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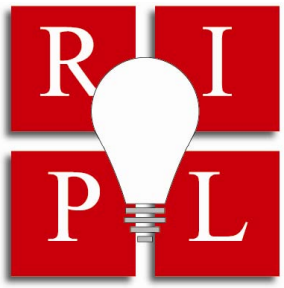

CLS BANK V. ALICE CORP.: WHAT DOES IT MEAN FOR SOFTWARE PATENT ELIGIBILITY?

CHARLES F. GREEN

ABSTRACT

For more than forty years, patent attorneys, software engineers, examiners, and judges have debated the patent eligibility of software. For most of the 1980s and 90s, the USPTO has viewed software as generally patent-eligible subject matter. Starting with the *State Street v. Signature Financial* case in 1998, courts have examined subject matter patent eligibility with greater scrutiny. This comment reviews six recent software patent eligibility cases, of which the court upheld software's eligibility twice and rejected its eligibility four other times. In particular, the *CLS Bank v. Alice Corp.* case serves as a basis for examining several approaches to the topic. This comment proposes a standard which deems software patent subject matter eligible when an alternate dedicated hardware expression of the invention exists. The proposal also gleans the lessons of the recent cases to avoid potential pitfalls. This standard provides clarity and allows all interested parties to know upfront a software invention's subject matter patent eligibility.

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I. INTRODUCTION

One of the first companies to come to mind when thinking about software patents is the ubiquitous Microsoft®. Today, Microsoft holds more than 21,000 U.S. patents, but the company's legal department has not always been so prolific.[1] As late as 1987, Microsoft held just one patent,[2] which covered a plastic book holder.[3] Three years later, the situation remained much the same, with Microsoft increasing its patent portfolio to just five patents.[4]

As Microsoft approached its twentieth birthday in 1995, patents continued to be an elusive conquest.[5] At the dawn of the internet age, Microsoft brandished only seventy-seven patents following the release of Windows 95®.[6] Bill Gates subsequently heightened Microsoft's focus on intellectual property, specifically software patents, and they embarked on a full-throttle pursuit of software patents.[7] While 1975 to 1995 marked a relative dearth for Microsoft patents, 1995 to the

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[1] *Patents*, MICROSOFT (Feb. 19, 2014), http://www.microsoft.com/en-us/legal/intellectualproperty/patents/default.aspx?Search=true#dl [hereinafter *Patents*] (click on "Download Entire List" to download a CSV spreadsheet of the entire list of active Microsoft patents).

[2] *Microsoft's Patents*, N.Y. TIMES (July 30, 2005), http://www.nytimes.com/imagepages/2005/07/30/business/yourmoney/20050731_DIGI_GRAPHIC.html [hereinafter *Microsoft's Patents*].

[3] *Id.*; *see generally* U.S. Patent No. 4,588,074 (filed Mar. 21, 1985).

[4] *Microsoft's Patents*, *supra* note 2; U.S. Patent No. 4,779,187 (filed Apr. 10, 1985); U.S. Patent No. 4,825,358 (filed June 18, 1987); U.S. Patent No. D302,426 (filed Sept. 1, 1987); U.S. Patent No. 4,866,602 (filed Nov. 9, 1987).

[5] NICHOLAS CARR, THE BIG SWITCH: REWIRING THE WORLD, FROM EDISON TO GOOGLE 54 (1st ed. 2009).

[6] *Microsoft's Patents*, *supra* note 2; Ronald J. Vetter et al., *Mosaic and the World-Wide Web*, 27 COMPUTER 49, 49 (1994) (listing 1993 as the launch of the NCSA Mosaic web browser, the first popular interface to the world-wide web), *available at* http://vision.unipv.it/wdt-cim/articoli/00318591.pdf.

[7] Timothy B. Lee, *Analysis: Microsoft's Software Patent Flip–Flop*, ARS TECHNICA (Mar. 13 2007, 9:37 AM), http://arstechnica.com/business/2007/03/analysis-microsofts-software-patent-flip-flop/; *see also* Memorandum from Bill Gates to Microsoft Management (May 16, 1991), *available at* http://antitrust.slated.org/www.iowaconsumercase.org/011607/0000/PX00738.pdf. The patent office released a set of guidelines in 1995 to assist examiners handling software patent applications. *Examination Guidelines for Computer-Related Inventions*, USPTO, http://www.uspto.gov/web/offices/pac/dapp/pdf/ciig.pdf (last visited on Dec. 25, 2013) [hereinafter *USPTO Examination Guidelines*]; Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478, 7479 (1996) [hereinafter Examination Guidelines].

present stands in stark contrast.[8] Over the last two decades, Microsoft has become a patent printing machine, obtaining more than 2,000 patents annually.[9]

The Microsoft patent story reveals several findings. First, Microsoft understands the value of protecting intellectual property and obtaining patents. Second, Microsoft remains committed to pursuing innovation. Third, with $7 billion in annual research and development (R&D) expenditures, Microsoft actually trails an industry trend of two issued patents per $1 million in R&D spending.[10]

Software plays a large role in the direction of technology, and the ability to patent it could affect whether some companies continue to develop it.[11] Since granting the first software patent in 1968,[12] the USPTO has granted more than 400,000 software patents;[13] in 2012 alone, it granted more than 50,000.[14] Software has come a long way since the days of punch cards and DOS®, and software continues to play an important role in technology.

In recent years, patent litigation has increased significantly, with a compounded annual rate of seven percent since 1991.[15] One study determined that forty-six

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[8] Microsoft obtained their 10,000th patent in February 2009. Austin Modine, *Microsoft Celebrates 10,000 US Patents*, REGISTER (Feb. 11, 2009), http://www.theregister.co.uk/2009/02/11/microsoft_10000_patents/.

[9] *Patents*, *supra* note 1.

[10] Randall Stross, *Why Bill Gates Wants 3,000 New Patents*, N.Y. TIMES (July 31, 2005), http://www.nytimes.com/2005/07/31/business/yourmoney/31digi.html?pagewanted=1&_r=1.

[11] *Top 10 Jobs for 2013*, FORBES, http://www.forbes.com/pictures/efkk45mkkh/top-10-jobs-for-2013/ (click on right arrow to see slides one through ten) (last visited Dec. 27, 2013) (showing three of the top ten growth jobs relate directly to software while all of the top ten jobs use software). According to *Forbes*, the top ten jobs for 2013 are: (1) Software Developers (Applications and Systems Software), (2) Accountants and Auditors, (3) Market Research Analysts and Marketing Specialists, (4) Computer Systems Analysts, (5) Human Resources, Training and Labor Relations Specialists, (6) Network and Computer Systems Administrators, (7) Sales Representatives (Wholesale and Manufacturing, Technical and Scientific), (8) [not listed] (9) Mechanical Engineers, and (10) Industrial Engineers. *Id.*

[12] Gina Smith, *Unsung Innovators: Marty Goetz, Holder of First Software Patent*, COMPUTERWORLD (Dec. 3, 2007, 12:00 PM), http://www.computerworld.com/s/article/9046646/Unsung_innovators_Marty_Goetz_holder_of_first_software_patent/index.html?taxonomyId=154&pageNumber=1. Marty Goetz, holder of the first software patent, pressed IBM and other hardware manufacturers to unbundle software from hardware, and via a series of lawsuits, convinced IBM to unbundle its software in 1969. *IBM Archives: 1969*, IBM, http://www-03.ibm.com/ibm/history/history/year_1969.html (last visited Dec. 24, 2013).

[13] PATENT TECHNOLOGY MONITORING TEAM REPORT, *Patent Statistics for Electrical Computers, Digital Processing Systems, Information Security, and Error/Fault Handling*, U.S. PAT. & TRADEMARK OFFICE, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/ec_dps_is_efh.htm (last modified Apr. 5, 2013).

[14] *Id.* (listing patent statistics for classes 700–19 and 726).

