The Hard Side of Software: The Difficulty of Patenting Software Amid Abstract Ideas and Correcting the Conflation of Patent Eligibility and Patentability

Abstract

In post *Alice Corp. Pty. Ltd v. CLS Int’l.* world, there is massive uncertainty in the patent system. The new *Mayo/Alice* framework for determining patentable subject matter is faulty, as it conflates the 35 U.S.C. § 101 judicial exceptions, primarily abstract ideas with novelty and obviousness. The framework also has massively increased invalidations under § 101 from the Federal Circuit. After the *Berkheimer v. HP, Inc.*, decision in 2018, the United States Patent and Trademark Office released the Berkheimer Memorandum, which limited patent examiner rejections under § 101. This Memorandum may help counteract *Mayo/Alice*, however this is the wrong solution. The memorandum does not change the Court’s test and thus may aggravate the amount of invalidations because more patents may be granted that do not conform to the *Mayo/Alice* standard. Instead, the Court should rely on patentability requirements of 35 U.S.C. §§ 102, 103, and 112 (novelty, non-obviousness, and written description requirements), and ask the question if an invention would monopolize a basic scientific tool.

# INTRODUCTION

Each year half of the patents issued by the USPTO are related to software.[[1]](#footnote-2) Despite the ubiquity of computer technology, software patents can be difficult to obtain and defend due to confusion whether an individual piece of software, and software generally, falls within the subject matter eligible for patents contained in 35 U.S.C. § 101, also known as patent eligibility.[[2]](#footnote-3) § 101 describes four categories that are eligible for patents: processes, machines, manufactures, or compositions of matter. The Supreme Court upholds three exceptions to § 101: laws of nature, natural phenomena, and abstract ideas are not eligible for patenting. Over the years the Federal Circuit and Supreme Court decisions have tipped the balance regarding patent eligibility and the scope of abstract ideas one way or the other, often without full explanation of the decision. One purpose of the patent system is to increase innovation and technology.[[3]](#footnote-4) Uncertainty in the system may chill innovation, as those seeking to protect their investments are unable to and turn to safer investments, hindering innovation.[[4]](#footnote-5)

One of the more recent changes to the certainty of patents is the Supreme Court’s decision in *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208 (2014)*.* Holding a patent of a software-based escrow system, this decision re-emphasized a test introduced in *Mayo Collaborative Servs. V. Prometheus Labs., Inc.,* 566 U.S. 66 (2012). This strict test presented several steps to determine if a claim centered around an abstract idea contained patentable subject matter. In the month after *Alice*, 830 patent applications were withdrawn.[[5]](#footnote-6) Applicants likely thought the framework and its application too strict or broad for continued prosecution on these patents to be worth the large investment.[[6]](#footnote-7) In the year following the decision, the Federal Circuit used the two-step framework in ten cases[[7]](#footnote-8) and only found one to contain patent eligible subject matter.[[8]](#footnote-9) Perhaps seeking to undo this uncertainty, the USPTO acted to counter act the difficulty created by *Alice* with the Berkheimer Memorandum.[[9]](#footnote-10)

In *Berkheimer v. HP Inc.*[[10]](#footnote-11)the Federal Circuit held a software method invalid as abstract. Though the opinion itself does little to tip the see-saw of uncertainty for software patents, in wake of the decision, the USPTO issued a guidance memorandum (hereinafter the Berkheimer Memorandum) to the Examining Corps, which changed the field once again.[[11]](#footnote-12) This document contained official instruction for patent examiners regarding how to issue patent rejections based on § 101. The memorandum severely limited how patent examiners reject patent applications for not meeting the requirements for patent eligibility under § 101.[[12]](#footnote-13) A momentary respite, this change eased the burden for applicants seeking software patents, but also created a diverging standard between the judicial system and the USPTO’s[[13]](#footnote-14). This change could lead to granting patents of dubious quality, with patents granted because of an inability to reject them, rather than meeting qualifications.

The uncertainty of what is patent eligible frustrates the purpose of the patent system. Where possible, the Courts should use novelty, obviousness, and indefiniteness invalidations as described in 35 U.S.C. §§ 102, 103, and 112, rather than § 101. § 101 sets forth subject matter that can be patented: “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof”. These broad categories are subject to the rules of patentability described in §§ 102, 103, and 112. Novelty (§ 102) requires an invention be new to receive patent protection, a logical requirement in a system meant to foster innovation. Obviousness (§ 103) is similar to novelty, requiring an invention to be more than a combination of known ideas. § 112 sets forth the detail of description required in a patent. Prioritizing invalidations under 35 U.S.C. §§ 102, 103, and 112 would allow the uncertainty of abstract ideas to be minimalized and allow innovation to proceed unimpeded. It also removes the need for the USPTO to step in and regulate patent rejections. This note will guide readers through the legislative history and standards regarding software patents, the repercussions of the *Berkheimer* decision, and a possible solution to this patent software dilemma: instead of relying heavily on abstract ideas to invalid patents, courts should look to the novelty, obviousness, and definiteness of the patents in question.

# BACKGROUND: INCONSISTENT AND CONFUSING TESTS AND STANDARDS FOR PATENT ELIGIBILITY LEADING TO *MAYO/ALICE* AND *BERKHEIMER*

To receive a patent, the invention must be patent eligible and patentable. Patentability generally refers to the standards of novelty, nonobvious, and the written description requirement.[[14]](#footnote-15) Patent eligibility, also known as subject matter eligibility refers to what types of inventions may be patented.[[15]](#footnote-16) Three exceptions to patent eligibility have been defined by the courts: laws of nature, natural phenomena, and abstract ideas.[[16]](#footnote-17) In order to under stand the *Alice* decision and its impact, patentability and patent eligibility must be understood.

## The Requirements for Patentability: Novelty, Obviousness, and Enablement

Patents may be obtained for “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”[[17]](#footnote-18) This broad statement is qualified by the concepts of patentability and patent eligibility, which are defined by both statute and judicial rulings.[[18]](#footnote-19) Patentability describes the standards to receive a patent, requiring an invention to be novel and nonobvious, definite and enabled.[[19]](#footnote-20) A novel patent is not anticipated (i.e. already described) by another invention. Anticipation requires each and every element of the claimed invention be disclosed in a single enabling prior art reference.[[20]](#footnote-21) 35 U.S.C. § 102 is the statutory basis for novelty, and novelty rejections are often referred to in relation to the statutory section. Obviousness, contained in 35 U.S.C. § 103, in its simplest terms requires that an invention be more than a combination of two prior art references.[[21]](#footnote-22) Enablement necessitates that a person of ordinary skill in the art be able to make and use the claimed invention.[[22]](#footnote-23) Closely related is the requirement that claims must particularly point out and distinctly claim the invention.[[23]](#footnote-24) Overly broad or vague claims fail to meet this requirement and are indefinite.[[24]](#footnote-25) Enablement, indefiniteness, and all other written description requirements are contained in 35 U.S.C. § 112.

## Patent Eligibility and the Judicial Exceptions: Laws of Nature, Natural Phenomena, and Abstract Ideas

The second standard, patent eligibility, concerns what subject matter warrants the incentives and protections provided by patent law.[[25]](#footnote-26) 35 U.S.C.§ 101 states that “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”[[26]](#footnote-27) Though expressly included within § 101, process claims often face great scrutiny under the judicial exception of abstract ideas. Machines, new manufactures and compositions of matter are physical and easily patentable, providing the invention meets requirements for patentability.[[27]](#footnote-28) Processes are not as tangible and can easily be classified as an abstract idea therefore are more difficult to patent.[[28]](#footnote-29) This is one reason why software can be difficult to patent, as it is most easily categorized as a process (it is certainly not a machine, manufacture, or composition of matter).[[29]](#footnote-30)

The Supreme Court has determined the statutory language “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof” contains an implicit exception disallowing patents for laws of nature, natural phenomena, and abstract ideas.[[30]](#footnote-31) These three exceptions prevent monopolies on foundational laws and concepts that many technologies may depend on, insuring that the limited monopoly provided for by law does not hinder innovation.[[31]](#footnote-32) However, broadly interpreting these exceptions would impede the patenting of important discoveries, therefore an invention or discovery cannot be unpatentable merely because it contains natural phenomena or algorithm.[[32]](#footnote-33)

Laws of nature, natural phenomena, and abstract ideas not always clearly defined or distinct from one another. Laws of nature include well known laws of physics such as gravity or Einstein’s famous “E = mc2”.[[33]](#footnote-34) Natural phenomena, more easily understood as products of nature, include more physical natural occurrences such as plants, minerals, lightning.[[34]](#footnote-35) The exceptions extend to even newly discovered uses of naturally occurring phenomenon.[[35]](#footnote-36) In *Funk Brothers Seed Co. v. Kalo Inoculant Co.* the disputed discovery was a mixture of bacteria for inoculating the seeds of several different types of plants at once, rather than separately.[[36]](#footnote-37) The court found the mixture ineligible for patent and therefore no infringement because the bacteria had not been altered; it was a natural phenomenon.[[37]](#footnote-38) In contrast, in *Diamond v. Chakrabarty*, a genetically engineered species of bacteria that digested oil was upheld to be patentable because it was not naturally occurring and it was unpatentable simply because it was a living organism.[[38]](#footnote-39)The guidance of case law does not always make clear what is or is not an abstract idea.

