that supervises "any transaction linked to a 'share price,' a 'weather event,' a 'market event,' or a 'currency exchange transaction.'" Pet. App. 219a–20a (quoting dependent claims). Alice does not dispute that finding.

Thus, if these patents were to be resurrected, Alice could assert them against virtually every financial institution—commercial banks, investment banks, clearing houses, insurance companies, mutual fund complexes, broker-dealers, title insurers, etc.—that performs intermediation using a computer. The only reason it has not done so already is, presuma-

bly, the judgment of ineligibility properly entered in this litigation.

"[A] patent is not a hunting license." *Brenner* v. *Manson*, 383 U.S. 519, 536 (1966). The public "has a paramount interest in seeing that patent monopolies are kept within their legitimate scope." *Medtronic, Inc.* v. *Mirowski Family Ventures, LLC*, 134 S. Ct. 843, 851 (2014) (punctuation omitted). No person should "be allowed to exact royalties for the use of" a basic "idea." *Id.* at 852 (punctuation omitted). That is all the more true where, as here, a non-practicing entity threatens an innovative company's productive operations. *See eBay Inc.* v. *MercExchange, L.L.C.*, 547 U.S. 388, 396 (2006) (Kennedy, J., concurring); *see also*, *e.g.*, Kris Frieswick, *The Real Toll of Patent Trolls*, Inc. (Feb. 14, 2013), www.inc.com/magazine/201202/kris-frieswick/patent-troll-toll-on-businesses.html.

A straightforward application of *Bilski* and *Mayo*, as well as this Court's other eligibility precedents, establishes that all of the claims asserted in this case fall within the longstanding exception to patentability for fundamental principles. They recite an abstract idea under *Bilski*, and their limitations, including computer implementation, add nothing more under *Mayo*. The Court should reject Alice's implicit—and some of its *amici*'s explicit—request to drive a stake through the heart of *Bilski* and *Mayo*. Under those decisions, the judgments of both courts below, concluding that the asserted claims are not patent-eligible under 35 U.S.C. § 101, can only be affirmed.

CONCLUSION

The judgment of the court of appeals should be affirmed.

Respectfully submitted.

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APPENDIX

U.S. Patent No. 5,970,479 (excerpts)

US005970479A

United States Patent [19]

Shepherd

[11] **Patent Number: 5,970,479**

[45] **Date of Patent: Oct. 19, 1999**

[54] **METHODS AND APPARATUS RELATING TO THE FORMULATION AND TRADING OF RISK MANAGEMENT CONTRACTS**

[75] Inventor: **Ian K. Shepherd**, Toorak, Australia

[73] Assignees: **Swychco Infrastructure Services Pty. Ltd.**, Melbourne, Australia; **Swychco Support Services Pty. Ltd.**, Sydney, Australia

[21] Appl. No.: **08/070,136**

[22] Filed: **May 28, 1993**

[30] **Foreign Application Priority Data**

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Jun. 30, 1992 [AU] Australia ..... PL 3216

[51] **Int. Cl.**[6] **G06F 17/60**

[52] **U.S. Cl.** **705/37**; 705/4

[58] **Field of Search** 364/408; 705/4, 705/37

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[57] **ABSTRACT**

Methods and apparatus which deal with the management of risk relating to specified, yet unknown, future events are disclosed.

'Sponsor' stakeholders specify a particular product relating to an event or phenomenon for which there is a range of possible future outcomes.

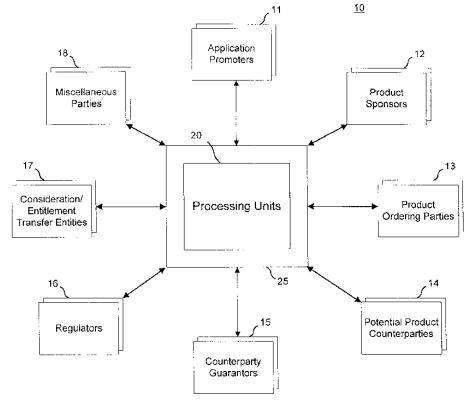
'Ordering' stakeholders then offer contracts relating to the predetermined phenomenon and corresponding range of outcomes. The offered contracts specify an entitlement or (pay-off) at the future time of maturity for each outcome, and a consideration (or premium) payable, in exchange, to a 'counter-party' stakeholder.