[15] CHRIS BARRY ET AL., 2013 PATENT LITIGATION STUDY: BIG CASES MAKE HEADLINES, WHILE PATENT CASES PROLIFERATE 6 (PricewaterhouseCoopers 2013), *available at* http://www.pwc.com/en_US/us/forensic-services/publications/assets/2013-patent-litigation-study.pdf. In 2010, litigants filed about 2,892 new patent infringement cases. Chris Barry, et al., PricewaterhouseCoopers, 2011 Patent Litigation Survey 8 (2011), *available at* h*ttp://www.pwc.com/us/en/forensic-services/publications/2011-patent-litigation-study.jhtml.* In 2011, the number of new patent infringement cases jumped to 4,015. Chris Barry, et al., PricewaterhouseCoopers, 2012 Patent Litigation Survey 6 (2012), *available at http://www.pwc.com/us/en/forensic-services/publications/2012-patent-litigation-study.jhtml.* In 2012, the number went up twenty–nine percent to 5,189 new patent infringement cases. 2013

percent of all new patent infringement suits filed between 2007 and 2011 involved software.[16] The same study determined that software patents accounted for eighty-nine percent of the increase in patent litigation over the same period.[17] One reason for a rise in patent litigation could be related to an increase in non-practicing entities (NPE).[18]

A clear patent eligibility standard for software would help to cut down on patent litigation because parties could refer to the standard and have a much better idea of the legitimacy of a suit prior to going to court.[19] This comment discusses and proposes a software subject matter patent eligibility standard based on the ability to express the software as a hardware equivalent.

Part II furnishes a background for software patent eligibility and elaborates with the applicable statutes and cases. Part III analyzes the recent software patent eligibility cases, including *CLS Bank v. Alice Corp*.[20] Part IV proposes a software patent eligibility standard in light of these cases.

Patent Litigation Survey 6 (2013), *available at* http://www.pwc.com/en_US/us/forensic-services/publications/assets/2013-patent-litigation-study.pdf.

[16] U. S. GOV'T ACCOUNTABILITY OFFICE, GAO–13–465, INTELLECTUAL PROPERTY: ASSESSING FACTORS THAT AFFECT PATENT INFRINGEMENT LITIGATION COULD HELP IMPROVE PATENT QUALITY 21 (2013), *available at* http://www.gao.gov/assets/660/657103.pdf.

[17] *Id.*

[18] Brief of *Amicus Curiae* Electronic Frontier Foundation in Support of Grant of Petition at 5–6, CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269 (Fed. Cir. 2013) (*en banc*), *available at* http://www.alicecorp.com/downloads/13-298_tsac_EFF.pdf; *see also* Brief of *Amicus Curiae* Gibbons Institute of Law, Science and Technology in Support of Neither Party at 10, CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269 (Fed. Cir. 2013) (*en banc*), *available at* http://www.alicecorp.com/downloads/13-298%20Gibbons%20Institute.pdf. Judge Richard Posner defines non-practicing entities as "companies that acquire patents . . . to lay traps for producers" rather than the traditional reason for holding a patent—to protect a product a company produces. Richard A. Posner, *Why There Are Too Many Patents in America*, The Atlantic (July 12, 2012, 10:20 AM), http://www.theatlantic.com/business/archive/2012/07/why-there-are-too-many-patents-in-america/259725/index.html. One survey estimated the cost of patent assertions by non-practicing entites consumed $29 billion in 2011 alone. James Bessen & Michael J. Meuer, *The Direct Costs from NPE Disputes*, 99 CORNELL L. REV. 387 (2014). NPE litigation increased from five percent of patent litigation to more than sixty percent for the last decade. Bessen & Meuer, *The Direct Costs from NPE Disputes*, at 412–13. Looking at the years 1984 to 1999, when NPEs were not a significant problem, one study nevertheless found the overall patent system to be a net tax. JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS AND LAWYERS PUT INNOVATORS AT RISK 138–146 (2008). Bessen and Meuer attribute these problems to a lack of notice regarding patent rights, and a clear software subject–matter patent eligibility standard would help to solve them. Bessen & Meuer, *The Direct Costs from NPE Disputes*, at 418.

[19] Brief of Electronic Frontier Foundation, *supra* note 18, at 4; *see also* Brief of Gibbons Institute, *supra* note 18, at 14. The Gibbons Institute's *amicus curiae* brief for the *CLS Bank* case discusses several scenarios related to trade secrets and patenting of software inventions. Brief of Gibbons Institute, *supra* note 18, at 5–7. Disclosure of software ideas and possible software inventions depends upon an *ex ante* determination of software patent eligibility. *Id.* at 7. Further, it proposes the need for a clear software patent eligibility standard when a technology consortium pools patents to produce industry standards. *Id.* at 9. Such patent pools help to develop the sewing machine, radio, aircraft, and DVD industries among others. *Id.* at 9. Without a clear software subject–matter patent eligibility standard, licensing becomes confusing and needless litigation results. *Id.* at 9.

[20] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1269, 1272 (Fed. Cir. 2013) (*en banc*).

II. BACKGROUND

This part lays the groundwork with a description of the applicable statutes for software patent eligibility followed by case law. A discussion of recent software cases includes an examination of *CLS Bank v. Alice Corp.*

A. Software Patent Eligibility Doctrine

To be eligible for a U.S. patent, an invention must meet several criteria. Subject matter eligibility is defined in 35 U.S.C. § 101, which says that any "process, machine, manufacture, or composition of matter" or improvement thereof may be eligible for a patent.[21] Section 102 discusses novelty, a concept sometimes intertwined with subject matter eligibility.[22] Section 103, directed to non-obviousness, says that an obvious derivative of prior art is not patentable.[23] Other requirements exist, such as an enabling written description.[24] This article will examine subject matter eligibility for software patents.

After the USPTO granted the first software patent in 1968, a line of Supreme Court cases examined in more detail the patent eligibility of software. The first case, *Gottschalk v. Benson*, involved a BCD to decimal number converter using a shift register.[25] The Court found the conversion process to be "so abstract and sweeping as to cover both known and unknown uses" and invalidated the patent.[26]

In 1978, the Supreme Court again examined the patent eligibility of software. In *Parker v. Flook*, the patent application in question described a method for adjusting alarm limits in the catalytic conversion of hydrocarbons.[27] The Court found the process to be patent ineligible because the application essentially attempted to patent a formula.[28] The addition of calculating alarm limits did not add enough to the application to make it worthy of protection.[29] Hence, at the end of the 1970s, the future of software patents looked bleak.

In 1980, the Supreme Court further re-examined subject matter eligibility. In *Diamond v. Chakabarty*, the Court re-iterated the holding that "anything under the sun" made by man is patent-eligible.[30] While *Chakabarty* dealt with a genetically

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[21] 35 U.S.C. § 101 (2012).

[22] 35 U.S.C. § 102.

[23] 35 U.S.C. § 103.

[24] 35 U.S.C. § 112.

[25] Gottschalk v. Benson, 409 U.S. 63, 64 (1972). Decimal number 25 converts to 0010 0101 in BCD because decimal 2 equals 0010 ((0*8)+(0*4)+(1*2)+(0*1)) in binary and 5 equals 0101 ((0*8)+(1*4)+(1*1)+(0*1)) in binary. In pure binary, decimal 25 equates to 11001 ((1*16)+(1*8)+(0*4)+(0*2)+(1*1)). Assembly language software uses a shift register to store a number for later use, such as in an accumulation-type function. In the case at issue, a shift register stores the partial results for each of the above calculations. *Id.* at 73.

[26] *Id.* at 68.

[27] Parker v. Flook, 437 U.S. 584, 585–86 (1978).

[28] *Id.* at 594–95.