These patentability and patent eligibility are often conflated by courts when patent validity is considered.[[39]](#footnote-40) Recent cases frequently conclude a claim is directed to an abstract idea and focus on whether a claim is a well-understood, routine, conventional activity to determine if it contains an inventive concept. [[40]](#footnote-41) These terms describe a lack of novelty, not abstraction, and yet these exact questions determine if the claim is invalid under § 101. Many abstract ideas are simply not novel, or their claims are overly broad.[[41]](#footnote-42) The courts’ use of abstract ideas as a catch all for these problems has contributed to the uncertainty in the patent world today.[[42]](#footnote-43)

## Patent Eligibility Also Requires Utility

In addition to stating subject matter, § 101 also requires an invention to be “useful”.[[43]](#footnote-44) The utility requirement helps protect limited administrative resources from patent applications that do not promote the progress of the “useful arts”.[[44]](#footnote-45) It also ensures inventors have put in enough work. The patent system incentivizes technology, and if an invention has no purpose, it is of no interest to the United States government.[[45]](#footnote-46) For example, in *In re Fisher*, the Federal Circuit ruled that a patent need only disclose a single specific and substantial utility.[[46]](#footnote-47) The patent in question regarded “expressed sequence tags” for identifying nucleic acid sequences in maize genes.[[47]](#footnote-48) Fisher’s provided uses were so general as to be meaningless.[[48]](#footnote-49)

## Abstract Ideas: Inconsistent Case Law

Abstract ideas often overlap with the other judicial exceptions of natural phenomena and laws of nature. There is no legal definition of “abstract ideas” and what is abstract can be difficult to describe.[[49]](#footnote-50) Algorithms and mathematical formulas are common examples of an abstract idea but can also fall under any or all of the three judicial exceptions, as certain natural laws are easily described mathematically.[[50]](#footnote-51) With no definition, applicants and litigants are left with vague statements as guidance and inconsistent judicial decisions. The cases below show a variety of standards and tests, which have helped create the confusing atmosphere and help give context to the *Alice* decision. *Benson* held an algorithm invalid because it had no application outside of computers, *Diehr* taught that a physical transformation was required for an algorithm to be patentable; and *In re Alappat* held algorithms patentable if they were applied in a “useful” way.[[51]](#footnote-52)

### *Gottschalk v. Benson*: Invention Held Invalid for Lack of Application Outside Digital Computing

In 1972, before the rise of the digital age, the Supreme Court heard arguments for *Gottschalk v. Benson* regarding a method for converting binary coded decimal to pure binary.[[52]](#footnote-53) In binary coded decimal (BCD) each digit of a number is represented by a four-digit binary segment e.g. 534 would be represented as 0101-0011-0100, where 0101, 0011, and 0100 are the numbers 5, 3, and 4 respectively in pure binary; in pure binary 534 would be represented as 1000010110.[[53]](#footnote-54) With no definition of abstract ideas, the Court compared the claims with previous cases and facts.[[54]](#footnote-55) However, at the time the patentability of computer programs was still in debate, and the patent was held invalid because it has no practical application outside of a digital computer.[[55]](#footnote-56) Clearly the Court did not understand the importance digital (the more advanced counter-part to analog) computers would play in the future, and so they dismissed the patent for having no use outside of computers. Although the claims described hardware components executing this algorithm, it was not enough to meet the Court’s requirements for patentability.[[56]](#footnote-57)

### *Diamond v. Diehr*: Physical Transformation Required for Patent Eligibility

In 1980 the Supreme Court considered claims for a process for curing synthetic rubber in *Diamond v. Diehr*.[[57]](#footnote-58) This process relied heavily on a formula known as the Arrhenius equation. By continually taking temperature measurements, a digital computer would use the formula to provide an accurate cure time.[[58]](#footnote-59) Here the Supreme Court upheld the patent, stating the claims must be considered as a whole, and that use of a mathematical formula did not disqualify a patent. This decision seemly reversed *Benson*, but the Supreme Court, distinguished it from *Benson*, characterizing the *Diehr* claims as a method for curing rubber, rather than a math formula. The court emphasized examining the claims as a whole, rather than individually. Upon examination, the Court found that the additional steps integrated the equation into a process and therefore patentable. The patent did not seek to protect the formula, but rather the process of how the formula was used.[[59]](#footnote-60) Despite similar dependencies on mathematical formula, two different outcomes occurred. At the time, this suggested that physical transformation was required for patent eligibility[[60]](#footnote-61) and the description and labelling of an invention was critical to patent survival.

### *In re* *Alappat* and *State Street*: Useful Results Enough for Validity

In *In re Alappat*, the claimed invention was a means for creating a smooth waveform display on a digital oscilloscope.[[61]](#footnote-62) An oscilloscope is a tool for measuring and displaying electric signals.[[62]](#footnote-63) The displays have a finite number of pixels, and so waveforms can appear jagged or discontinuous. To overcome the appearance of discontinuity, the invention uses an anti-aliasing system in which the intensity of pixel illumination is dependent on the distance from the center of the waveform.[[63]](#footnote-64) This anti-aliasing depended on a series of mathematical calculations, but the patent was held to be valid because it produced “a useful, concrete and tangible result.”[[64]](#footnote-65) Also important to the Court’s decision was

*State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, reaffirmed the standard of “useful, concrete, and tangible result” set forth in *In re Alappat*.[[65]](#footnote-66) *State Street* reasoned “unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not ‘useful.’”.[[66]](#footnote-67) Although difficult to imagine a formula without a use, the court clarified that for an algorithm to be patentable it must be applied in a useful way.[[67]](#footnote-68) This broad test emphasized the need for attachment to the physical world seen in *Diehr* and *Benson*.[[68]](#footnote-69)

However, the standard is still unclear. *Diehr* states that limiting formulas to a particular technological environment will not make them patentable.[[69]](#footnote-70) *In re Alappat* does exactly that, and the patent in question was held patentable. The standards used by the Courts are anything but clear and leave the question of how much is required to be patent eligible uncertain. Despite the inconsistencies between the aforementioned decisions, *In re Alappat* made clear the Court’s preference for physical inventions. *Alappat*’s “useful, concrete, and tangible result test” was reaffirmed a few later. This test was supplanted by the machine or transformation test by the Federal Circuit in *In re Bilski*.[[70]](#footnote-71) However, a short time later, Federal Circuit’s deference to the machine-or-transformation test was also over turned by the Supreme Court in *Bilski v. Kappos*.[[71]](#footnote-72) *The* *State Street* “useful, concrete and tangible result” test and the machine-or-transformation tests were among the last before the *Mayo/Alice* framework.

### Machine or Transformation Test

The “machine or transformation test” was used as the sole test by the Federal Circuit to determine patent eligibility of a process.[[72]](#footnote-73) When first introduced machine-or-transformation test was not the sole determining inquiry. However, the Federal Circuit reaffirmed the machine-or-transformation test several times and eventually the Federal Circuit adopted it as the sole test.[[73]](#footnote-74) Two years later, the Supreme Court stated the machine-or-transformation test was never intended to be an exhaustive or exclusive test, arguing the machine-or-transformation test would create uncertainty as to the patentability of software.[[74]](#footnote-75)

The machine-or-transformation test required an applicant to show the claim was tied to a machine, or that it transformed an article.[[75]](#footnote-76) If either of these criteria was met, then the process was not an abstract idea and therefore patent eligible. A claim “tied to a particular machine” is only implemented on a specific machine. The second path of the machine-or-transformation test deems a process patent eligible if it transforms “particular article into a different state or thing”.[[76]](#footnote-77) In *Diehr*, the process included a mathematical formula, a perfect example of an abstract idea. Despite this, it met both criteria of the machine-or-transformation test and was therefore patent eligible.[[77]](#footnote-78) The formula calculated the time to cure rubber and was integrated into a process tied to a specific oven and technological set up.[[78]](#footnote-79) With these additional elements it was deemed patent eligible[[79]](#footnote-80)

In contrast a few years prior to *Diehr*,in *Parker v. Flook*, the applicant had claimed a “Method for Updating Alarm Limits” which was a mathematical formula for updating alarm limits during catalytic conversion processes. There was no novel machine or physical connection and was deemed not patent eligible.[[80]](#footnote-81) This case also introduced “inventive concepts” that can transform an unpatentable idea into a patentable one.[[81]](#footnote-82) The test is contradictory, stating that patents may be eligible when tied to a particular machine, but in the same opinion the Court notes that ineligibility under § 101 “cannot be circumvented by attempting to limit the use of the formula to a particular environment.”[[82]](#footnote-83) This contradiction and limiting nature of the test epitomizes the difficulty of patenting software today. The test still sees uses, but is only *a* consideration, rather than *the* consideration.[[83]](#footnote-84) Since the overturning of the machine-or-transformation test, patents are considered on a subjective case-by-case basis, comparing the invention at hand to others rather than applying a set of factors.[[84]](#footnote-85)

