Brief Introduction to Patent Eligible Subject Matter (Physical Sciences)

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Diamond v. Diehr (Sup. Ct. 1981)

Methods for Direct Digital Control of Rubber Molding Presses – Patent Eligible

1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising:

providing said **computer** with a data base for said press including at least,

natural logarithm conversion data (1n),

the activation energy constant (C) unique to each batch of said compound being molded, and

a constant (x) dependent upon the geometry of the particular mold of the press,

initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,

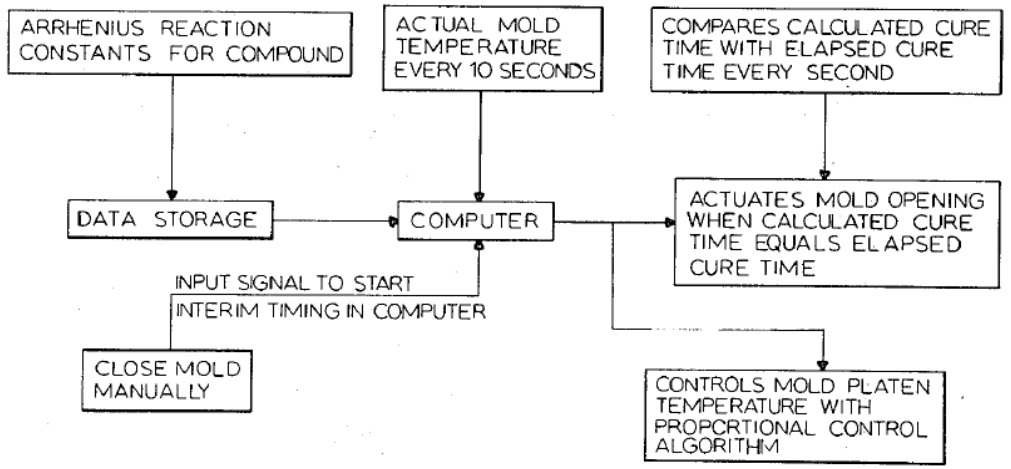
constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding,

constantly providing the computer with the temperature (Z),

repetitively performing in the computer, at frequent intervals during each cure, **integrations** to calculate from the series of temperature determinations the Arrhenius equation for reaction time during the cure, . . .

repetitively comparing in the computer at frequent intervals during the cure each said **calculation of the total required cure time** calculated with the Arrhenius equation and said elapsed time, and

opening the press automatically when a said comparison indicates completion of curing.



Diamond v. Diehr (Sup. Ct. 1981)

Diehr emphasized the need to consider the invention "as a whole," rather than "dissect[ing] the claims into old and new elements and then . . . ignor[ing] the presence of the old elements in the analysis."

The Court concluded that because the claim was not "an attempt to patent a mathematical formula, but rather [was] an industrial process for the molding of rubber products," it constituted patent eligible subject matter.

Notes on Example Patent Eligible Caselaw

Enfish LLC v. Microsoft Corp.

Claims directed to a self-referential database that improved the way computers operated and handled data, allowing the more efficient launching and adaptation of databases, were held patent eligible. Under step 1 of the 101 inquiry, Fed. Cir. held that the claims were directed to a particular improvement in the computer's functionality.

Visual Memory LLC v. NVIDIA Corp.,

Claims "focus[ed] on a 'specific asserted improvement in computer capabilities,'" were held patent eligible for being directed to the accommodation of different types of processors without compromising performance.

Core Wireless Licensing v. LG Elecs. Inc.

Claims directed to an improved user interface that enabled users to more quickly access stored data and programs in small-screen electronics were held patent eligible. Fed. Cir. determined that the claimed invention "improve[d] the efficiency of using the electronic device by bringing together a limited list of common functions and commonly accessed stored data, which can be accessed directly from the main menu" and held "the claims [we]re directed to an improvement in the functioning of computers, particularly those with small screens."

Notes on Example Patent Eligible Caselaw

DDR Holdings, LLC v. Hotels.com, L.P.

Claims recited a system for generating a hybrid web page that maintained the "look and feel" of a host website were held patent eligible by Fed. Cir., which emphasized that, in "overcom[ing] a problem specifically arising in the realm of computer networks," the invention "changed the normal operation of the computer network itself" and was "necessarily rooted in computer technology."

Thales Visionix Inc. v. U.S.

Claims recited an inertial tracking system with a first sensor on an object being tracked, a second sensor on a moving reference frame, and an element that determines the tracked object's orientation relative to the moving reference frame using signals from both sensors.