[29] *Id.*

[30] Diamond v. Chakabarty, 447 U.S. 303, 309 (1980).

modified bacterium capable of breaking down crude oil[31], its holding has a wide effect across multiple technologies.[32]

On the heels of the *Chakabarty* decision, the Supreme Court looked at the patent eligibility of software in *Diamond v. Diehr*. The case dealt with the patent eligibility of a process to cure synthetic rubber.[33] The process uses the well-known Arrhenius equation to determine when to open the mold.[34] The iterative process of constantly measuring the mold temperature and re-calculating the cure time[35] allowed the Court to declare the application to be subject matter eligible.[36] The use of a well-known formula did not bar the application from being patent-eligible because the applicant claimed an industrial process, not an abstract formula.[37]

For most of the 1980s and '90s, courts held software to be generally patent-eligible.[38] In 1998, courts began examining a string of financial software patents, starting with *State Street Bank v. Signature Financial*.[39] Signature Financial created the Hub and Spoke® system, where mutual funds ("Spokes") are pooled together in a portfolio ("Hub") to give a financial administrator greater leverage in transactions while garnering a partnership's tax advantages.[40] The software allowed for daily re-balancing of mutual fund assets and calculation of underlying security percentages.[41] In Judge Rich's Federal Circuit opinion, the court held inventions to be patent-eligible when they produce a "useful, concrete, and tangible result," even if the useful result is a number.[42] The court reversed and remanded, holding Signature Financial's software to be patent-eligible.[43]

Later that same year, the Federal Circuit ruled on an application by Bernard Bilski and Rand Warsaw.[44] The court enunciated the "machine-or-transformation" test to determine subject matter eligibility.[45] The same case eventually went to the Supreme Court as *Bilski v. Kappos*.[46] The Supreme Court did not strike down the machine-or-transformation test but said that the test represents just one among several tests for patent eligibility.[47] This ruling raised the bar for subject matter

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[31] *Id.* at 305.

[32] *Id.* at 315.

[33] Diamond v. Diehr, 450 U.S. 175, 177 (1981).

[34] *Id.* at 178–79. The Arrhenius equation is $k=A*\exp(-E_a/(RT))$, where k is the chemical rate constant, A is a scaling factor, E_a is the activation energy, R is the universal gas constant (8.31 Joules/Kelvin•mole), and T is the temperature. *The Arrhenius Equation*, SHODOR EDUC. FOUND., http://www.shodor.org/unchem/advanced/kin/arrhenius.html (last visited Dec. 25, 2013).

[35] *Diehr*, 450 U.S. at 178–79.

[36] *Id.* at 188.

[37] *Id.* at 192–93.

[38] Daniel A. Tysver, *The History of Software Patents: From Benson, Flook, and Diehr to Bilski and Mayo v. Prometheus*, BITLAW, http://www.bitlaw.com/software-patent/history.html (last visited Oct. 10, 2013). In 1996, the USPTO created a set of guidelines for assessing software's patentability. *USPTO Examination Guidelines*, *supra* note 7; Examination Guidelines, *supra* note 7, at 7479.

[39] State St. Bank v. Signature Fin. Grp., 149 F.3d 1368, 1370 (Fed. Cir. 1998).

[40] *Id.*

[41] *Id.* at 1371.

[42] *Id.* at 1375.

[43] *Id.* at 1377.

[44] *In re* Bilski, 545 F.3d 943, 949 (Fed. Cir. 2008).

[45] *Id.* at 961.

[46] Bilski v. Kappos, 130 S. Ct. 3218, 3218 (2010).

[47] *Id.* at 3231.

eligibility and left the patent community looking for clarity regarding Section 101 patent eligibility.

B. Recent Software Cases

Bilski revealed cracks in the foundation for software patent eligibility and recent cases have continued this trend. The six main Federal Circuit decisions involving software patent eligibility under section 101 since *Bilski* have failed to provide clarity.[48] The Federal Circuit ruled against software patent eligibility in three cases not including *CLS Bank*, and in favor of software patent eligibility in two other cases.[49] The Federal Circuit held the software to be patent-ineligible in *CyberSource v. Retail Decisions*,[50] *DealerTrack v. Huber*,[51] and *Fort Properties v. American Master Lease*.[52] Alternatively, the court found for software patent eligibility in *Research Corporation Technologies v. Microsoft*[53] and *Ultramercial v. Hulu*.[54] Without even considering the *CLS Bank* case, these five additional cases reveal a split within the Federal Circuit decisions regarding the patent eligibility of software. These five cases will be examined in more detail in the Analysis section.

While the *Ultramercial* case awaits consideration of its certiorari petition,[55] the Supreme Court has agreed to hear another IP case, *CLS Bank v. Alice Corporation*.[56] In May 2013, the Federal Circuit ruled on *CLS Bank* after sifting through twenty-four *amicus curiae* briefs.[57] The case deals with Alice Corp.'s financial transaction management system that intervenes prior to transaction fulfillment and, similar to

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[48] CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366, 1376–77 (Fed. Cir. 2011); DealerTrack, Inc. v. Huber, 674 F.3d 1315, 1334–35 (Fed. Cir. 2012); Fort Props., Inc. v. Am. Master Lease, LLC, 671 F.3d 1317, 1324 (Fed Cir. 2012); Research Corp. Techs. v. Microsoft Corp., 627 F.3d 859, 869 (Fed. Cir. 2010); Ultramercial, Inc. v. Hulu, LLC, 722 F.3d 1335, 1350, 1353 (Fed. Cir. 2013).

[49] *CyberSource Corp.*, 654 F.3d at 1376–77; *DealerTrack, Inc.*, 674 F.3d at 1334–35; *Fort Props., Inc.*, 671 F.3d at 1324; *Research Corp. Techs.*, 627 F.3d at 869; *Ultramercial, Inc.*, 722 F.3d at 1350, 1353.

[50] *CyberSource Corp.*, 654 F.3d at 1376–77.

[51] *DealerTrack, Inc.*, 674 F.3d at 1334–35.

[52] *Fort Props., Inc.*, 671 F.3d at 1324.

[53] *Research Corp. Techs.*, 627 F.3d at 869.

[54] *Ultramercial, Inc.*, 722 F.3d at 1350, 1353.

[55] *WildTangent, Inc. v. Ultramercial, LLC*, SCOTUSBLOG, http://www.scotusblog.com/case-files/cases/wildtangent-inc-v-ultramercial-llc/ (last visited Dec. 26, 2013). The parties filed a writ of certiorari on August 23, 2013. *Id.*

[56] Ashby Jones, *Can Software Be Patented? Supreme Court to Decide*, WALL ST. J. L. BLOG (Dec. 6, 2013 2:51 PM), http://blogs.wsj.com/law/2013/12/06/supreme-court-to-weigh-whether-software-is-patentable/index.html.

[57] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1269–72 (Fed. Cir. 2013) (*en banc*). Emphasizing the importance of the issues involved, companies such as IBM, Google, and Philips Electronics, as well as the USPTO, AIPLA, IPLAC, and NYIPLA, among others all filed *amicus curiae* briefs prior to issuance of the Federal Appeals Court opinion. *Id.* at 1269–72. When Alice Corp. filed a writ of certiorari, a new set of amicus curiae briefs appeared from Accenture, IEEE, IPLAC, and NYIPLA, among others. *Patents*, ALICE CORP., http://www.alicecorp.com/fs_patents.html (last visited Dec. 25, 2013).

escrow, verifies and ensures each party's ability to settle its financial obligations.[58] The Federal Circuit, *en banc*, lacking a comprehensive majority opinion, affirmed the lower court's rejection of patent eligibility.[59] The case gives some insight into the different Federal circuit appellate judges' opinions about the patent eligibility of software, but none of the concurrences and dissents has the force of law.[60]

III. ANALYSIS

Although software remains patent-eligible after *Bilski*, subsequent cases have applied the criteria inconsistently. This part begins with a discussion of several software patent cases decided after *Bilski* and follows with analysis and comparison of *CLS Bank* and *Ultramercial.*[61] Comparing the recent software patent cases with each other reveals a split in the federal circuit. The analysis section illuminates the differences in these cases and provides a foundation for a software patent eligibility standard.