## Software Patents & Abstract Ideas: Why Software is Difficult to Patent

Software is not easily sorted into the categories of 35 U.S.C. § 101. It is not a “machine, manufacture, or composition of matter”, and must therefore be a “process”.[[85]](#footnote-86) Processes are not always physical and can easily be called abstract ideas. This difficulty extends to software, which is often difficult to patent for several reasons: 1) it is intangible; 2) software frequently is made up of algorithms (a classic example of an abstract idea); and 3) it can be seen as a mere representation of an abstract idea.[[86]](#footnote-87) Many, including a past director of the USPTO and a former Federal Circuit Judge, believe that this broad interpretation of abstract ideas is stifling innovation with its chilling effect on patents of all kinds.[[87]](#footnote-88) These inherent difficulties require inventors to claim their inventions in specific ways in attempt to anchor their claims with physicality.[[88]](#footnote-89)

One of these ways is the Beauregard claim. [[89]](#footnote-90) These claims began in response to *In re Beauregard*, which quoted the Commissioner of Patents and Trademarks, who stated that software embodied in a tangible medium was patentable.[[90]](#footnote-91) This claim type helps root the software in physical terms.[[91]](#footnote-92) Thus, software claims often contain a variation on the following, “A computer readable medium containing program instructions…”[[92]](#footnote-93) in an effort to connect the abstract nature of software with something tangible and real. Early decisions relating to software patents seemed to require physical effects to make the software appear mechanical and more easily fit into the other statutory categories.[[93]](#footnote-94) The outcomes of *Diehr* and *Benson* exhibit this requirement. In *Diehr*, the process for curing rubber was upheld despite of its reliance on a mathematical formula, because of the physical transformation that occurred in the rubber. *Benson*’s conversion from BCD to binary was not overtly physical therefore was invalidated.[[94]](#footnote-95)

## *Mayo/Alice*: The Impetus for Berkheimer

In 2012, the Supreme Court heard a petition concerning processes that help doctors who administer thiopurine drugs determine if a dosage is too low or too high in *Mayo Collaborative Servs. v. Prometheus Labs*.[[95]](#footnote-96) It introduced a two-step process to determine if an invention claims “building blocks of human ingenuity, which are ineligible for patent protection” or if the patent integrates building blocks into something more. This framework is the method of considering abstract ideas across all patent areas. *Mayo* marked a return of the “inventive step” or “inventive concept” line of inquiry introduced in *Flook* but did not specify how much of an inventive step was necessary for patent eligibility, leaving the meaning of § 101 unclear.[[96]](#footnote-97)

Frequently courts ask whether the claim is ‘directed to’ an abstract idea? [[97]](#footnote-98) The reader may gather that the court is asking whether the claim is about an abstract idea. The court has never deigned to define the meaning of “directed to” but one might surmise the phrase determining whether the claim encompass the idea; or whether claim is just the abstract idea itself.[[98]](#footnote-99)

In 2014, *Alice Corp. Pty. Ltd. v. CLS Bank Int’l* drastically changed patent law. The Supreme Court ruled that escrow software was a patent ineligible invention.[[99]](#footnote-100)Petitioner Alice was the assignee of a patents disclosing an escrow software.[[100]](#footnote-101) The software would work as a third party intermediary, creating “shadow” credit and debit records mirroring real-world bank accounts of the parties.[[101]](#footnote-102) When conditions were met, the software then would instruct the relevant banks to carry out the transactions, mitigating risk that only one party will perform the agreed-upon exchange.[[102]](#footnote-103) CLS filed a suit against Alice, seeking a declaratory judgment that the claims at issue were invalid.[[103]](#footnote-104)

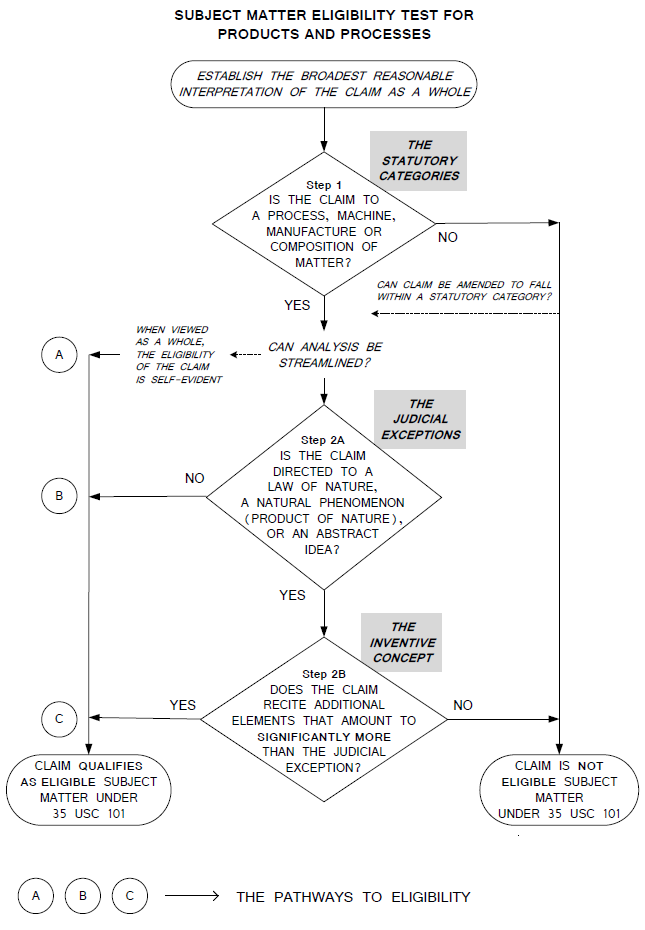


Figure 1- The Mayo/Alice Framework - Manual of Patent Examining Procedure § 2106-(III) (9th ed. Rev. 8, Jan. 2018).

The Court reviewed the three judicial exceptions (laws of nature, natural phenomena, and abstract ideas) of patent eligibility.[[104]](#footnote-105)The court reaffirmed the two-step test described in *Mayo,* this time in greater detail*.[[105]](#footnote-106)* These steps can be confusing, and at times a visual representation may helpful, as seen in Figure 1 above. In step one a reviewing court must determine if the claims at issue are directed to a patent-ineligible concept; if so then they proceed to step two which asks: “what else is there in the claim before us?”[[106]](#footnote-107) This second step looks for an inventive step or inventive concept that elevates the patent to more than the ineligible concept itself.[[107]](#footnote-108) The Court considers as part of step two if the additional elements are well-understood, routine, or conventional.[[108]](#footnote-109) In other words, the additional elements are not enough of an inventive step if they are well known in the art. The claim elements must be considered individually and in combination. In the first step of the framework, the court determined that intermediated settlement was an abstract idea, comparing to the claims in *Benson*, *Flook*, and *Bilski v. Kappos*, a similar case which concerned software for hedging.[[109]](#footnote-110) Escrow is a widespread “fundamental economic practice”.[[110]](#footnote-111) Alice argued the invention was not an abstract idea, pointing to other patents with algorithms held valid by the Supreme Court, and argued for a narrow definition of abstract ideas: “preexisting, fundamental truths that exist in principle apart from any human action”.[[111]](#footnote-112) The Court rejected this argument and chose not to “delimit the precise counters of the ‘abstract ideas’ category”.[[112]](#footnote-113)

Moving to step two, the Court “must examine the elements of the claim for an ‘inventive concept’ sufficient to ‘transform’ the abstract idea into a patent-eligible application.”[[113]](#footnote-114)The Court looked for additional features to show the claim was more than an attempt to monopolize the abstract idea.[[114]](#footnote-115) To ascertain this, the Court asked whether the claims did more than implement the abstract idea of escrow on a computer.[[115]](#footnote-116) First looking at the claims separately, the court determined the claims were conventional activity and the basic functions of a computer[[116]](#footnote-117) The Court noted thatimplementation of an abstract idea on a computer was not enough to grant patent eligibility.[[117]](#footnote-118) The Court drew comparisons to the formula in *Diehr*, which used an algorithm to improve a process for curing rubber.[[118]](#footnote-119) The Court noted that *Diehr* was patent eligible because it used a thermocouple to record constant temperature measurements and fed into the computer to repeatedly recalculate the remaining cure time.[[119]](#footnote-120) These additional steps transformed the formula into an inventive application.[[120]](#footnote-121)In light of this, the relevant questionfor the claims in *Alice* was whether the claims did more than instruct the practitioner to implement escrow on a computer.[[121]](#footnote-122)Using a computer to create shadow accounts, adjust account balances and issue automated instructions were merely electronic record keeping, a basic computer function. As an ordered combination, nothing new was added already presented when the steps were considered separately.[[122]](#footnote-123) The claims added nothing new beyond what was already known and obvious about computers, thus were ruled an abstract idea.