Fed. Cir. held the claims to be patent eligible, finding the claims "nearly indistinguishable" from those in the *Diamond v. Diehr* decision, and stated the claims were not "merely directed to the abstract idea of "using mathematical equations for determining the relative position of a moving object to a moving reference frame," but rather were directed to systems and methods that used inertial sensors in a non-conventional manner to reduce errors in measuring the relative position and orientation of a moving object on a moving reference frame.

Notes on Example Patent Eligible Caselaw

Uniloc v. LG Electronics

Claims related to a communication system comprising a primary station (base station) and at least one secondary station (e.g., a computer mouse or keyboard) in a piconet, utilizing a data field for polling as part of an inquiry message to enable simultaneous inquiry and polling.

Fed. Cir. held claims were directed to a patent-eligible improvement to computer functionality (the reduction of latency experienced by parked secondary stations in communication systems).

Ancora Technologies, Inc. v. HTC America, Inc.

Claims directed to a non-abstract improvement to computer security were held to be patent eligible. Fed. Cir determined that the claims addressed the "vulnerability of license-authorization software to hacking" and were thus "directed to a solution to a computer-functionality problem."

10,000' View – Patent Ineligible Caselaw

Trading Technologies Int'l v. IBG LLC
Displaying order information in relation to a derivative price

Trading Technologies Int'l v. IBG LLC
GUI for electronic trading of commodities

University of Florida Research Foundation v. General Electric Co.
Managing critical care physiologic data using data synthesis technology

BSG Tech LLC v. Buyseasons, Inc.
Self-evolving generic index for organizing information in a database

SAP America Inc. v. Investpic, LLC
Method for display and dissemination of financial information using resampled statistical methods

Inventor Holdings, LLC v. Bed Bath & Beyond, Inc.
Method of Processing a Payment

10,000' View – Patent Ineligible Caselaw

RecogniCorp LLC v. Nintendo Co.
Encoding and decoding image data

Intellectual Ventures I LLC v. Capital One Financial Corp.
Managing multiple sets of XML data

Intellectual Ventures I LLC v. Erie Indemnity Co.
- Mobile interface for accessing remotely stored documents
- Retrieving data from a database using an index of XML tags and metafiles

Affinity Labs of Texas, LLC v. Amazon.com
Communicating targeted information

TLI Communications LLC v. AV Automotive LLC
Recording, transmitting and administering digital images

Internet Patents Corp. v. Active Network, Inc.
Dynamic tabs for a graphical user interface

10,000' View – Patent Ineligible Caselaw

OIP Technologies, Inc. v. Amazon.com, Inc.
Automatic pricing in electronic commerce

Content Extraction and Transmission LLC v. Wells Fargo Bank, N.A.
Scanning and Information Processing Methodology

Ultramercial, Inc. v. Hulu, LLC
Payment of intellectual property royalties by interposed sponsor over a telecommunications network

Fort Properties, Inc. v. American Master Lease LLC
Methods and investment instruments for performing tax-deferred real estate exchanges

In re Grams
Method of Diagnosing an Abnormal Condition in an Individual

In re Meyer
Process and Apparatus for Identifying Locations of Probable Malfunctions

Notes on Example Patent Ineligible Caselaw

Electric Power Group, LLC, v. Alstom - Real-time monitoring of an electric power grid

The claims broadly recited:

(i) gathering streams of data related to sensor measurements of a power grid,
(ii) from this data, determining events occurring in the power grid, and
(iii) displaying visualizations of the events.

The Court wrote "[t]he focus of the asserted claims . . . is on collecting information, analyzing it, and displaying certain results of the collection and analysis" and was held to be directed to an abstract idea.

ChargePoint Inc. v. Semaconnect, Inc. - Charging stations for electric vehicles

ChargePoint purported to: (1) allow remote sites (e.g., shopping centers, apartment complexes, etc.) to control access to vehicle chargers on their premises; (2) allow electric vehicles to transfer power to the electrical grid in times of high demand on the grid.

The Court observed that "the specification never suggests that the charging station itself is improved from a technical perspective, or that it would operate differently than it otherwise could . . . [n]or does the specification suggest that the invention involved overcoming some sort of technical difficulty in adding networking capability to the charging stations." Thus, "the specification suggests that the invention of the patent is nothing more than the abstract idea of communication over a network for interacting with a device, applied to the context of electric vehicle charging stations."

American Axle & Manufacturing, Inc. v. Neapco Holdings

- As of March 1, 2021, US Supreme Court is still considering whether it will hear the case on appeal.
- One question presented on appeal is "What standard determines whether a patent claim is "directed to" a patent-ineligible concept under step 1 of the Mayo/Alice analysis?