A. Research Corporation Technologies v. Microsoft

Research Corp. Tech. v. Microsoft is the first of several significant software patent cases decided after *Bilski*.[62] The technology in question deals with a method of creating halftone images from grayscale images.[63] The panel of Judges Rader, Newman, and Plager viewed the subject matter eligibility inquiry as a threshold

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[58] *CLS Bank Int'l*, 717 F.3d at 1274 (Lourie, J., concurring). In a typical financial transaction, the parties make an agreement several days before exchanging money. *Id.* In the meantime, occasionally one of the parties becomes unable to fulfill their financial obligation. Alice Corp.'s computerized system uses a trusted third party to remove settlement risk from financial transactions. *Id.*; *see infra* note 113 for a discussion of escrow.

[59] *CLS Bank Int'l*, 717 F.3d at 1273 (*per curiam*).

[60] *Id.* at 1274 n.1 (Lourie, J., concurring).

[61] *Id. at* 1269–73 (*en banc*); Ultramercial, Inc. v. Hulu, LLC, 722 F.3d 1335, 1335 (Fed. Cir. 2013).

[62] Research Corp. Techs. v. Microsoft Corp., 627 F.3d 859, 862 (Fed. Cir. 2010). A very recent case not significantly addressed in this comment, *Accenture Global Services, v. Guidewire Software*, held a software patent application to be an abstract concept of "generating tasks [based on] rules . . . to be completed upon the occurrence of an event" and patent ineligible. Accenture Global Servs. v. Guidewire Software, Inc., 728 F.3d 1336, 1344 (Fed. Cir. 2013) (quoting U.S. Patent No. 7,013,284 (filed May 4, 1999)). The Accenture patents deal with software used in storing, retrieving, and manipulating insurance data and tasks, such as policy holder, policy level, claim information, and related data. '284 Patent.

[63] *Research Corp. Techs.*, 627 F.3d at 862. Half tone images consist of a series of various size dots that blend together to form shades of gray when viewed at an appropriate distance. *Halftone*, MERRIAM-WEBSTER, http://www.merriam-webster.com/dictionary/halftone (last visited Oct. 10, 2013). This technique enabled publishers to print photographs in books and newspapers at the turn of the 20th century using one color of black ink while obtaining the mirage of shades of gray. *Printed Halftone*, FEDERAL AGENCIES DIGITIZATION GUIDELINES INITIATIVE, http://www.digitizationguidelines.gov/term.php?term=printedhalftone (last visited Dec. 25, 2013). Publishers have expanded this technique to use four colors of ink (cyan, magenta, yellow, and black) to obtain millions of colors as perceived by the eye. *Halftones*, ABOUT.COM, http://desktoppub.about.com/cs/halftones/a/halftones.htm (last visited Dec. 25, 2013).

test.[64] Because the laws of nature and physical phenomena exceptions did not apply to this case, the court looked to the abstractness exception.[65] Chief Judge Rader found the use of specific film and computer components as well as detailed software functionality in Research Corporation Technologies' claims overcame the abstract hurdle.[66] Similar to *Diehr*, the court found the inclusion of algorithms and formulae failed to disqualify the subject matter eligibility or to render the claims abstract.[67]

B. CyberSource v. Retail Decisions

Starting with *CyberSource*, the Federal Circuit ruled against patent eligibility in a trilogy of software cases.[68] Contrary to the holding in *Microsoft*, the *CyberSource* court found the patent to be abstract and subject matter ineligible.[69] The CyberSource patent involved a method of detecting fraudulent Internet transactions.[70] Writing in a post-*Bilski* world, Judge Dyk found the machine-or-transformation test to be helpful, but not the only indicator of subject matter eligibility.[71] The court stated that more than human intelligence needs to be added to the underlying concept to make it eligible subject matter.[72] Also, reciting mere data-gathering steps fails to tip the scale to patent-eligible.[73] The court rejected CyberSource's contention that their *Beauregard* claim categorically failed to fall into one of Section 101's three subject matter exceptions.[74] Regardless of which Section 101 eligible category the applicant claims, subject matter patent eligibility hinges on the underlying concept.[75] A machine (a computer in the *CyberSource* case) must impose meaningful limits on the claim scope and thereby play a significant role for the claimed method.[76] The court found that CyberSource failed to claim patent-eligible subject matter, and the court rejected the claims as abstract mental processes.[77]

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[64] *Research Corp. Techs.*, 627 F.3d at 868; *see* Bilski v. Kappos, 130 S. Ct. 3218, 3225 (2010).

[65] *Research Corp. Techs.*, 627 F.3d at 868.

[66] *Id.* at 868–69.

[67] *Id.* at 869; Diamond v. Diehr, 450 U.S. 175, 185 (1981).

[68] CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366, 1376–77 (Fed. Cir. 2011); DealerTrack, Inc. v. Huber, 674 F.3d 1315, 1334–35 (Fed. Cir. 2012); Fort Props., Inc. v. Am. Master Lease, LLC, 671 F.3d 1317, 1324 (Fed Cir. 2012).

[69] *CyberSource Corp.*, 654 F.3d at 1376–77.

[70] *Id.* at 1367. CyberSource's patent uses Internet Protocol (IP) addresses, Media Access Control (MAC) addresses, e-mail addresses, and other electronic identity information to verify credit card transactions. *Id.* at 1367–68.

[71] *Id.* at 1369. Judges Prost and Bryson joined Judge Dyk's opinion. *Id.* at 1366–67.

[72] *Id.* at 1371.

[73] *Id.* at 1370.

[74] *Id.* at 1374–75 (Fed. Cir. 2011); *In re* Beauregard, 53 F.3d 1583, 1584 (Fed. Cir. 1995). A Beauregard claim asserts a data storage device (e.g. a hard drive) holding compiled software instructions executable by a computer processor. *Beauregard*, 53 F.3d at 1584. *See infra* note 112 for Section 101's three exceptions.

[75] *CyberSource Corp.*, 654 F.3d at 1374.

[76] *Id.* at 1375.

[77] *Id.* at 1376–77.

C. DealerTrack v. Huber

Similar to the *CyberSource* holding regarding abstractness, the *DealerTrack* court found the patent to be abstract and ineligible for patenting.[78] The DealerTrack patent created a method of coordinating car loans and eliminating paperwork.[79] The court applied the machine portion of the machine-or-transformation test.[80] DealerTrack did not argue that the claims described a transformation, so the court ignored that portion of the test.[81]

The court looked at several sub-issues related to abstractness. Although the phrase "computer aided method" appeared in a claim's preamble, DealerTrack provided no further explanation of the phrase.[82] Similarly, the court construed the claims to lack a limit to a particular algorithm or a specific computer.[83] The court found that limiting the application to the car loan field did not provide a sufficient limitation to make the otherwise abstract claims patent-eligible.[84] However, the dissent felt that the *DealerTrack* case and similar cases should be decided based on Sections 102, 103, 112, and 251 and not on Section 101 unless absolutely necessary.[85] Similarly to other post-*Bilski* cases, the *DealerTrack* court decided the subject matter patent eligibility issue based primarily on the machine-or-transformation test and an analysis for abstract claims.[86]

D. Fort Properties v. American Master Lease

Like *DealerTrack*, the *Fort Properties* court applied the machine-or-transformation test and found that the claims lacked a connection to a particular machine or apparatus, in this case because the method could be executed without a computer.[87] The patent dealt with a method of aggregating real estate transactions into a portfolio to take advantage of the IRS regulation allowing tax avoidance when the property is exchanged for a higher-priced property.[88] The claimed "deedshare" (a partial ownership of a portfolio of properties) could not provide the transformation

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[78] DealerTrack, Inc. v. Huber, 674 F.3d 1315, 1334–35 (Fed. Cir. 2012).