This framework broadened the scope of abstract ideas and drastically increased the invalidation of software at District Courts, Patent Trial and Appeal Board and the Federal Circuit, with an average invalidation rate of 82.9% the first year.[[123]](#footnote-124) Of the 17 cases brought before the Federal Circuit, only 1 was validated (an invalidation rate of 94%).[[124]](#footnote-125) Newly filed patent cases dropped by 40% from 2013 to 2014.[[125]](#footnote-126) This drastic change set the stage for the *Berkheimer* decision.[[126]](#footnote-127) The Federal Circuit’s streak of invalidations after *Alice* finally ended with *DDR Holdings, LLC v. Hotels.com*.[[127]](#footnote-128) Four years later, *Berkheimer* was decided.[[128]](#footnote-129)

# THE *BERKHEIMER* DECISION AND MEMORANDUM

In early 2018 the Federal Circuit heard oral arguments for *Berkheimer v. HP*. The Appellant, Steven Berkheimer, was the patentee and brought action for infringement of his patent that described methods for digital file processing and archiving.[[129]](#footnote-130) The claimed invention parsed files into objects and tags the objects to create relationships.[[130]](#footnote-131) The objects were then compared to archived objects to determining variation. The system eliminates redundant storage of common text and graphic element, improving operating efficient and storage.[[131]](#footnote-132) Finding several claims indefinite, the Court then considered patent eligibility of the claims.[[132]](#footnote-133)

The *Mayo/Alice* court only addressed the question of well-understood, routine, and conventional activity briefly, the *Berkheimer* Court returned to the question repeatedly.[[133]](#footnote-134) This question was the defining characteristic of the additional elements to abstract idea.[[134]](#footnote-135) An idea that is well-understood, routine, and conventional, is not abstract, but merely non-novel. In step one of the *Mayo/Alice* framework, the Court found that the claims were directed to abstract ideas of parsing, comparing, storing and editing data. In step two, the claims must be considered individually and in combination.[[135]](#footnote-136) Both separately and together, the claims only contained well-understood, routine, and conventional activity and amounted to the abstract idea of parsing and comparing data on a computer,.[[136]](#footnote-137) After this analysis some genuine issue of material fact remained concerning whether claims 4-7 contained transformative invention concept and was summarily remanded.[[137]](#footnote-138)

A few months later, the USPTO released a memorandum regarding changes in examination procedure pertaining to subject matter eligibility after *Berkheimer v. HP, Inc.*[[138]](#footnote-139) The memorandum reviews the steps of the *Mayo/Alice* framework and *Berkheimer* decision.[[139]](#footnote-140) The memorandum notes that the case does not change the framework, it alleges that the decision clarified the inquiry of whether an additional element represents well-understood, routine, and conventional activity.[[140]](#footnote-141) Such a clarification is not obvious in the case itself, and seems to the author that the USPTO is reaching, using the *Berkheimer* decision as a means to stem the tide of invalidations emanating from the Courts in the wake of *Alice*.

Examiners when issuing a § 101 must follow the *Mayo/Alice* framework.[[141]](#footnote-142) In accordance to the “clarification” in *Berkheimer*, the memorandum now requires examiners to support the rejection in final step of *Mayo/Alice* analysis (that the claim lacks additional element that amounts to significantly more than the judicial exception, and is a well-understood, routine, or conventional) in at least one of four ways:[[142]](#footnote-143) 1) the examiner must cite to an express statement in the patent application’s specification that demonstrates the well-understood, routine, conventional nature of the additional element; 2) the examiner must cite one of the listed court decisions in the Manual of Patent Examining Procedure [hereinafter MPEP] which note the well-understood, routine, conventional nature of the additional elements; 3) the examiner must cite a publication that demonstrates the well-understood, routine, conventional nature of the additional elements, or 4) a statement that is taking official notice of the well-understood, routine conventional nature of the additional element.[[143]](#footnote-144) The fourth option is only to be used when the examiner is certain, as person of ordinary skill in the art, and based upon person knowledge that the additional elements do not meet the requirements for patent eligibility.[[144]](#footnote-145)

These options provide various difficulties for the examiner. The first option requires the applicant to expressly admit that the claimed invention is conventional, something an applicant is unlikely to do because patent applications are written to convince examiners of claim invention’s novelty. Option two requires the examiner to cite one of the cases in listed in MPEP § 2106.05(d)(II). This sections only includes twenty different well-understood, routine, conventional activities, with approximately two cases per activities.[[145]](#footnote-146) While a large list, it is not exhaustive, so if the conventional activity is not listed among the cases cited, the examiner is not able to make the analogy and avail themselves of the three options if he or she wishes to make the rejection. Option three requires the examiner do additional research, searching for publications that proves the element is widely prevalent.[[146]](#footnote-147) Unless such a publication is already known to an examiner, given limited time and resources, the examiner may not be inclined to do the additional research required for such a rejection. The fourth option requires the examiner to rely on personal knowledge. This should only be used rarely, especially in instances of final rejection.[[147]](#footnote-148)

A patent examiner’s work is measured on a quota system, and revisiting patent applications do not always count towards an examiner’s count.[[148]](#footnote-149) With this system, an examiner is incentivized to be as quick and efficient as possible in his or her rejections. As such, it does not benefit the examiner to be thorough in their rejections, making the difficulty options of the Berkheimer Memorandum[[149]](#footnote-150) even less likely. These difficulties are good news for software patent applicants and will hopefully help curb the invalidations of patents due to *Alice*. Easing the burden of obtaining a patent may help curb invalidations because patents are presumed valid and must be shown in valid with clear and convincing evidence.[[150]](#footnote-151) However, it should not be necessary for the USPTO to act to mitigate the action of the Courts and could lead to a diverging standard between the USPTO and the Courts, as the Courts are not bound by the Berkheimer Memorandum or MPEP.

# THE SOLUTION: FOCUS ON BASIC TOOLS OF SCIENCE AND TECHNOLOGY AND INVALIDATE USING NOVELTY, OBVIOUSNESS, AND INDEFINITENESS.

The standard *Mayo/Alice* framework is too restrictive and conflates patentability into the determination. Instead, the Court should make patent eligibility determinations based on if the invention at issue meets the requirement for utility and falls within the statutory categories within 35 U.S.C. 101. The Court should then ask, “would granting this patent monopolize a basic tool of scientific technological work?”. If the patent does not meet the standards of utility or is not a process, machine, manufacture, or composition or matter, or would monopolize a basic tool, the patent is invalid. If necessary, the Court should then move to the question of patentability.

## Judges Should Focus on Preventing Monopolization of Basic Tools of Science and Technology

The judicial exceptions to § 101 are in place to prevent monopolizing the foundational tools of science and technology.[[151]](#footnote-152) If patent is granted for a broad concept or idea, it would be possible to control an entire field of technology.[[152]](#footnote-153) This would frustrate the purpose of the patent system. Judges seek to prevent monopolies of foundational knowledge by calling it an abstract idea, natural law, or natural phenomenon.[[153]](#footnote-154) However, this creates uncertainty as to what is an abstract idea. This uncertainty may stunt innovation and leads to extra-judicial solutions such as the Berkheimer Memorandum. Rather than relying on the clunky and uncertain *Mayo/Alice* method, in which judges must determine if an invention lies within the vague boundaries of an uncertain idea, the courts should instead ask, “Would granting this patent monopolize a basic tool of scientific technological work?”

The Supreme court asks this question in *Alice*, but the inquiry of whether the patent is abstract idea is asked and then the consideration of whether it would block a basic tool of science is evidence of an abstract idea, rather than starting point.[[154]](#footnote-155)Using this question as a starting point instead would root the analysis in more concrete terms. This question could be as open-ended or worse to the *Mayo/Alice* line of inquiry. However, the question would not be used alone. After answering affirmatively that the claim does resemble something so basic it is a building block or tool, the court should then turn to § 102 (novelty), § 103 (obviousness), § 112 (indefiniteness). Even if the Court finds that the claim would not monopolize a basic scientific tool, the patent may still be invalidated under these sections. Many patents which were invalidated for merely being an abstract idea should have been invalidated for lacking novelty, or lack of non-obviousness, or being indefinite.[[155]](#footnote-156) In other words, test for patent eligibility should consist of asking does a patent monopolize a basic tool of science, technology, or even business in the case of *Alice*.[[156]](#footnote-157) This is a much lower standard than *Alice*. However, even surviving a lower standard of patent eligibility, the patent may still not meet the standards of patentability, because it lacks novelty or is obvious.