Independently of the offered contracts, the 'counter-party' stakeholders input data as to their view of the likelihood of occurrence of each outcome in the predetermined range into the future, or specifically at the predetermined date of maturity.

Each offered contract is priced by calculating counter-party premiums from the registered data, and a match attempted by a comparison of the offered premium with the calculated premiums.

Matched contracts can be further traded until maturity, and at-maturity processing handles the exchange of entitlement as between the matched parties to the contract.

39 Claims, 101 Drawing Sheets



records and debit records for exchange of predetermined obligations, the method comprising the steps of:

(a) creating a shadow credit record and debit record for each party to be held independently from the exchange institutions by a supervisory institution;

(b) obtaining from each exchange institution a start-of-day balance for each shadow credit record and debit record;

(c) for every transaction resulting in an exchange obligation, the supervisory institution adjusts each respective party's shadow credit record or debit record, allowing only those transactions that do not result in the value of the shadow debit record being less than the value of the shadow credit record at any time, each said adjustment taking place in chronological order; and

(d) at the end-of-day, the supervisory institution instructing ones of the exchange institutions to exchange credits or debits to the credit record and debit record of the respective parties in accordance with the adjustments of the said permitted transactions, the credits and debits being irrevocable, time invariant obligations placed on the exchange institutions.

The invention also encompasses apparatus and method dealing with the handling of contracts at maturity, and specifically the transfer of entitlement.

Therefore, in accordance with a further aspect of the invention, there is disclosed a method of exchanging obligations as between parties, each party holding a credit record and a debit record with an exchange institution, the credit

7. Description of Consideration/Entitlement Payment Process

The purpose of the CONTRACT APP consideration/entitlement (and related transactions) payment/receipt process is to effect debits and credits to INVENTCO stakeholder accounts, typically at maturity of a contract, with participating consideration/entitlement transfer (or exchange) entities, reflecting payment/receipt entitlements and obligations originated within INVENTCO. The process effects these payments/receipts in a two-stage process. First, by debiting/crediting, on a real-time basis, the relevant

shadow records (in the data file PAYACC SHADOW) of the applicable stakeholder accounts-with a participating consideration/entitlement transfer entity (C/E entity), external to INVENTCO, with which they maintain an account. And second, by periodically effecting, via existing and potential payment mechanisms, corresponding payment instructions to the payment entities concerned. Details of the above-described mechanism are as follows.

All INVENTCO stakeholders maintain (a minimum of) two special-purpose (net-credit balance only) accounts with (at least) one selected, VIRPRO authorised, C/E transfer entity. The purpose of special-purpose accounts is to ensure that only INVENTCO-initiated debits and credits are capable of being effected to the accounts. Thus, at any time the balance of each PAYACC SHADOW file account record should, be equivalent to the true, but usually unknown, time-of-day balance of the actual account maintained by the C/E transfer entity.

The purpose of two accounts is to enable only credits to be effected through one account and only debits through another account. And the purpose of "net-credit balance only" accounts is to ensure that accumulated debits to the debits-only account never exceed the account opening balance plus accumulated credits to the credits-only account. C/E transfer entities will typically be (but do not need to be) institutions of any/all of six types: public/private record-registries of various types; credit card companies (typically for retail transactions only); commercial banks; central banks; taxation authorities; and non-bank clearing houses and depositories.

The resources transferred by these entities may be of any type. However, most typically, they will be deposits appropriate for the entity concerned: With respect to public/private record-registries—entitlement deposits (including shares in financial or physical assets, participation rights in wagers, and so on). With respect to credit/debit card companies—normal card company deposits (denominated in national currencies or synthetic currencies (for example, SDRs)). With respect to commercial banks—normal bank deposits (denominated in national currencies or synthetic currencies (for example, SDRs)). With respect to central banks—exchange settlement account (or equivalent) deposits. With respect to taxation authorities—taxation account deposits. And with respect to non-bank clearing houses and depositories—deposits of financial instruments, precious metals and the like. CONTRACT APP potential counterparties will also effectively be C/E transfer entities, as will ordering party guarantors (external to INVENTCO) where they offer credit to product ordering parties. Also, some accounts will be trust accounts maintained on behalf of potential counterparties (and some product ordering parties) involved in applications requiring the periodic payment of collateral to independent third parties to serve as an additional security device.