[79] *Id.* at 1317–18.

[80] *Id.* at 1332, 1334, 1335. The court also reiterated the four patent–eligible categories of Section 101 along with the three main exceptions. *Id.*; 35 U.S.C. § 101 (2012).

[81] *DealerTrack, Inc.*, 674 F.3d at 1332.

[82] *Id.* at 1331–32.

[83] *Id.* at 1333–34.

[84] *Id.* at 1334.

[85] *Id.* at 1335 (Plager, J., dissenting); 35 U.S.C. §§ 102, 103, 112, 251 (2012).

[86] *Id.* at 1330–35.

[87] Fort Props., Inc. v. Am. Master Lease, LLC, 671 F.3d 1317, 1319, 1320, 1323 (Fed Cir. 2012).

[88] *Fort Props., Inc.*, 671 F.3d at 1318. The invention takes advantage of the Internal Revenue Code's provision allowing tax liability avoidance by exchanging real estate for a higher priced property. 26 U.S.C. § 1031 (2012). The method requires aggregating multiple properties in a portfolio and selling portfolio shares, called "deedshares." *Fort Props., Inc.*, 671 F.3d at 1318–19. Owners may encumber deedshares with mortgages and appoint managers over multiple deedshares to perform landlord-type duties. *Id.* at 1319.

because American Master Lease ("AML") did not claim a physical object, just an ownership right.[89]

The court found that the tax avoidance process is a purely mental process and that physical world connections do not change that finding.[90] Similar to the rule in *CyberSource*, simply performing the abstract idea on a computer or embedding it in a computer program fails to make the claims non-abstract because the computer did not add meaningful claim limitations.[91] The court ruled the underlying concept of tax avoidance to be patent-ineligible by itself because it would preclude all others from using the abstract idea.[92] Limiting the tax avoidance to the energy market fails to make the application patent-eligible.[93] Despite coming after *Bilski*, the court found the AML patent to be subject matter ineligible primarily under the machine-or-transformation test.[94]

E. CLS Bank v. Alice Corp.

Following in the footsteps of the previous trilogy of software cases that rejected subject matter eligibility, the *CLS Bank* court denied eligibility to Alice Corp.'s patents.[95] The patented technology relates to verifying another party's ability to pay prior to executing a financial transaction.[96] The *CLS Bank* decision contains seven opinions including the fifty-eight word majority opinion.[97]

Judge Lourie divided the claims into method, system, and computer-readable media claims.[98] Judge Lourie analyzed the claims for subject matter eligibility using a four-step test: (1) See if a section 101 statutory class covers the invention;[99] (2) Determine if one of the section 101 exceptions applies;[100] (3) Ensure fundamental laws remain available[101] by performing a preemption analysis using the central idea of the claims;[102] and (4) Identify substantive limitations that restrict otherwise abstract claims.[103] Plain field-of-use claim limitations do not render a fundamental concept patent-eligible.[104] Moreover, adding generic computer functionality for efficiency or speed reasons fails to limit claim scope for patent eligibility.[105]

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[89] *Fort Props., Inc.*, 671 F.3d at 1322.

[90] *Id.*

[91] *Id.* at 1323; CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366, 1374–75 (Fed. Cir. 2011); *In re* Bilski, 545 F.3d 943, 963 (Fed. Cir. 2008).

[92] *Fort Props., Inc.*, 671 F.3d at 1324.

[93] *Id.* at 1323.

[94] *Id.* at 1319, 1320, 1323.

[95] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1273 (Fed. Cir. 2013) (*en banc*).

[96] *Id.* at 1274 (Lourie, J., concurring).

[97] *Id.* at 1273–336.

[98] *Id.* at 1285, 1287, 1289 (Lourie, J., concurring).

[99] *Id.* at 1282.

[100] *Id.*

[101] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1280 (Fed. Cir. 2013) (Lourie, J., concurring) (quoting Funk Bros. Seed Co. v. Kalo Inoculant, 333 U.S. 127, 130 (1948)).

[102] *Id.* at 1282.

[103] *Id.*

[104] *Id.* at 1283–84.

[105] *Id.* at 1286.

Applying Alice's patents to the above criteria, Judge Lourie rejected all the claims.[106] Judge Lourie also found that every general-purpose computer would include "a computer," "a data storage unit," and "a communications controller" and thereby could execute the generic and abstract system functions claimed in Alice's patents.[107] Judge Lourie found the method claims to be patent-ineligible because they did not add "significantly more" to the basic abstract concepts.[108]

Chief Judge Rader divided the claims into two sections.[109] In the first section, he upheld the system claims as patent-eligible claims.[110] Chief Judge Rader pointed out that Congress intended Section 101 to have broad inclusivity.[111] Therefore, to avoid eviscerating patent law, the three exceptions to Section 101 should not be interpreted broadly.[112]

In Chief Judge Rader's second section, he rejected the patent eligibility of the method and computer-readable media claims.[113] With regard to computers, an applicant claiming a specific method of using a computer or a use of a specific computer will likely make the application patent-eligible.[114] Also, when a computer

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[106] *Id.* at 1292. Analysis of the claims used a claim-by-claim approach with regard to subject matter eligibility. *Id.* at 1281. The court determined that use of a third party to reduce settlement risk qualified as an abstract idea due to its "disembodied" nature and thereby rendered it patent ineligible. *Id.* at 1286 (quoting *In re* Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994)). Alice Corp.'s *Beauregard* claim fails to claim a specific computer readable medium and attempts to re-cast a method for using a third party to reduce settlement risk. *Id.* at 1288. Hence, the computer readable medium claims are patent ineligible for the same reasons as the method claims. *Id.* at 1288–89. Although the system claims invoke a computer system for execution of the method claims, the system claims essentially recite abstract ideas. *Id.* at 1289.

[107] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1291 (Fed. Cir. 2013) (Lourie, J., concurring).

[108] *Id.* at 1287.

[109] *Id.* at 1292 (Rader, J., Dissenting).

[110] *Id.* at 1311. In coming to his conclusion, Chief Judge Rader made several observations regarding patent eligibility. *Id.* at 1292–313. Looking at the legislative history of the 1952 Patent Act, he noted that both inventions and discoveries are eligible for patenting. *Id.* at 1295. To be patent-eligible, applicants must do more than just claim an abstract concept or natural law and say "apply it." *Id.* (quoting Bilski v. Kappos, 130 S. Ct. 3218, 3230 (2010)). If the user must perform a recited additional step in practicing the abstract concept, then the additional step does not further limit the application nor render it patent-eligible. *Id.* at 1303. A presumption of validity for subject matter eligibility should be given to all issued patents. *Id.* at 1304–05. The abstract concept present in Alice's system claims is integrated into the system and therefore patent-eligible subject matter. *Id.* at 1311.

[111] *Id.* at 1304.

[112] *Id.* (quoting Mayo Collaborative Servs. v. Prometheus, 132 S. Ct. 1289, 1293 (2012)). The three exceptions to Section 101 are laws of nature, natural phenomena, and abstract concepts. *Prometheus*, 132 S. Ct. at 1293.

[113] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1313 (Fed. Cir. 2013) (Rader, J., dissenting). The historical record shows that the theoretical concept of using a third–party to reduce settlement risk in a financial transaction has been known for centuries via an escrow arrangement. *Id.* at 1311. Hence, the method claims are patent ineligible. *Id.* at 1311–13. Merriam-Webster defines escrow as "a deed, a bond, money, or a piece of property held in trust by a third party to be turned over to the grantee only upon fulfillment of a condition." *Escrow*, MERRIAM-WEBSTER, http://www.merriam-webster.com/dictionary/escrow (last visited Dec. 25, 2013). In the US, a typical application of an escrow occurs in real estate, where a mortgagor creates a separate bank account to use for paying taxes and insurance. TREVOR RHODES, AMERICAN MORTGAGE: EVERYTHING U NEED TO KNOW . . . ABOUT FINANCING A HOME 158 (2008).