Potentially Patent Eligible

1. A method for manufacturing a shaft assembly of a driveline system, the driveline system further including a first driveline component and a second driveline component, the shaft assembly being adapted to transmit torque between the first driveline component and the second driveline component, the method comprising:

providing a hollow shaft member;

tuning at least one liner to attenuate at least two types of vibration transmitted through the shaft member; and

positioning the at least one liner within the shaft member such that the at least one liner is configured to damp shell mode vibrations in the shaft member by an amount that is greater than or equal to about 2%, and the at least one liner is also configured to damp bending mode vibrations in the shaft member, the at least one liner being tuned to within about ±20% of a bending mode natural frequency of the shaft assembly as installed in the driveline system.

American Axle & Manufacturing, Inc. v. Neapco Holdings

Not Patent Eligible

22. A method for manufacturing a shaft assembly of a driveline system, the driveline system further including a first driveline component and a second driveline component, the shaft assembly being adapted to transmit torque between the first driveline component and the second driveline component, the method comprising:

providing a hollow shaft member;

tuning a mass and a stiffness of at least one liner; and

inserting the at least one liner into the shaft member;

wherein the at least one liner is a tuned resistive absorber for attenuating shell mode vibrations and

wherein the at least one liner is a tuned reactive absorber for attenuating bending mode vibrations.

Rationale – District Court

Step 1 of the Mayo/Alice analysis, the court concluded that the asserted claims, "considered as a whole," were "directed to the mere application of Hooke's law".

Step 2 of the Mayo/Alice analysis, the court determined that the claimed "additional steps consist of well-understood, routine, conventional activity already engaged in by the scientific community . . . and those steps, when viewed as a whole, add nothing significant beyond the sum of their parts taken separately."

American Axle & Manufacturing, Inc. v. Neapco Holdings

Rationale – Fed Circuit (Claim 22)

Step 1 of the Mayo/Alice analysis, the court looked to determine whether "the claimed methods are directed to laws of nature".

The court concluded that claim 22 merely "defines a goal" or "desired result" ("tuning a liner" to achieve certain types of vibration attenuation) without "any physical structure or steps for achieving the claimed result" and that this goal could be met by one skilled in the art using "any method, including any method implemented by computer modeling and trial and error."

Claim 22 "does not specify how target frequencies are determined or how, using that information, liners are tuned to attenuate two different vibration modes simultaneously, or how such liners are tuned to dampen bending mode vibrations." The court held claim 22 is "directed to the use of a natural law".

Step 2 of the Mayo/Alice analysis, the court determined that nothing in claim 22 "qualifies as an 'inventive concept' to transform it into patent eligible matter." Claim 22 discloses no other inventive concept – "The real inventive work lies in figuring out how to design a liner to damp two different vibration modes simultaneously, and no such inventive work is recited in claim 22. The remaining steps of claim 22, "amount to no more than conventional pre- and postsolution activity."

American Axle & Manufacturing, Inc. v. Neapco Holdings

Rationale – Fed Circuit (Claim 1)

Step 1 of the Mayo/Alice analysis, the court looked to determine whether "the claimed methods are directed to laws of nature".

The court concluded that claim 1 was different from claim 22 in that, while both claims require "tuning," claim 1 requires "tuning at least one liner to attenuate at least two types of vibration transmitted through the shaft member," which the district court construed to mean "controlling characteristics of at least one liner to configure the liner to match a relevant frequency or frequencies to reduce at least two types of vibration transmitted through the shaft member," and which the Fed. Cir. took to include variables other than mass and stiffness preventing it from concluding that it was "merely directed to Hooke's law"

American Axle & Manufacturing, Inc. v. Neapco Holdings

Dissent

Judge Moore argued that "[t]he majority's decision expands § 101 well beyond its statutory gate-keeping function and collapses the Alice/Mayo two-part test to a single step—claims are now ineligible if their performance would involve application of a natural law" and cited three errors of law:

- First, the majority creates a new test, finding claims directed to natural laws even where the claims recite no such natural law.
- Second, the majority refuses to consider the unconventional claim elements.
- Third, the majority **improperly blended 101/112 analysis,** expanding the reach of § 101.

Judge Moore argued that the claims at issue contain a specific, concrete solution (inserting a liner inside a propshaft) to a problem (vibrations in propshafts). Although some degree of trial and error in modifying the mass, stiffness, and location of the liner to optimize the reduction in vibration of a given shaft could (if undue) create an **enablement** concern, that is not a § 101 problem.

SUPREME COURT GRANT OF CERTIORARI?