Immediately after the completion of its daily—or more frequent—transaction processing, and their associated settlement functions, each C/E transfer entity electronically notifies the applicable CONTRACT APP of the "opening balances" of all the debit and credit INVENTCO accounts it maintains (At this stage, the debit account balance should be zero and the credit account balance should be greater than or equal to zero). Where an INVENTCO stakeholder has an overdraft or line-of-credit with its C/E transfer entity, the credit value of this will be reflected in the non-zero balance of its credit account at this time.

Upon receipt of the above-described notifications, the applicable CONTRACT APP updates/confirms its stakeholder shadow balances. Thus, at this point-in-time, all credit and debit shadow account balances should be equivalent to their actual debit and credit account balances.

Progressively throughout the day (where "day" here is likely to be different for each C/E transfer entity due to a combination of differences in the time-zone locations of payment entities in relation to the applicable CONTRACT APP, and the likely different account processing cycles of these entities), INVENTCO-stakeholder—authorised debits and credits to INVENTCO stakeholder shadow accounts are effected on a real-time basis—debits to debit accounts and credits to credit accounts. At all times, the CONTRACT APP ensures that the cumulative debit balance of each stakeholder's debits account does not exceed the "opening balance" plus the cumulative credit balance of the stakeholder's credit account. Thus, at any time, for every INVENTCO stakeholder, the combination of each stakeholder's debit account and credit account will represent the "true", net, time-of-day value of the stakeholder's two actual special-purpose accounts maintained external to INVENTCO.

Debits and credits to INVENTCO stakeholder accounts are effected according to strict rules and conditions, being different for credits and debits. Credits can be made to any INVENTCO stakeholder's credit account with its nominated C/E transfer entity by any other INVENTCO stakeholder for any reason. Naturally, as INVENTCO stakeholders will not know the account details of other stakeholders, such credits will be effected either automatically, according to information and rules known by the applicable CONTRACT APP, or semi-automatically by way of an INVENTCO stakeholder requesting from VIRPRO, as they need to do so, a credit-account number of the stakeholder to which they wish to transfer assets. This account number may only be valid for a nominated period and would not typically be the specified stakeholder's actual account number with its nominated consideration/entitlement transfer entity—it would only be a reference to an INVENTCO file containing this number.

On the other hand, debits can only be made to an INVENTCO stakeholder's debit account with its nominated C/E transfer entity by the stakeholder itself, and by other stakeholders explicitly granted this right by each stakeholder, subject to these other stakeholders exercising this right according to the rules and conditions specified for them.

Where an INVENTCO stakeholder seeks to initiate/authorise debits to its nominated account(s) on its own, this can only be done through the stakeholder satisfactorily completing the identification and security procedures set down by their C/E consideration/entitlement transfer entity (and reflected in VIRPRO-specified INVENTCO communication procedures). The type of procedure set down by all participating C/E transfer entities involves (at least) the following: First, the consideration/entitlement transfer entity supplying VIRPRO with a confidential file of account Pin numbers corresponding to each of its INVENTCO stakeholder debit accounts, and a similarly confidential "black box" which, by initiating any of a number of possible proprietary password request-response processes involving any one of its customers possessing the appropriate device (s), confirms that remote messages received from that customer, and processed by the "black box", are authentic. Second, the consideration/entitlement transfer entity supplying their INVENTCO customers with a programmable smart card (or equivalent device) enabling each customer, remotely—via telephone or direct computer line, to unambiguously confirm their identity with their INVENTCO-maintained account, thereby having the capability to autho-

rise debits to their account within predefined parameters concerning factors such as maximum transaction amounts, possible transaction types, account usage patterns and so on. Third, INVENTCO providing the mechanisms for direct, confidential, stakeholder communications with their C/E transfer entity shadow debit accounts, and the formal updating of these accounts, through non real-time processes, utilizing the unique time-stamped reference numbers created as/when stakeholders authorise access to their account records.