[114] *CLS Bank Int'l*, 717 F.3d at 1302.

factors significantly into the performance of the claimed invention, then the claim is patent-eligible.[115] On the other hand, mere reference to a general purpose computer by a method claim will not render a claim patent-eligible.[116] A special purpose computer may be enough to satisfy subject matter patent eligibility.[117]

Two other opinions in *CLS Bank* work together with Chief Judge Rader's opinion. Judge Moore aligned with Chief Judge Rader and upheld the patent eligibility of the system claims.[118] Judge Moore found Judge Lourie's patent eligibility analysis to be flawed because in Judge Moore's opinion, Judge Lourie erroneously performed a "heart of the invention" analysis, a technique abolished via the 1952 Patent Act[119] and years of court precedent.[120] Also, Judge Moore found Judge Lourie's opinion irreconcilable with *In re Alappat*.[121] At the end of the opinion, Chief Judge Rader discussed a few more ideas related to patent eligibility, with the main point being that judges should consult Section 101.[122]

Judge Newman presented a third perspective to the claims. Judge Newman found all of the claims to be patent-eligible.[123] She discerned some main principles relating to Section 101 and moved the focus past Section 101.[124] Judge Newman felt that Section 101 should be an inclusive listing of useful arts.[125] Courts should later eliminate abstract or preemptive claims via further analysis based on substantive criteria.[126] Consistent with Judge Newman, Judges Linn and O'Malley upheld the patent eligibility of all the claims.[127]

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[115] *Id.*

[116] *Id.* at 1302.

[117] *Id.*

[118] *Id.* at 1321.

[119] Act of July 19, 1952, ch. 950, § 1, 66 Stat. 792 (codified as Title 35 of the United States Code).

[120] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1315 (Fed. Cir. 2013) (Rader, J., dissenting). A "heart of the invention" analysis with regard to subject matter patent eligibility looks at the general subject matter of the application's specification instead of the specific language of the claims. *Backsliding to a "Gist of the Invention" Analysis*, 717 MADISON PLACE, http://www.717madisonplace.com/?p=4357 (last visited Dec. 25, 2013).

[121] *CLS Bank Int'l*, 717 F.3d at 1316 (Rader, J., dissenting); *see In re* Alappat, 33 F.3d 1526, 1545 (Fed. Cir. 1994).

[122] *CLS Bank Int'l*, 717 F.3d at 1335 (Rader, J., dissenting).

[123] *Id.* at 1327 (Fed. Cir. 2013) (Newman, J., dissenting).

[124] *Id.* at 1322. Judge Newman feels claim form should not affect patent eligibility, and deciding whether an idea receives a patent differs from whether an idea lacks patent-eligible subject matter. *Id.* at 1321–22. Judge Newman also corrected a common misconception by stating that the patenting of information does not bar it from being used in future experiments. *Id.* at 1322.

[125] *Id.* at 1322.

[126] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1322 (Fed. Cir. 2013) (Newman, J., dissenting).

[127] *Id.* at 1333 (Linn, J., and O'Malley, J., dissenting). Like Judge Newman, Judges Linn and O'Malley felt the system, method, and computer–readable media should all pass muster with Section 101. *Id.* Judge Linn pointed out that Judge Lourie and Chief Judge Rader should have construed Alice's method claims as being performed using a computer and memory. *Id.* at 1327–28. The judicial record shows that the lower court granted summary judgment based on the stipulation that the method claims be construed as being executed electronically, and CLS Bank acknowledged these positions on appeal. *Id.* at 1328–29. According to Judges Linn and O'Malley, Judge Lourie, unlike Chief Judge Rader, also reads the system and computer-readable media claims broadly instead of including the computer and memory limitation. *Id.* at 1329.

F. Ultramercial v. Hulu

Re-visiting the software patent eligibility issue, Chief Judge Rader and Judges O'Malley and Lourie decided the *Ultramercial v. Hulu* case six weeks after the *CLS Bank* case.[128] *Ultramercial* deals with a method of using a consumer's watching of a commercial to enable the downloading of audio and video media.[129] The decision consisted of the majority opinion written by Chief Judge Rader and a concurrence written by Judge Lourie.[130]

Resounding a theme present in his *CLS Bank* "Additional Reflections," Chief Judge Rader reiterated in *Ultramercial* that Section 101 governs inquiries into eligible subject matter.[131] Regarding Section 101, Chief Judge Rader felt that an expansive and broad scope should be applied to the categories allowed for eligible subject matter.[132] Also, Chief Judge Rader noted the statute lacks a list of ineligible processes.[133] Considering Section 101 as a whole, Chief Judge Rader viewed it as more of a "threshold check" with Sections 102, 103, and 112 playing more of a part in patent issuance.[134] In *CLS Bank*, Judge Newman provided a view consistent with this approach, with both Judge Newman in *CLS Bank* and Chief Judge Rader in *Ultramercial* perceiving Section 101 as a "coarse eligibility filter."[135] Looking at the three exceptions to Section 101, the court ruled a narrow view should be applied.[136]

While Section 101 applies to general patent eligibility, software has some technology-specific rules of thumb. Tying claims to a specific computer or a specific method of using a computer likely yields patent-eligible material.[137] Meaningful limitations on the computer implementation also likely render patent-eligible material.[138]

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[128] Ultramercial, Inc. v. Hulu, LLC, 722 F.3d 1335, 1335 (Fed. Cir. 2013).

[129] *Id.* at 1337.

[130] *Id.* at 1337–55.

[131] *Id.* at 1340; *CLS Bank Int'l*, 717 F.3d at 1335 (Rader, J., reflecting); 35 U.S.C § 101 (2012).

[132] *Ultramerical*, 722 F.3d at 1340. Chief Judge Rader came to this conclusion by looking at Section 100(b)'s definition of process "to include a new use of a known machine" and the need to add Section 100(b) to avoid narrow definitions of process interpreted by judges prior to 1952. *Id.*

[133] *Id.* at 1340–41.

[134] *Id.* at 1341; 35 U.S.C. §§ 102, 103, 112 (2012). Chief Judge Rader views subject matter eligibility as a low bar with novelty (§ 102), non-obviousness (§ 103), and adequate description (§ 112) providing a closer check for obtaining a patent. *Ultramercial, Inc.*, 722 F.3d at 1341; 35 U.S.C. §§ 102, 103, 112 (2012).

[135] *Ultramercial, Inc.*, 722 F.3d at 1341 (quoting Research Corp. Tech., Inc. v. Microsoft Corp., 627 F.3d 859, 869 (Fed. Cir. 2010)); CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1326 (Fed. Cir. 2013) (Newman, J., dissenting) (quoting *Research Corp. Tech.,* 627 F.3d at 869).

[136] *Ultramercial*, *Inc.*, 722 F.3d at 1342. The three main exceptions to Section 101 include laws of nature, physical phenomena, and abstract ideas. *Id.* at 1341.

[137] *Id.* at 1348; see *In re* Alappat, 33 F.3d 1526, 1544–45 (Fed. Cir. 1994). This same idea is present in Chief Judge Rader's *CLS Bank* opinion. *CLS Bank Int'l*, 717 F.3d at 1302 (Rader, J., dissenting). In contrast to the patent eligibility stance in the U.S., Europe tends to view software (or computer-implemented invention ("CII")) as patent ineligible by itself. *Patents for Software? European Law and Practice*, EPO 3, http://documents.epo.org/projects/babylon/eponet.nsf/0/a0be115260b5ff71c125746d004c51a5/$FILE/patents_for_software_en.pdf (last visited Dec. 25, 2013).