## Using the Proposed Method in Context of § 101.

Judge Plager of the Federal Circuit in a dissenting opinion stated, “I believe that this court should exercise its inherent power to control the processes of litigation, and insist that litigants, and trial courts, initially address patent invalidity issues in infringement suits in terms of the defenses provided in the statute: “conditions of patentability,” specifically §§ 102 and 103, and in addition §§ 112 and 251, and not foray into the jurisprudential morass of § 101 unless absolutely necessary”.[[157]](#footnote-158) The use of § 101 is not eliminated but should be reserved for inventions that lack utility, or are not a “process, machine, manufacture, or composition of matter”, or any new and useful improvement thereof”.[[158]](#footnote-159)

The Supreme Court has mandated that patent eligibility analysis must precede obviousness or novelty inquiry.[[159]](#footnote-160) The Supreme Court’s direction to address § 101 can still be followed under the method suggested here. This inquiry should be basic, insuring utility is met, as well as the make sure the invention falls within the statutory categories (i.e. process, machine, manufacture, or composition of matter). The inquiry whether the claims would monopolize a basic tool or concept would be the last piece of the patent eligibility inquiry.

Addressing § 101 first can often be a time and cost saving measure. Patent eligibility issues can be resolved quickly and inexpensively without the need for a jury.[[160]](#footnote-161) In *I/P Engine, Inc. v. AOL Inc.*, the patent at issue was found invalid for non-obviousness after a full jury trial with expense to the litigants. Judge Mayer, in his concurring opinion, agreed with the invalidation, but believed non-obviousness should not have been addressed. He stated “fail[ure] to address … section 101 is put the cart before the horse. Until it is determined that [it is] even *eligible* for patent protection, a court has no warrant to consider subordinate validity issues such as non-obviousness.”[[161]](#footnote-162) Patent eligibility can be resolved without claim construction, and these early determinations can save years of litigation.[[162]](#footnote-163) Addressing § 101 may indeed save time and money[[163]](#footnote-164), however saving money is a poor argument for doing something incorrectly. The analysis for abstract ideas has become a substitution for novelty with the question of well-understood, routine, and conventional activity. As the Courts adjusted to the new methodology, any inefficiency would eventually dissipate.[[164]](#footnote-165) The Court need not visit every possible method of rejection as patent examiners do. This would be inefficient in the extreme, requiring litigants to brief additional issues, and Judges to decides to hear and decide on these issues when they may not be important or outcome determinative.

The progression of the legal system, and thereby the patent system, is slow. The full effects of the Berkheimer Memorandum are not yet clear, and hopefully will remove the uncertainty for software patents going forward. However, the Berkheimer Memorandum should not have been necessary. It is positive change, but it is inconsistent with the opinion which sparked its creation. It should not be necessary for the USPTO to make a drastic change based on such an innocuous case to correct the failings of the Courts.

The current uncertainty curbs innovation by increasing the chances of patent invalidation. By relying less on § 101, innovation will not be curbed. The proposed test is more lenient than the *Mayo/Alice* framework, helping prevent new technology areas from having the same difficulty as software fitting into the statutory scheme. Software still does not fall neatly into the categories designed by the drafters of the 1952 Patent Act, but this focus on basic building blocks of science and technology may help alleviate the software patent invalidations. In the following cases the Federal Circuit could have achieved the same result with §§ 102, 103, and 112 rather than relying on § 101. In other cases, reliance on the other statutory sections could have allowed an interesting new technology to be validated, rather than invalidated on § 101 grounds.

## Applying the Proposed Methodology to Existing Case Law

There are many cases where focusing on preventing the monopolization of basic scientific tools would have resulted in more logically sound holdings, or different, more correct holdings all together. In a case shortly before *Alice*, *Bilski v. Kappos*, the Supreme Court held a software hedging method invalid as an abstract idea.[[165]](#footnote-166) Here, the Court used an analysis very similar to the one proposed here, and correctly held this as an abstract idea because granting the patent would allow a monopoly on hedging.[[166]](#footnote-167) The Court in *Alice* should have used a similar analysis. Escrow is well known and frequently practiced in business dealings, as such implementing it on a computer is not new or non-obvious.[[167]](#footnote-168) Such software is perhaps better suited to copyright protection.[[168]](#footnote-169)

In *Benson*, the court found that the claim was “so abstract and sweeping as to cover both known and unknown uses of BCD to pure binary conversion”[[169]](#footnote-170) Rather relying on abstract ideas, the court should have relied on §§ 102, 103, or 112. The court should have stated the idea the was not novel, or the algorithm a basic tool of science and technology, or if the claims lacked adequate description for the methods described, that the claims were indefinite.[[170]](#footnote-171)

This approach could also potentially change the outcome in *Ariosa Diagnostics Inc. v. Sequenom, Inc*.[[171]](#footnote-172) In *Ariosa* the claimed invention concerned a non-invasive method for detecting paternally inherited cffDNA in maternal plasma or serum. The Court ruled the patent-ineligible as laws of nature and natural phenomenon, reasoning that the patent disclosed only previously existing, but unknown natural phenomenon.[[172]](#footnote-173) However, if the patent had been approached with the question of whether such an invention would monopolize the use of a basic tool of science rather than if it was a product of nature, the discovery would not have been invalidated.

Shortly after the *Alice* decision, the Federal Circuit heard arguments for *Planet Bingo, LLC v. VKGS LLC*.[[173]](#footnote-174) Planet Bingo alleged VKGS infringed its software patent for managing bingo games. The patent claimed computer-aided methods for storing sets of bingo numbers, tracking player payments, and verifying winning numbers. Following the *Mayo/Alice* framework, the Court determined that recording a bingo numbers was similar to the abstract idea of organizing human activity, similar to *Alice*.[[174]](#footnote-175) Moving to the second step, the found the invention lacking an inventive concept sufficient to transform the idea into a patent eligible application, noting that mere implementation on a computer is not enough.[[175]](#footnote-176) In seeking to apply §§ 102, 103, or 112, the Court could have asked if allowing this patent would block a basic scientific tool, which would likely be no, as bingo is not a tool. However, the Court could turn to novelty as bingo is not new, or the Court’s arguments could easily be turned into one of obviousness as the Court views the patent as something a human could do on paper with a pen.[[176]](#footnote-177)

In *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, the Federal Circuit heard argument regarding ATM software which recited methods for extracting and digitizing data from physical documents, recognizing the digitized data and storing it.[[177]](#footnote-178) This method recognizes the hand-written information on a check, and then populates data fields with that information.[[178]](#footnote-179) The Court follows the *Mayo/Alice* two-step framework, stating that the Supreme Court has not “delimited the precise contours of the ‘abstract ideas’ category.[[179]](#footnote-180) In step, the Court agrees with the district court that the claims are directed to the abstract idea of collection data, recognizing data, and storing data, emphasizing that these concepts are well known.[[180]](#footnote-181) Early in the analysis process the court as conflated abstract ideas with novelty, stating “humans have always performed these functions” and “banks have, for some time, review checks, recognized relevant data, … and stored that information in their records”.[[181]](#footnote-182)

Moving to step two of the analysis, the court found there was no inventive concept in Content Extraction’s use of a scanner (or other digitizing device) or the computer’s ability to recognizes the text.[[182]](#footnote-183) The use of a generic scanner and computer here is a well-understood, routine, and conventional activity commonly used industry.[[183]](#footnote-184) Here, the Court should have noted that the claims if granted would likely lead to a monopolization of basic scientific tools and held the patent invalid under § 101. If Court finds no monopolization, it should then examine under §§ 102, 103, and 112. The claims here could easily have been invalidated for lack of novelty under § 102, or § 103 without needing to resort to § 101.

## Long Term Practical Effects of the Proposed Methodology

While many of the results in the previously discussed cases were the same, the analysis was more correct, as patent eligibility and patentability were not conflated as they are under the *Mayo/Alice* framework. Ultimately, this test is not perfect, and may to just to as much confusion and difficulty as the *Mayo/Alice* framework. However, imperfect improvements should not be ignored because they do not work perfectly. The current framework conflates abstract ideas with routine, conventional, and well-understood activity[[184]](#footnote-185), which clearly falls under the novelty and requirement of 35 U.S.C. § 102. This solution would eliminate the *Mayo/Alice* framework, as well the judicial exceptions to § 101, reducing the § 101 inquiry to ensuring the invention falls within the statutory categories, has utility and determining if a patent monopolizes a basic building block of science or technology. Overtime, factors could arise to aid this determination, however, judges must be careful to avoid once again conflating this consideration with novelty. After this determination, novelty, obviousness, or § 112 considerations may still be applicable. Perhaps this alteration will merely shift the invalidations “downstream” to novelty or obviousness, but these invalidations will not be logically flawed like those made under *Mayo/Alice*.

Focusing on preventing monopolization of basic scientific and technological tools will help bring certainty to the software patents and patents generally. This test will narrow the scope of what is an abstract idea, and separate patentability and patent eligibility which have been conflated with the *Mayo/Alice* framework.