In 2020, the Supreme Court denied *certiorari* in the following patent eligibility cases:

- *HP Inc. v. Berkheimer* (18-415)
- *Hikma Pharmas v. Vanda Pharmas* (18-817)
- *Athena Diagnostics, Inc. v. Mayo Collaborative* (19-430)
- *Power Analytics Corporation v. Operation Technology, Inc.*, et al., No. 19-43
- *Garmin USA, Inc., et al. v. Cellspin Soft, Inc.*, No. 19-400
- *Medtronic, Inc. v. Barry*, No. 19-414
- *Chestnut Hill Sound Inc. v. Apple Inc., et al.*, No. 19-591
- *Nuvo Pharmaceuticals, et al. v. Dr. Reddy's Laboratories, et al.*, No. 19-584
- *ChargePoint, Inc. v. SemaConnect, Inc.*, No. 19-521
- *Trading Technologies International, Inc. v. IBG LLC, et al.*, No. 19-522; *Trading Technologies International, Inc. v. IBG LLC, et al.*, No. 19-353
- *Apple Inc. v. VirnetX Inc., et al.*, No. 19-832
- *Maxell, Ltd. v. Fandango Media, LLC*, No. 19-852
- *Cisco Systems, Inc. v. SRI International, Inc.*, No. 19-619
- *Chrimar Systems, Inc. v. Juniper Networks, Inc., et al.*, No. 19-829
- *Morris Reese v. Sprint Nextel Corporation, et al.*, No. 19-597

HP Inc. v. Berkheimer

The invention in Berkheimer relates to digitally processing and archiving files in a digital asset management system by eliminating redundant storage of text and graphical elements, which improves system operation efficiency and reduces storage costs.

With respect to Mayo/Alice step 1, the Federal Circuit held that the claims are directed to the abstract ideas of parsing, comparing, storing and/or editing data based upon a comparison of these claims to claims held to be abstract in prior Federal Circuit decisions.

With respect to Mayo/Alice step 2, the Fed. Cir. considered the claims and claim elements of each claim both individually and as an ordered combination, recognizing that "whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact." While the specification disclosed purported improvements (e.g., "storing a reconciled object structure in the archive without substantial redundancy"), the Fed. Cir held some claims ineligible because the claims did not positively recite limitations including these purported improvements.

The Fed. Cir. held that other claims reciting limitations directed to the purported improvements, raised a genuine issue of material fact as to whether the purported improvements were more than well-understood, routine, conventional activity previously known in the industry and reversed and remanded to the district court.

ENCRYPTION, BLOCKCHAIN, CRYPTO, SOFTWARE?

- 2019 Patent Examining Guidelines (PEG) have relaxed examination standards as to patent subject matter eligibility, resulting in an increased grant rate on computer-implemented technologies.
- Not a panacea - USPTO examiners continue to reject many computer-implemented technologies as being drawn to abstract "mental processes" that use technology only as a tool to speed the process. This is particularly true in the fintech art unit where blockchain patent applications are examined.
- The Federal Circuit has repeatedly cautioned that the 2019 PEG is not binding.

Cleveland Clinic Found. v. True Health Diagnostics LLC (Fed. Cir. 2019)