[138] *Ultramercial*, *Inc.*, 722 F.3d at 1348; see SiRF Tech., Inc. v. Int'l Trade Comm'n, 601 F.3d 1319, 1332–33 (Fed. Cir. 2010) (observing that a GPS receiver, a machine, was critical to the claims and provided a meaningful claim limitation). Examples of meaningful computer implementation

According to Judge Lourie, the method claims in *Ultramercial* should be interpreted for subject matter eligibility by the standard two–step process: (1) see if the four statutory classes apply; and (2) see if the three exceptions apply.[139] In connection with subject matter eligibility and abstract claims, the court should follow a two-step pre-emption analysis: (1) identify and define the applicable underlying concept, creating a claim construction if necessary; and (2) ietermine if the additional claim limitations prevent complete pre-emption of the abstract concept.[140] Not surprisingly, Judge Lourie's analysis in *Ultramercial* tracks closely with his methodology in *CLS Bank*.[141]

IV. PROPOSAL

For more than forty years, patent attorneys, software engineers, examiners, and judges have debated whether software should be patent-eligible.[142] This section presents a solution with a software subject matter, patent eligibility standard. Software patent applications that meet this standard will still need to meet the many other requirements to receive a patent, such as novelty, non-obviousness, and adequate description.[143]

Software should be subject matter, patent-eligible if it meets one of two factors. First, if the software could alternately be expressed as a dedicated hardware device, then it should be patent-eligible. Alternatively, if the application contains tangible steps involving software, then it should be patent-eligible. On the other hand, the software should be subject matter ineligible if it falls within one of two categories. First, if the application mentions a series of algorithms, abstract processes, or mental steps without the software adding something more, then it should be patent-ineligible. Congruently, if the application describes the software generically without any implementation details, then it also should be patent-ineligible.

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limitations include listing the computer as a solution component, demonstrating the computer to be essential to the method's execution, or incorporating a computer advancement. *Ultramercial*, *Inc.*, 722 F.3d at 1348.

[139] *Ultramercial*, *Inc.*, 722 F.3d at 1354–55. The four statutory classes are: (1) process, (2) machine, (3) manufacture [product], and (4) composition of matter. 35 U.S.C. § 101 (2012). *See supra* note 112 for the three exceptions.

[140] Ultramercial, Inc. v. Hulu, LLC, 722 F.3d 1335, 1355 (Fed. Cir. 2013) (quoting *CLS Bank Int'l*, 717 F.3d at 1282 (citing Mayo Collaborative Servs. v. Prometheus, 132 S. Ct. 1289, 1300 (2012); Bilski v. Kappos, 130 S.Ct. 3218, 3231 (2010); Diamond v. Diehr, 450 U.S. 175, 187 (1981))).

[141] *Ultramercial, Inc.*, 722 F.3d at 1354.

[142] Gina Smith, *Unsung Innovators: Marty Goetz, Holder of First Software Patent*, COMPUTERWORLD (Dec. 3, 2007, 12:00 PM), http://www.computerworld.com/s/article/9046646/Unsung_innovators_Marty_Goetz_holder_of_first_software_patent/index.html?taxonomyId=154&pageNumber=1. The first U.S. software patent, for a number sorting program, contained figures for magnetic tape drive contents, timing sequences, and program flow. U.S. Patent No. 3,380,029 (filed April 9, 1965). The first British software patent, for solving four simultaneous linear equations, contained two block diagrams, a simple flowchart, and a sample punch tape figure. Gr. Brit. Patent No. 1,039,141 (filed May 21, 1962).

[143] 35 U.S.C. §§ 102, 103, 112 (2012). *See supra* note 124.

A. Eligible Subject Matter: Dedicated Hardware Devices

One broadly applicable method for evaluating the subject matter eligibility of software could be performed via a hardware equivalent test. This test requires that if the software could be expressed as a series of stand-alone hardware components, the software should be patent-eligible under Section 101. This test may not work for all situations, and it tends to break down for more complicated software by requiring software elements not part of the patent also to be expressed as hardware. An example of this concept could be a video game that runs on top of a computer operating system. The applicant lays claim only to the video game but not the operating system.[144] In spite of these potential weaknesses, the hardware equivalent test still provides helpful insight.

Consider a telecommunications device with a noisy data signal. Using an analog-to-digital converter, the signal moves from raw analog voltage to discrete digital values. The engineer uses a software program to clean up the digital data and make it more usable by other components in the system. The clean-up process comprises a series of signal processing algorithms executed in the software realm.[145]

Alternatively, the engineer uses a series of hardware filters, implemented via either a set of capacitors, resistors, and inductors, or an off-the-shelf hardware filter chip. Either way, the signal filtering concept meets Section 101's requirements, regardless of whether software, hardware, or a combination of both software and hardware performs the filtering. System designers and engineers routinely need to perform financial, physical volume, and power consumption tradeoffs, to name a few, and these tradeoffs could dictate whether a function occurs in hardware or software.[146] Yet, these tradeoff analyses should not dictate whether or not an applicant would be eligible for a patent under Section 101. But, having applicants take a set of software functions and express them as a series of stand-alone hardware components should enable the court to find the software meets Section 101's eligibility requirements.

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[144] *See, e.g.*, U.S. Patent No. 6,280,323 (filed Aug. 28, 2001). This patent describes a method for executing and controlling a penalty kick match in a soccer video game. *Id.* The patented software runs on top of a video game operating system, such as the XBOX system. *Id.*

[145] *See, e.g.*, *Example C Code for FIR and IIR Filters*, IOWA HILLS SOFTWARE, http://iowahills.com/A7ExampleCodePage.html (last visited Dec. 25, 2013) (providing a typical software filtering process). In applying a software filter, one option, a finite impulse response ("FIR") filter, could be executed via C source code. *FIR Filter C Source Code*, IOWA HILLS SOFTWARE (Oct. 7, 2013), http://iowahills.com/Example%20Code/FIRIntegerImplementation.txt. With a finite impulse response filter, an input data stream goes through the filter a single time and immediately produces an output data stream (i.e., usually no feedback loop). *FIR Filter Basics*, DSPGURU, http://dspguru.com/dsp/faqs/fir/basics (last visited Dec. 25, 2013). With an infinite impulse response ("IIR") filter, the input data stream goes through the filter to produce an intermediate result which is then fed back into the system so that it continues to affect future input and output data streams (i.e., a feedback loop). *Id.*

[146] Steve Taranovich, *Integration Choices: Analog Filters vs. Digital Filters*, PLANET ANALOG (July 15, 2013), http://www.planetanalog.com/author.asp?section_id=3065&doc_id=560512.

B. Eligible Matter: Tangible Software Steps

Software patent applications that claim tangible software steps should meet Section 101's requirements. These tangible steps could be expressed with detailed software source code or more generically with block diagrams or flowcharts. The patent application in *Ultramercial* provided tangible and realizable steps that could be executed in software.[147] These tangible steps helped to make the application meet Section 101's requirements in that case.[148]

Alternatively, the software in *CLS Bank* failed to provide tangible software steps that could take the application beyond the realm of escrow and other abstract concepts.[149] As a result, the court rejected Alice Corp.'s patent.[150] Claims drawn to tangible software steps narrow the scope of the application and enable the application to satisfy subject matter patent eligibility.

C. Ineligible Subject Matter: Algorithms, Abstract Processes, and Mental Steps

Like Section 101's three exceptions of patent-ineligible matter (laws of nature, natural phenomena, and abstract concepts), algorithms, abstract processes, and mental steps by themselves also fail to make an application subject matter patent-eligible.[151] Having an applicant add software to such claims will not necessarily make them subject matter patent-eligible.[152] The addition of software should add something more in order to make them subject–matter eligible.[153]

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[147] Ultramercial, Inc. v. Hulu, LLC, 722 F.3d 1335, 1350 (Fed. Cir. 2013). Ultramercial's U.S. Patent No. 7,346,545 listed several flowcharts that can be summarized as a ten-step process for users to view commercials in order to be allowed to download copyrighted material such as songs, videos, TV shows, and movies. *Id.*; U.S. Patent No. 7,346,545 (filed May 29, 2001). Some of the steps in Ultramercial's '545 Patent included complex processes such as displaying commercial content on the end user's device and restricting access to downloaded media items that require the use of "complex computer programming." *Ultramercial*, 722 F.3d at 1350; '545 Patent.