Where an INVENTCO stakeholder has authorised other INVENTCO stakeholders to initiate debits to (any of) its nominated account(s) according to a standing authority of some type, this can only be done through the authorised stakeholder itself satisfactorily completing the identification and security procedures set down by the authorisation-granting stakeholder's nominated C/E transfer entity (and reflected in VIRPRO-specified INVENTCO communication procedures). Once again, the type of procedure, set down by all participating C/E transfer entities in this respect, involves (at least) the following: First, the C/E transfer entity supplying VIRPRO with a confidential file of account Pin numbers corresponding to each of its INVENTCO stakeholder debit accounts and each other INVENTCO stakeholder which has been authorised to effect debits (within defined parameters) to these accounts. Second, the C/E transfer entity supplying VIRPRO with a similarly confidential black box which, by initiating any of a number of possible proprietary password request-response processes involving an entity nominated by any of its customers possessing the appropriate device(s), confirms that remote messages received from that authorised entity, and processed by the black box, are authentic. Third, the C/E transfer entity supplying their INVENTCO customers with a collection of programmable smart cards (or equivalent devices), for distribution to these authorised entities, enabling each authorised entity, remotely—via telephone or direct computer line—to unambiguously confirm their identity with the customer's PAYACC SHADOW account, thereby having the capability to authorise debits to this account (again, within predefined parameters concerning factors such as maximum transaction amounts, possible transaction types, account usage patterns and so on). And four, INVENTCO providing the mechanisms for direct, confidential, authorised stakeholder communications with a stakeholder's C/E transfer entity shadow debit account(s).

At the end of each C/E transfer entity's specified day (or part of a day), the applicable CONTRACT APP transfers (at least) two things to the entity: First, if required, a series of figures representing the exchange settlement (or equivalent) accounting entries it has or will communicate to the C/E transfer entity's appropriate clearing authority (for each of the applicable consideration/entitlement denomination, currency and national currency types of the payments/receipts involved) where these figures represent the balancing net debit or credit figure corresponding to the aggregation of all of the entity's INVENTCO customer transactions in the prior day. And second, a detailed file of all customer transactions effected during the day (corresponding, if required, to the above-described net figures). Upon their receipt of these transactions and summary figures, the C/E transfer entity then debits/credits each transaction to the appropriate actual customer accounts, enabling new "closing" account balances to be calculated (these "closing" balances should be exactly the same as the end-of-day balances communicated by the applicable CONTRACT APPS with it's file of customer transactions). In turn, these

"closing balances" become the C/E transfer entity's account "opening balances" for the next day. The CONTRACT APPS notification process then repeats itself.

Where applicable, at days-end for the "clearing house" of clusters of like C/E transfer entities (for example, a national central bank), CONTRACT APP transfers netted exchange settlement accounting entries to the clearing houses concerned. These entries serve to "balance the individual customer account entries transferred to each associated C/E transfer entity individually.

8. Industrial Applicability

The invention has industrial application in the use of electrical computing devices and data communications. The apparatus and methods described allow the management of risk in an automated manner by means of programming of the computing devices. The types of events associated with the risk management apparatus and methodologies includes physical and technical phenomena, and therefore have value in the field of economic endeavour.

33. A method of exchanging obligations as between parties, each party holding a credit record and a debit record with an exchange institution, the credit records and debit records for exchange of predetermined obligations, the method comprising the steps of:

(a) creating a shadow credit record and a shadow debit record for each stakeholder party to be held independently by a supervisory institution from the exchange institutions;

(b) obtaining from each exchange institution a start-of-day balance for each shadow credit record and shadow debit record;

(c) for every transaction resulting in an exchange obligation, the supervisory institution adjusting each respective party's shadow credit record or shadow debit record, allowing only these transactions that do not result in the value of the shadow debit record being less than the value of the shadow credit record at any time, each said adjustment taking place in chronological order; and

(d) at the end-of-day, the supervisory institution instructing ones of the exchange institutions to exchange credits or debits to the credit record and debit record of the respective parties in accordance with the adjustments of the said permitted transactions, the credits and debits being irrevocable, time invariant obligations placed on the exchange institutions.

34. The method as in claim **33**, wherein the end-of-day instructions represent credits and debits netted throughout the day for each party in respect of all the transactions of that day.