# CONCLUSION

The state of the law is constantly evolving, and no system is without fault. However, the current standards for patent eligible has created uncertainty, which may impede innovation in the long term. Seeking to remove the stream of invalidations from the courts, following *Alice*, the USPTO released the Berkheimer Memorandum. This Memorandum reduced the ways patent examiners can implement § 101 rejections for well-understood, routine, conventional activity. This solution may allow more patents to be granted going forward, but it does not remove the strict standards set under *Mayo/Alice*. This may cause more invalidations long term as patents are being granted that are inconsistent with the Courts’ standard for abstract ideas. A better solution is to change the Court’s definition of abstract ideas, which have become conflated with the standards of patentability. This can be done by first asking if an invention blocks a basic scientific tool, and then using §§ 102, 103, and 112 for invalidations and turning to § 101 only when necessary, rather than sweeping all invalidations under the umbrella of § 101.

Pledge of Honesty

On my honor, I submit this work in good faith and pledge that I have neither given nor received improper aid in its completion.

/s/ Seth Guthrie

1. Raymond Millien, *Alice Who? Over Half the U.S. Utility Patents Issued Annually are Software Related!*, IP Watchdog, (May 21, 2017),https://www.ipwatchdog.com/2017/05/21/alice-over-half-u-s-utility-patents-issued-annually-software/id=83367/; IFC Claims Patent Services, *2017 Patent Trends and Insights*, (last visited Jan. 1, 2019), https://www.ificlaims.com/rankings-trends-2017.htm. [↑](#footnote-ref-2)
2. *See e.g. Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012); *Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018); *Gottschalk v. Benson*, 409 U.S. 63 (1972). [↑](#footnote-ref-3)
3. *See* U.S. Const. art 1, § 8, cl. 8. “To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries” [↑](#footnote-ref-4)
4. Joshua A. Kresh, *Patent Eligibility After Mayo: How Did We Get Here and Where Do We Go?*, 22 Fed. Circuit B.J. 521, 522 (2013). [↑](#footnote-ref-5)
5. *See* Jasper L. Tran, *Software Patents:* *A One-Year Review of Alice v. CLS Bank*, 97 J. PAT. & TRADEMARK OFF. SOC'Y, 532, 539-40 (2015). [↑](#footnote-ref-6)
6. *See id.* [↑](#footnote-ref-7)
7. *See* *Versata Dev. Grp., Inc. v. SAP America*, 793 F.3d 1306 (Fed. Cir. 2015); *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1367-68 (Fed. Cir. 2015); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1345 (Fed. Cir. 2015); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362-63 (Fed. Cir. 2012); *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1346-47 (Fed. Cir. 2014); *DDR Holdings, LLC v. Hotels.com*, *L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 721-22 (Fed. Cir. 2014); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1351 (Fed. Cir. 2014); *Planet Bingo, LLC v. VKGS LLC*, 576 F. Appx. 1005, 1006 (Fed. Cir. 2014); *Digitech Image Techs. v. Elecs. for Imaging*, 758 F.3d 1344, 1348-51 (Fed. Cir. 2014); Robert Daniel Garza, *Software Patents and Pretrial Dismissal Based on Ineligibility*, 24 Rich. J.L. & Tech. 1, 28 (2018). [↑](#footnote-ref-8)
8. *See DDR Holdings, LLC v. Hotels.com*, L.P., 773 F.3d 1245, 1245 (Fed. Cir. 2014). [↑](#footnote-ref-9)
9. *See* Memorandum from Robert W. Bahr, Deputy Commissioner for Patent Examination Policy, Deputy Comm'r of the U.S. Pat. & Trademark Off. to Patent Examiners (Apr 19, 2018) [hereinafter Berkheimer Memorandum], *available at* https://www.uspto.gov/sites/default/files/documents/memo-berkheimer-20180419.PDF [↑](#footnote-ref-10)
10. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1360 (Fed. Cir. 2018). [↑](#footnote-ref-11)
11. *See* Memorandum from Robert W. Bahr, Deputy Commissioner for Patent Examination Policy, Deputy Comm'r of the U.S. Pat. & Trademark Off. to Patent Examiners (Apr 19, 2018) [hereinafter Berkheimer Memorandum], *available at* https://www.uspto.gov/sites/default/files/documents/memo-berkheimer-20180419.PDF [↑](#footnote-ref-12)
12. *See* Memorandum from Robert W. Bahr, Deputy Commissioner for Patent Examination Policy, Deputy Comm'r of the U.S. Pat. & Trademark Off. to Patent Examiners (Apr 19, 2018) [hereinafter Berkheimer Memorandum], *available at* https://www.uspto.gov/sites/default/files/documents/memo-berkheimer-20180419.PDF [↑](#footnote-ref-13)
13. *Compare* Berkheimer Memorandum, *supra* note X at 3-5, with *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 217-18 (2014) (the analysis is the same, but patent examiners must follow explicit steps to be able to make such a rejection, the courts have no such restrictions). [↑](#footnote-ref-14)
14. 35 U.S.C. §§ 102, 103, 112. [↑](#footnote-ref-15)
15. 35 U.S.C. § 101. [↑](#footnote-ref-16)
16. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 216 (2014). [↑](#footnote-ref-17)
17. 35 U.S.C. § 101 (2018). [↑](#footnote-ref-18)
18. 35 U.S.C. §§ 102, 103, 112; *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70 (2012) (restating the long-held exceptions of 35 U.S.C. § 101: laws of nature, natural phenomena, and abstract ideas). [↑](#footnote-ref-19)
19. 35 U.S.C. §§ 102, 103, 112. [↑](#footnote-ref-20)
20. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) (setting forth the anticipation rule used in judicial review and examiners at the USPTO). [↑](#footnote-ref-21)
21. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966) (introducing the four-factor test for obviousness). Obviousness in patent law is more complicated than put forth here. Those seeking to evaluate obviousness must avoid hindsight bias and determine 1) scope and content of prior art; 2) differences between prior art and claimed invention; 3) ease of traversing differences to create invention as a whole; and 4) various secondary considerations. [↑](#footnote-ref-22)
22. 35 U.S.C. § 112(a). [↑](#footnote-ref-23)
23. 35 U.S.C. § 112(b). [↑](#footnote-ref-24)
24. 35 U.S.C. § 112(b). [↑](#footnote-ref-25)
25. 35 U.S.C. § 101; Manual of Patent Examining Procedure § 2106.05(d)(II) (9th ed. Rev. 8, Jan. 2018) [hereinafter MPEP]. [↑](#footnote-ref-26)
26. 35 U.S.C. § 101. [↑](#footnote-ref-27)
27. Rader & Christoff, *supra* note x, at 56. [↑](#footnote-ref-28)
28. *See e.g. Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 216 (2014); *Berkheimer v. HP Inc*., 881 F.3d 1360, 1366 (Fed. Cir. 2018);Kathleen Chapman, Esq. & Stephen Ball, Esq*., Challenges with Patenting Software,* Vt. B.J., Winter 2007/2008, at 36 [↑](#footnote-ref-29)
29. 35 U.S.C. § 101. [↑](#footnote-ref-30)
30. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70 (2012) [↑](#footnote-ref-31)
31. *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (holding a method for converting binary-coded-decimals to binary unpatentable). [↑](#footnote-ref-32)
32. *Mayo*, 556 U.S.at 70. [↑](#footnote-ref-33)
33. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). [↑](#footnote-ref-34)
34. *Chakrabarty* at 309. [will be *Id.* at 309.] [↑](#footnote-ref-35)
35. *Funk Bros. Seed Co. v. Kalo Inoculant Co*., 333 U.S. 127, 131 (1948). [↑](#footnote-ref-36)
36. *Funk Bros.*, 333 U.S.at 131. *Id.*  [↑](#footnote-ref-37)
37. *Funk Bros.*, 333 U.S.at 131. *Id.*  [↑](#footnote-ref-38)
38. *Chakrabarty*, 447 U.S. at 304. [↑](#footnote-ref-39)