[148] *Ultramercial*, 722 F.3d at 1349–50.

[149] CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1273 (Fed. Cir. 2013); *id.* at 1286 (Lourie, J., concurring). The *DealerTrack* case provides another example of an applicant failing to add tangible steps regarding the software. DealerTrack, Inc. v. Huber, 674 F.3d 1315, 1334 (Fed. Cir. 2012).

[150] *CLS Bank Int'l*, 717 F.3d at 1273. On March 31, 2014, the Supreme Court heard oral arguments in the *CLS Bank v. Alice Corp.* case. *CLS Bank Int'l v. Alice Corp. Pty. Ltd. Litigation History*, ALICE CORP., http://www.alicecorp.com/fs_patents.html (last visited Apr. 15, 2014).

[151] Mayo Collaborative Servs. v. Prometheus, 132 S. Ct. 1289, 1293 (2012). *See supra* note 112 regarding the three exceptions to subject matter patent eligibility: laws of nature, natural phenomena, and abstract concepts.

[152] *See, e.g.*, Gottschalk v. Benson, 409 U.S. 63, 68, 73 (1972); CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366, 1376–77 (Fed. Cir. 2011); DealerTrack, Inc. v. Huber, 674 F.3d 1315, 1334 (Fed. Cir. 2012); Fort Props., Inc. v. Am. Master Lease, LLC, 671 F.3d 1317, 1323–24 (Fed Cir. 2012).

[153] *DealerTrack*, 674 F.3d at 1333–34; *Fort Props., Inc.*, 671 F.3d at 1323–24. DealerTrack's patent described the abstract idea of using a clearinghouse to apply for car loans and the addition of software failed to make the idea non-abstract. *DealerTrack*, 674 F.3d at 1334. Fort Properties' patent described an abstract method of rounding up properties to perform tax-exempt exchanges, and the software only provided post-solution activity, not a non-abstract limitation. *Fort Props.*, 671 F.3d at 1319, 1324.

One of the earliest software subject matter patent eligibility cases, *Gottschalk v. Benson*, shows that applicants have historically sought to take an algorithm, write some software, and attempt to get a patent.[154] Without the software adding something more, receiving a patent from the patent office would allow an applicant to lock up a general algorithm that should be freely available for others to use.[155] In the same way, abstract processes and mental steps should be available to anyone. The software in *Research Corp. Tech.* further limited the claims and provided something more by performing complex half-tone calculations that realistically would be difficult to perform by hand.[156] Alternatively, the software in *CyberSource* failed to extend the idea beyond a series of mental steps.[157] The software should not be just "filler" but should further the development of new ideas by providing something more.

D. Ineligible Subject Matter: Generic Software

This factor relates to the previous one concerning algorithms, abstract processes, and mental steps. By describing an otherwise ineligible method and adding a generic allusion to software, the applicant does not render the application subject matter, patent-eligible. Applicants in this category tend to add the reference to software as an afterthought in an attempt to render the application patent-eligible. The software reference contains nothing specific and lacks an outline of the basic software functionality. While applicants need not provide a detailed software code listing, a top-level framework of software blocks should be available.[158]

In the past few years, several applicants have sought to patent business methods and financial algorithms by adding a generic claim regarding software.[159] The courts have found several of these patents to be ineligible because the use of software added nothing to the subject matter patent eligibility.[160] Even if these

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[154] *Gottschalk*, 409 U.S. at 64. The *Gottschalk* case occurred only four years after the granting of the first U.S. software patent to Martin Goetz in 1968. *Id.* at 63; U.S. Patent No. 3,380,029 (filed April 9, 1965) (issued Apr. 23, 1968).

[155] *Gottschalk*, 409 U.S. at 68 (holding the claimed BCD conversion process would cover known and unknown uses of it and thereby denying a patent).

[156] Research Corp. Tech., Inc. v. Microsoft Corp., 627 F.3d 859, 868–69 (Fed. Cir. 2010). The court opinion contains a detailed description of half–toning and the functions performed by Research Corp. Tech.'s patents. *Id.* at 863.

[157] *CyberSource Corp.*, 654 F.3d at 1376–77.

[158] *See* SiRF Tech., Inc. v. Int'l Trade Comm'n, 601 F.3d 1319, 1333 (Fed. Cir. 2010) (holding that the method in SiRF's patent could not be performed with generic software but required the software to execute complex GPS functionality).

[159] *See, e.g.*, Accenture Global Servs. v. Guidewire Software, Inc., 728 F.3d 1336, 1343–44 (Fed. Cir. 2013). Accenture's patent listed typical computer components (such as figure one's blocks labeled "CPU," "ROM," "RAM," and blocks with a picture of a keyboard and a picture of a display) present in any general computer system and failed to tailor the computer elements to the specific environment. *Id*; U.S. Patent No. 7,013,284 (filed May 4, 1999).

[160] *Compare Accenture Global Servs.*, 728 F.3d at 1343 (holding the application to disclose generic computer components that fail to further limit the claim's scope), *and* CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1273 (Fed. Cir. 2013); *and id.* at 1286 (Lourie, J., concurring) (finding the computer implementation to lack any specificity and failing meaningful claim limitation), *with* State St. Bank v. Signature Fin. Grp., 149 F.3d 1368, 1375, 1377 (Fed. Cir. 1998)

applications met Section 101, there is a good chance that they would fail under Sections 102, 103, and/or 112.[161]

E. Objections to Patent Eligibility Proposal

There are some main objections to patent eligibility of software. For example, granting software patents stifles innovation by locking out technology. This objection lacks an industry-specific approach, and it applies to more than just software. By granting a patent, not just one related to software, competitors must discover new methods, thereby avoiding the patent.

In addition, the patent eligibility standard should be to decipher when software contains eligible subject matter. Creating a clear software patent eligibility standard does not eliminate the other patent requirements. Patent-eligible applications must still meet Sections 102, 103, and 112. This proposal identifies certain situations in which software should or should not be patentable, but other scenarios may exist. Future research should cover these additional situations.

V. CONCLUSION

As the CLS Bank case demonstrates, patent eligibility of software requires a clear standard. Software should be subject matter, patent-eligible if it passes one or both of the tests: (1) the software could be expressed alternately as a dedicated hardware device; or (2) the application contains tangible steps involving software. The software should be subject matter ineligible if: (1) the application mentions a series of algorithms, abstract processes, or mental steps without the software adding something more; or (2) the application contains a generic allusion to software without any implementation details. Software applications that placate this factor test for subject matter patent eligibility still need to satisfy the other USPTO requirements to receive a patent.

(quoting *In re* Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994)) (noting the financial software produced "useful, concrete, and tangible result" and met the Section 101 hurdle). The addition of computer software functionality in *Accenture Global Servs.* and *CLS Bank Int'l* failed to get the applications past the Section 101 standard whereas in *State St. Bank* the software met the Section 101 standard. *Accenture Global Servs.*, 728 F.3d at 1343; *CLS Bank Int'l*, 717 F.3d at 1273; *id.* at 1286 (Lourie, J., concurring); *State St. Bank*, 149 F.3d at 1375, 1377.

[161] *CLS Bank Int'l*, 717 F.3d at 1326 (Newman, J., dissenting); 35 U.S.C. §§ 102, 103, 112 (2012). Judge Newman felt that Section 101 should be interpreted as an inclusive standard for subject matter patent eligibility and Sections 102, 103, and 112 should be the workhorses for discerning patentability. *CLS Bank Int'l*, 717 F.3d at 1322, 1326.