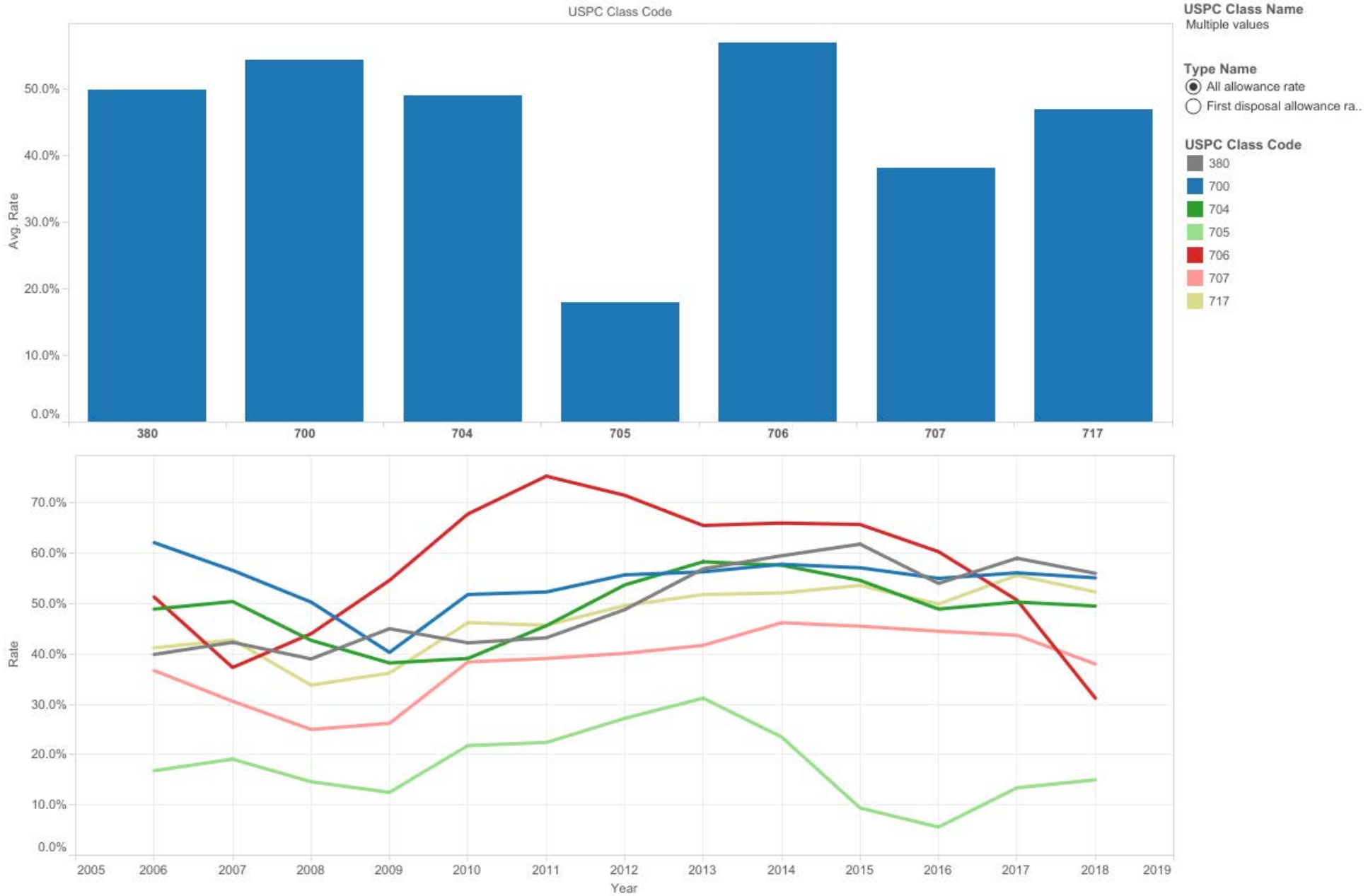
The court stated: "While we greatly respect the PTO's expertise on all matters relating to patentability, including patent eligibility, we are not bound by its guidance" and the court concluded "that the district court did not err in its [lack of deference to] the PTO's subject matter eligibility guidance."

In re Rudy (Fed. Cir. 2020)

"To the extent the Office Guidance contradicts or does not fully accord with [Federal Circuit] case law, it is [Federal Circuit] case law, and the Supreme Court precedent it is based upon, that must control."

cxLoyalty, Inc. v. Maritz Holdings Inc. (Fed. Cir. 2021)

2019 Guidance "is not, itself, the law of patent eligibility, does not carry the force of law, and is not binding on our patent eligibility analysis."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JOURNAL OF EMPIRICAL LEGAL STUDIES, LEMLEY ET AL.*

Figure 5: Patent eligibility decisions by industry.

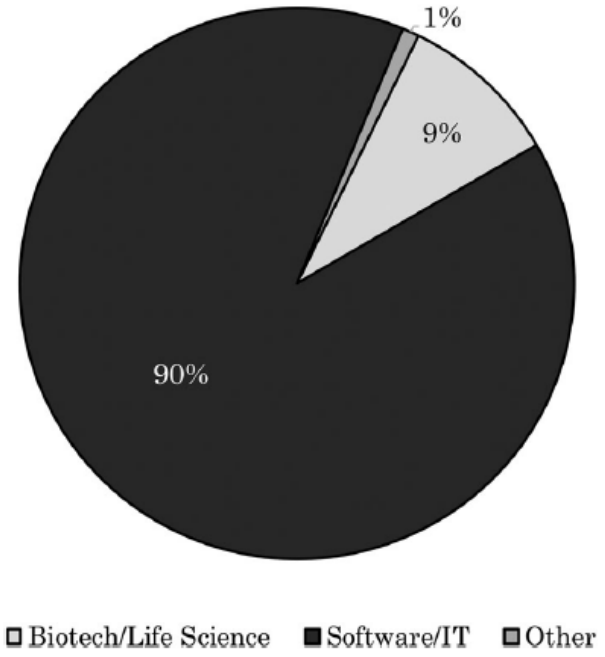

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Figure 11: District court decision outcomes over time.