39. *See Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 225 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 73 (2012); *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011) (determining invalidity on abstractness but noting the wide breadth of the claims problematic). [↑](#footnote-ref-40)
40. *See* *Alice,* 573 U.S. at 225; *Mayo*, 556 U.S. at 73. [↑](#footnote-ref-41)
41. *See e.g. Alice,* 573 U.S. at 225. [↑](#footnote-ref-42)
42. *See* Jasper L. Tran, *Software Patents:* *A One-Year Review of Alice v. CLS Bank*, 97 J. PAT. & TRADEMARK OFF. SOC'Y, 532, 539-40 (2015). [↑](#footnote-ref-43)
43. 35 U.S.C. § 101. [↑](#footnote-ref-44)
44. *See Bonito Boats, Inc. v. Thunder Craft.,* 489 U.S. 131, 150 (1989) (stating that clarity of the patent is “essential to promote progress”). [↑](#footnote-ref-45)
45. *See id.* at 1-7. [↑](#footnote-ref-46)
46. *In re Fisher*, 421 F.3d 1365, 1370 (Fed. Cir. 2005). [↑](#footnote-ref-47)
47. *Id*. at 1367. [↑](#footnote-ref-48)
48. *Id.* at 1370. [↑](#footnote-ref-49)
49. *See Alice Corp. Pty. v. CLS Bank Int'l,* 573 U.S. 208, 221 (2014) (declining to define the exact limits of abstract ideas) [↑](#footnote-ref-50)
50. *See Diamond v. Diehr;* 450 U.S. 175 (1981). [↑](#footnote-ref-51)
51. *Gottschalk v. Benson*, 409 U.S. 63 (1972); *Diamond v. Diehr;* 450 U.S. 175 (1981); *Arrhythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1054 (Fed. Cir. 1992); *In re Alappat*, 33 F.3d 1526, 1537 (Fed. Cir. 1994), abrogated by *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008). [↑](#footnote-ref-52)
52. *Gottschalk v. Benson*, 409 U.S. 63 (1972) [↑](#footnote-ref-53)
53. *Benson*, 409 U.S. at 64. [↑](#footnote-ref-54)
54. *Benson*, 409 U.S. at 66. [↑](#footnote-ref-55)
55. *Benson*, 409 U.S. at 66. [↑](#footnote-ref-56)
56. *Benson*, 409 U.S. at 73-74. [↑](#footnote-ref-57)
57. *Diamond v. Diehr;* 450 U.S. 175 (1981). [↑](#footnote-ref-58)
58. *Diehr*, 450 U.S.at 175. [↑](#footnote-ref-59)
59. *Diehr*,450 U.S. at 185. *Id.* at 185. [↑](#footnote-ref-60)
60. *Diehr*, 450 U.S.at 184 (noting several times that the respondent’s claims involve transforming of raw rubber into a different state). *Id.* at 184. [↑](#footnote-ref-61)
61. *In re Alappat*, 33 F.3d 1526, 1537 (Fed. Cir. 1994), abrogated by *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008). [↑](#footnote-ref-62)
62. *In re Alappat*, 33 F.3d at 1537. [↑](#footnote-ref-63)
63. *In re Alappat*, 33 F.3d at 1537. [↑](#footnote-ref-64)
64. *In re Alappat*, 33 F.3d at 1537. [↑](#footnote-ref-65)
65. *State St. Bank & Tr. Co. v. Signature Fin. Grp., Inc*, 149 F.3d 1368, 1373 (Fed. Cir. 1998), abrogated by *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008). [↑](#footnote-ref-66)
66. *Id.* at 1373. [↑](#footnote-ref-67)
67. *Id.* [↑](#footnote-ref-68)
68. *Diamond v. Diehr;* 450 U.S. 175, 191-93 (1981).; *Gottschalk v. Benson*, 409 U.S. 63 (1972). [↑](#footnote-ref-69)
69. *Diehr*, 450 U.S., at 191–92. [↑](#footnote-ref-70)
70. *In re Bilski*, 545 F.3d 943, 991 (Fed. Cir. 2008), aff'd but criticized sub nom. *Bilski v. Kappos*, 561 U.S. 593 (2010) [↑](#footnote-ref-71)
71. *Bilski v. Kappos*, 561 U.S. 593, 603 (2010). [↑](#footnote-ref-72)
72. *Bilski v. Kappos*, 561 U.S. 593, 603 (2010). While introduced before the “useful, concrete, tangible” result test of *State Street*, the machine-or-transformation test outlived *State Street* and was adopted as the sole test by the Federal Circuit in *In re Bilski*, 545 3.d at 956. [↑](#footnote-ref-73)
73. *In re Bilski*, 545 F.3d at 956. [↑](#footnote-ref-74)
74. *Bilski v. Kappos*, 561 U.S. at 605. [↑](#footnote-ref-75)
75. *In re Bilski*, 545 F.3d at 961. [↑](#footnote-ref-76)
76. *See* *Gottschalk v. Benson*, 409 U.S. 70 (1972). [↑](#footnote-ref-77)
77. *In re Bilski*, 545 F.3d at 954. [↑](#footnote-ref-78)
78. *Diamond v. Diehr;* 450 U.S. 175, 179 (1981). [↑](#footnote-ref-79)
79. *Diehr*, 450 U.S. at 184, 187; *In re Bilski*, 545 F.3d at 954. [↑](#footnote-ref-80)
80. *Parker v**. Flook*, 437 U.S. 584, 585 (1978). [↑](#footnote-ref-81)
81. *Parker v. Flook*, 437 U.S. 584, 594 (1978). [↑](#footnote-ref-82)
82. *Diehr*, 450 U.S. at 191–92. [↑](#footnote-ref-83)
83. *CyberSource*, 654 F.3dat 1371. [↑](#footnote-ref-84)
84. Garza, *supra* note x, at 41, 87; *See* *Amdocs (Isr.) Ltd. v. Openet Telecomm. Inc.*, 841 F.3d 1288, 1293-94 (Fed. Cir. 2016). [↑](#footnote-ref-85)
85. 35 U.S.C. § 101. [↑](#footnote-ref-86)
86. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 222 (2014). [↑](#footnote-ref-87)
87. Paul R. Gugliuzza, *Quick Decisions in Patent Cases*, 106 Geo. L.J. 619, 622 (2018). [↑](#footnote-ref-88)
88. For example, Beauregard claims will claim software as “a computer readable medium containing program instruction”. *See infra* note 88. [↑](#footnote-ref-89)
89. Lucas S. Osborn, *Intellectual Property Channeling for Digital Works*, 39 Cardozo L. Rev. 1303, 1330 (2018); Kyle J. Trout, Esq., and Justin N. Mullen, KramerAmado, *Preserving the Value of Medical Device Patents During The Rise Of Three-Dimensional Printing*, Westlaw Journal IP 2013 WL 5808127, at \*4. [↑](#footnote-ref-90)
90. *In re Beauregard*, 53 F.3d 1583, 1584 (Fed. Cir. 1995). [↑](#footnote-ref-91)
91. *See In re Beauregard*, 53 F.3d 1583, 1584 (Fed. Cir. 1995). [↑](#footnote-ref-92)
92. *See e.g.* *CyberSource*, 654 F.3d at 1373; *SEVEN Networks, LLC v. Google LLC*, No. 2:17-CV-441-JRG, 2018 WL 5263271, at \*30 (E.D. Tex. Oct. 23, 2018). [↑](#footnote-ref-93)
93. Kathleen Chapman, et al., *supra* note x, at 36, 27. [↑](#footnote-ref-94)
94. *Diamond v. Diehr;* 450 U.S. 175, 187 (1981).; *Gottschalk v. Benson*, 409 U.S. 73 (1972). [↑](#footnote-ref-95)
95. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 66 (2012). [↑](#footnote-ref-96)
96. *Parker v. Flook*, 437 U.S. 584, 585 (1978); *See Mayo*, 566 U.S. at 90. [↑](#footnote-ref-97)
97. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 214 (2014). [↑](#footnote-ref-98)
98. Stuart P. Meyer, *Our Attention is Now Directed To: “Directed To”*, Post: Bilski Blog (Apr. 18, 2018), https://www.bilskiblog.com/2018/04/our-attention-is-now-directed-to-directed-to/ [↑](#footnote-ref-99)
99. *Alice,* 573 U.S. at 227. [↑](#footnote-ref-100)
100. *Alice,* 573 U.S. at 212. [↑](#footnote-ref-101)
101. *Alice*, 573 U.S. at 213. [↑](#footnote-ref-102)
102. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 213-14 (2014). [↑](#footnote-ref-103)
103. *Alice*, 573 U.S. at 214. [↑](#footnote-ref-104)
104. *Alice*, 573 U.S. at 216. [↑](#footnote-ref-105)
105. *Alice*, 573 U.S. at 217. [↑](#footnote-ref-106)
106. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 217 (2014). [↑](#footnote-ref-107)
107. *Alice,* 573 U.S*.* at 217-18. [↑](#footnote-ref-108)
108. *Alice,* 573 U.S.at 225. [↑](#footnote-ref-109)
109. *Alice* *Id.* at 218-21; *Gottschalk v. Benson*, 409 U.S. 63 (1972); *Parker v. Flook*, 437 U.S. 584, 585 (1978); *Bilski v. Kappos*, 561 U.S. 593 (2010). [↑](#footnote-ref-110)
110. *Alice,* 573 U.S.at 219. [↑](#footnote-ref-111)
111. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 220 (2014). [↑](#footnote-ref-112)
112. *Alice,* 573 U.S.at 220. [↑](#footnote-ref-113)
113. *Alice,* 573 U.S.at 221. [↑](#footnote-ref-114)
114. *Alice,* 573 U.S. at 222. [↑](#footnote-ref-115)
115. *Alice,* 573 U.S.at 225. [↑](#footnote-ref-116)
116. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 225 (2014). [↑](#footnote-ref-117)
117. *Alice,* 573 U.S.at 223. [↑](#footnote-ref-118)
118. *Alice,* 573 U.S.at 223. [↑](#footnote-ref-119)
119. *Alice,* 573 U.S.at 223. [↑](#footnote-ref-120)