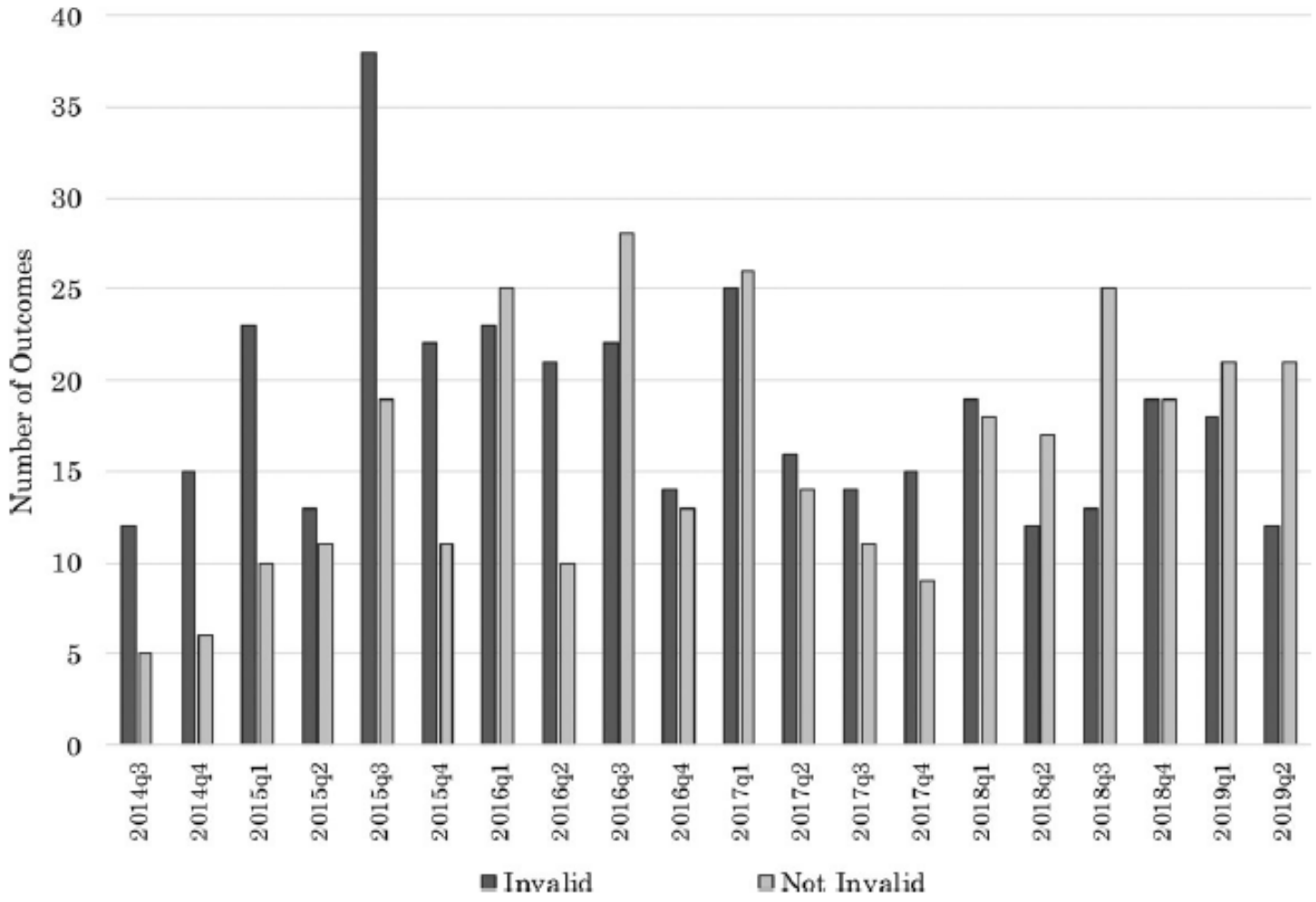
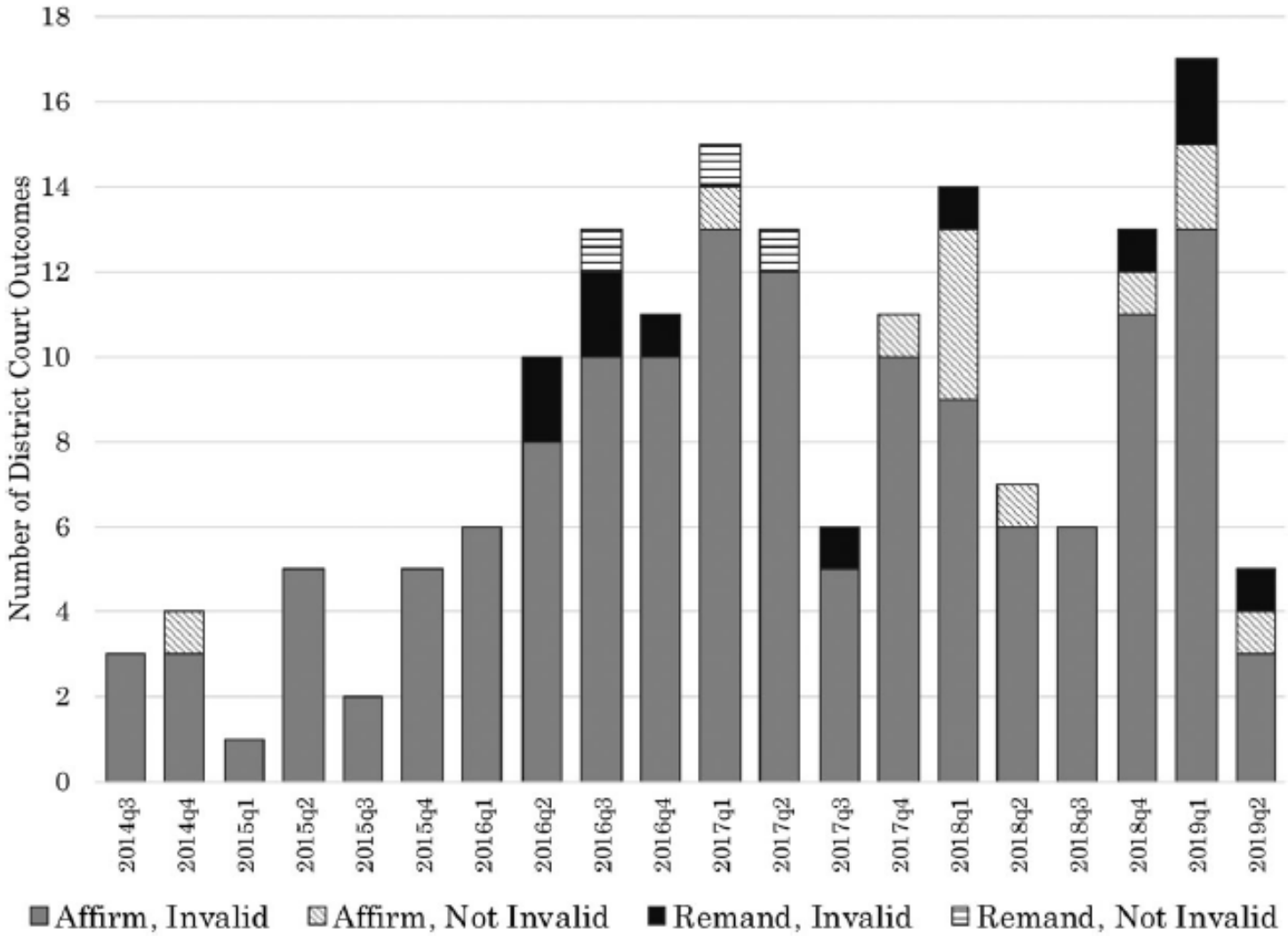