120. *Alice,* 573 U.S.at 223. [↑](#footnote-ref-121)
121. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 225 (2014). [↑](#footnote-ref-122)
122. *Alice* at 225. *Id.* [↑](#footnote-ref-123)
123. Tran, *supra* note x, at 540. [↑](#footnote-ref-124)
124. Tran, *supra* note x, at 540. [↑](#footnote-ref-125)
125. Austin Donohue, Patent Cases Down by 40% in 2014, BIOTECHNOW (Oct. 17, 2014), http://www.biotechnow.org/public-policy/patently-biotech/2014/10/patent-cases-down-by-40-in-2014. [↑](#footnote-ref-126)
126. *Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018) [↑](#footnote-ref-127)
127. *DDR Holdings, LLC v. Hotels.com*, L.P., 773 F.3d 1245, 1245 (Fed. Cir. 2014). [↑](#footnote-ref-128)
128. *Berkheimer*, 881 F.3d at 1362. [↑](#footnote-ref-129)
129. *Berkheimer*, 881 F.3d at 1362. [↑](#footnote-ref-130)
130. *Berkheimer*, 881 F.3d at 1362. [↑](#footnote-ref-131)
131. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1362-63 (Fed. Cir. 2018) [↑](#footnote-ref-132)
132. *Berkheimer*, 881 F.3d at 1367-1370. [↑](#footnote-ref-133)
133. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 225 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 73, 79, 82 (2012); *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1367-69 (Fed. Cir. 2018). [↑](#footnote-ref-134)
134. *Berkheimer*, 881 F.3d at 1367-70. [↑](#footnote-ref-135)
135. *Berkheimer*, 881 F.3d at 1367. [↑](#footnote-ref-136)
136. *Id.* at 1370. [↑](#footnote-ref-137)
137. *Berkheimer,* 881 F.3d at 1360. [↑](#footnote-ref-138)
138. Berkheimer Memorandum, *supra* note x [↑](#footnote-ref-139)
139. *Id.* at 1-2. [↑](#footnote-ref-140)
140. *Id.* at 2. [↑](#footnote-ref-141)
141. Manual of Patent Examining Procedure § 2106.05(d)(II) (9th ed. Rev. 8, Jan. 2018) [hereinafter MPEP]. [↑](#footnote-ref-142)
142. Berkheimer Memorandum, *supra* note xat 3-5. [↑](#footnote-ref-143)
143. *Id.* at 3-4. [↑](#footnote-ref-144)
144. *Id.* at 4. [↑](#footnote-ref-145)
145. Manual of Patent Examining Procedure § 2106.05(d)(II) (9th ed. Rev. 8, Jan. 2018) [hereinafter MPEP]. [↑](#footnote-ref-146)
146. *Id.* at 4. [↑](#footnote-ref-147)
147. *Id.* at 4; MPEP, *supra* note x at § 2144.03. [↑](#footnote-ref-148)
148. United States Patent and Trademark Office, Patent Examiner Counter System, https://www.uspto.gov/patent/initiatives/patent-examiner-count-system (last visited Jan. 25, 2019). [↑](#footnote-ref-149)
149. *See* Memorandum from Robert W. Bahr, Deputy Commissioner for Patent Examination Policy, Deputy Comm'r of the U.S. Pat. & Trademark Off. to Patent Examiners (Apr 19, 2018) [hereinafter Berkheimer Memorandum], *available at* https://www.uspto.gov/sites/default/files/documents/memo-berkheimer-20180419.PDF [↑](#footnote-ref-150)
150. *Auto. Tech. Int’l, Inc. v. BMW of N. Am., Inc.*, 501 F.3d 1274, 1281 (Fed. Cir. 2007). [↑](#footnote-ref-151)
151. *Gottschalk v. Benson*, 409 U.S. 67 (1972). [↑](#footnote-ref-152)
152. Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130 (1948); Gottschalk v. Benson, 409 U.S. 63, 67 (1972); *Diamond v. Diehr*, 450 U.S. 175, 200 (1981); Bilski v. Kappos, 561 U.S. 593, 611–12 (2010) [↑](#footnote-ref-153)
153. Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130 (1948); Gottschalk v. Benson, 409 U.S. 63, 67 (1972); *Diamond v. Diehr*, 450 U.S. 175, 200 (1981); Bilski v. Kappos, 561 U.S. 593, 611–12 (2010). [↑](#footnote-ref-154)
154. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 217-22 (2014). [↑](#footnote-ref-155)
155. Joshua A. Kresh, *Patent Eligibility After Mayo: How Did We Get Here and Where Do We Go?*, 22 Fed. Circuit B.J. 521, 544 (2013) (“Most, if not all, of the patents that have been held unpatentable for being “abstract ideas” or “products of nature” could have been invalidated using §§ 102, 103, or 112.”). [↑](#footnote-ref-156)
156. While “scientific tool” is used here, this could also be expanded as noted here to basic business tools, technical tools, or potentially a variety of categories. [↑](#footnote-ref-157)
157. Citations omitted. *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1335 (Fed. Cir. 2012) (Plager, J., dissenting). [↑](#footnote-ref-158)
158. 35 U.S.C. § 101. [↑](#footnote-ref-159)
159. *Flook*, 437 U.S. at 593 (holding that the determination if an invention falls within § 101 must precede the determination if it is new or obvious); *Bilski v. Kappos*, 561 U.S. at 601 (ruling that the § 101 issue is a threshold test); *see also In re Comiskey*, 554 F.3d 967, 973 (Fed. Circ. 2009)(stating if the requirements of § 101 are satisfied is the inventor allowed to pass through to the other requirements, such as novelty (§ 102) and non-obviousness (§ 103)). [↑](#footnote-ref-160)
160. *I/P Engine, Inc. v. AOL Inc.*, 576 F. App'x 982, 992, 996 (Fed. Cir. 2014) (Mayer, J., concurring). [↑](#footnote-ref-161)
161. *Id.* at 995–96. [I/P engine]. [↑](#footnote-ref-162)
162. *Id.* at 996. [i/p engine]. [↑](#footnote-ref-163)
163. Some issues could arguably take more or less time and cost. For example, novelty is a question of fact (*Microsoft Corp. v. Biscotti, Inc.*, 878 F.3d 1052, 1068 (Fed. Cir. 2017)). However, obviousness and claim construction are questions of law, with underlying facts (*Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1039 (Fed. Cir. 2017); *Interactive Gift Exp., Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001)). [↑](#footnote-ref-164)
164. Compare *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208 (2014) *with Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012) (The court reaffirms the *Mayo* framework in *Alice* in more concrete, delineated terms. Likewise, the proposed method would likely become better understood and implemented as time passed. Any change requires adjustments) . [↑](#footnote-ref-165)
165. *Bilski v. Kappos*, 561 U.S. 593, 611 (2010). [↑](#footnote-ref-166)
166. *Bilski v. Kappos*, 561 U.S. 593, 611 (2010). [↑](#footnote-ref-167)
167. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208, 219-20 (2014). [↑](#footnote-ref-168)
168. While the software itself may not be allowed protection because it is only a computer implementation of a well-known idea, the expression of software is protectable through copyright. [↑](#footnote-ref-169)
169. *Gottschalk v. Benson*, 409 U.S. 67 (1972). [↑](#footnote-ref-170)
170. Kresh, *supra* note x, at527. [↑](#footnote-ref-171)
171. *Ariosa Diagnostics Inc. v. Sequenom, Inc.*, 788 F.3d 1372 (Fed. Cir. 2015). [↑](#footnote-ref-172)
172. *Ariosa Diagnostics Inc. v. Sequenom, Inc.*, 788 F.3d 1372, XXX (Fed. Cir. 2015). [↑](#footnote-ref-173)
173. *Planet Bingo, LLC v. VKGS LLC*, 576 Fed. Appx. 1005 (Fed. Cir. 2014). [↑](#footnote-ref-174)
174. *Planet Bingo*, 576 Fed. Appx. at 1008. *Id.* at 1008 [↑](#footnote-ref-175)
175. *Id.* [↑](#footnote-ref-176)
176. *Id*. (bingo) [↑](#footnote-ref-177)
177. *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass'n*, 776 F.3d 1343, 1345 (Fed. Cir. 2014). [↑](#footnote-ref-178)
178. *Id.* (content extraction) [↑](#footnote-ref-179)
179. *Id.* at 1347. (content extraction) [↑](#footnote-ref-180)
180. *Id.* (content extraction) [↑](#footnote-ref-181)
181. *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass'n*, 776 F.3d 1343, 1347 (Fed. Cir. 2014). [↑](#footnote-ref-182)
182. *Id.* at 1348. (content extraction) [↑](#footnote-ref-183)
183. *Id.* at 1348. (content extraction) [↑](#footnote-ref-184)
184. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,573 U.S. 208 (2014). [↑](#footnote-ref-185)