Figure 10: Outcomes for district court decisions sent to Federal Circuit on appeal.



Business Method Patents?

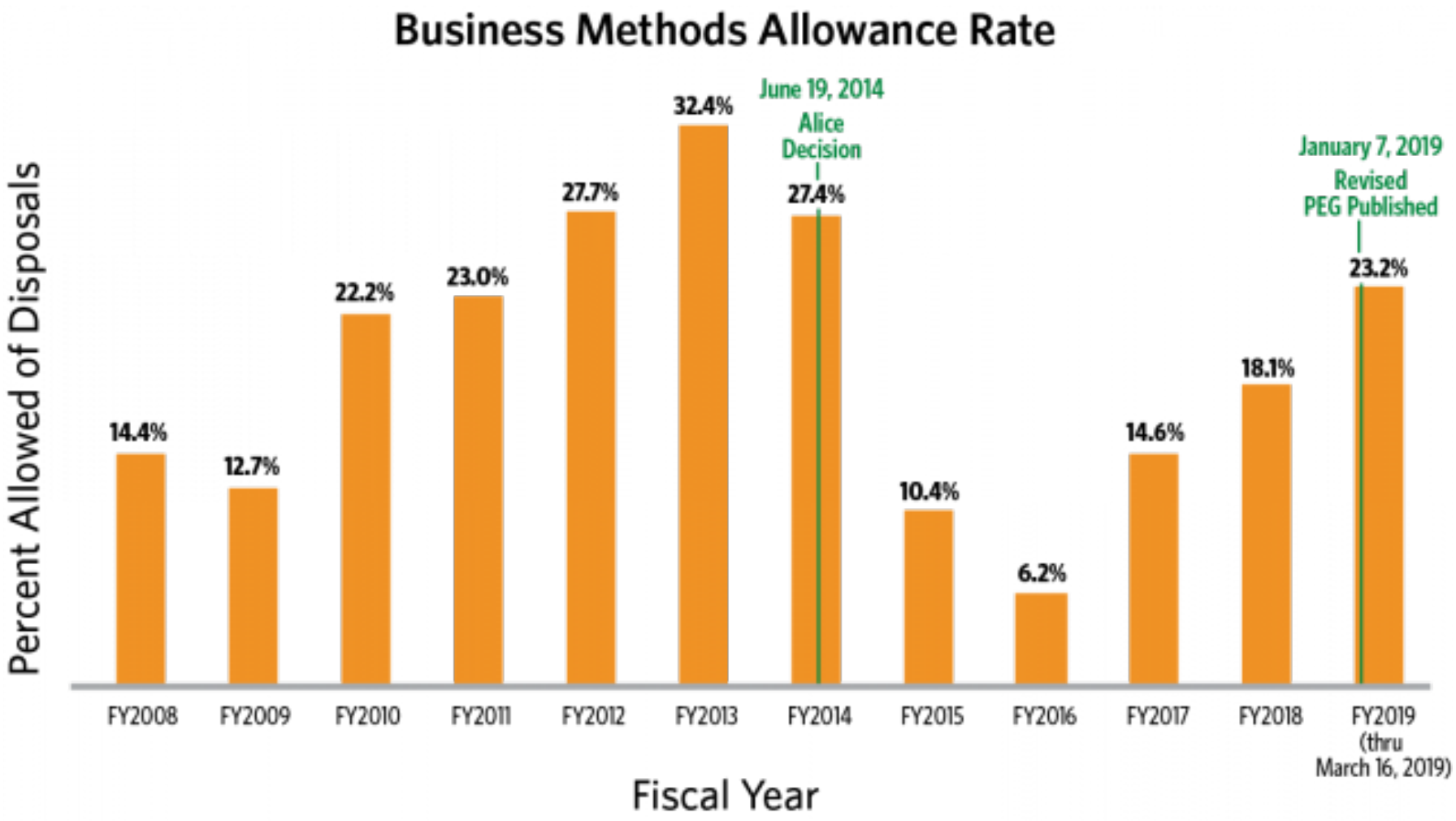
- ***Bilski v. Kappos*** (Sup. Ct. 2010) involved a method of entering into contracts to hedge risk in commodity prices.
  - Section 101 precludes the broad contention that the term "process" categorically excludes business methods.
  - Under 35 U. S. C. §273(b)(1), if a patent-holder claims infringement based on "a method in [a] patent," the alleged infringer can assert a defense of "prior use." For purposes of this defense alone, "method" is defined as "a method of doing or conducting business." §273(a)(3). A conclusion that business methods are not patentable would render §273 meaningless in violation of canons of statutory interpretation.
  - In searching for a limiting principle, this Court's precedents on the "unpatentability of abstract ideas provide useful tools."
  - There can be processes (business methods) that are within patentable subject matter under §101 provided the processes also are novel (§102), nonobvious (§103) and are fully and particularly described (§112).

Business Method Patents?

Alice Corp v. CLS Bank (Sup. Ct. 2014) – Patents at issue involved methods and systems for "exchanging financial obligations between two parties using a third-party intermediary to mitigate settlement risk“.

- The method claims in Alice recite "the use of a computer to create electronic records, track multiple transactions, and issue simultaneous instructions," perform "electronic recordkeeping," and "the use of a computer to obtain data, adjust account balances, and issue automated instructions“.
- The disclosed invention did not “purport to improve the functioning of the computer itself.”
- **Unanimous decision** - The Court held that patent law should not restrain abstract ideas that are the "building blocks of human ingenuity" (e.g., “using a third party to eliminate settlement risk”) and held all of Alice's claims patent ineligible as merely using a generic computer to implement an abstract idea (intermediated settlement).

Business Method Patents?



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