

# Patentable Subject Matter of Computer-Implemented Inventions in Canada and U.S.

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# Patentable Subject Matter of Computer-Implemented Inventions- Canada

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## Subject Matter

- Section 2 of the Patent Act
  - *invention* means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter
- Section 27(8)
  - No patent shall be granted for any mere scientific principle or abstract theorem

## Schlumberger and Amazon

- Schlumberger (1981)
  - The fact that a computer is used to implement a discovery does not change the nature of that discovery
  - The use of a computer neither adds to, nor subtracts from, the patentability of an alleged invention
- Amazon (2011)
  - the “determination of subject matter must be based on a purposive construction of the patent claims”

## Practice Notices post Amazon

- Examination Practice (PN 2013-03)
- Purposive Construction
  - according to *Amazon.com*, the "identification of the actual invention" is "required to be grounded in a purposive construction of the patent claims"
  - provides guidelines for claim construction in examination, relying on the Supreme Court decisions in the related cases of *Free World Trust* and *Whirlpool*
- Computer-Implemented Inventions
  - the "evaluation of the subject-matter of a claim for compliance with section 2 of the *Patent Act* is to be made on the basis of the essential elements as determined through a purposive construction"
  - "where a computer is found to be an essential element of a construed claim, the claimed subject-matter will generally be statutory"
- Enshrined in the Manual of Patent Office Practice (MOPOP)
  - 12.02

## Subject Matter Examination - Theory

- Application of 12.02
  - Review specification as a whole
  - Identify person of ordinary skill in the art
  - Identify Common General Knowledge (CGK) at the time
  - Identify practical problem
  - Identify solution to problem
  - Determine which elements of claim solve the identified problem
    - The essential elements
  - If computer is an essential element, then subject matter is statutory

## Subject Matter Examination – Practice

- Combination of identification of Person of Ordinary skill in the art, CGK, problem and solution leads to the exclusion of the computer
  - as it can be omitted or substituted for mental means
- Conclusion is that the remaining elements:
  - correspond to manipulations of data, along with the presentation of information of merely intellectual significance
  - do not manifest a discernable effect of change of character or condition in a physical object
  - And therefore are not suitable subject matter

## Patent Appeal Board

- Inclusion or exclusion of computer elements as essential driven by the problem and solution as described or derived from the specification
- Without description of problem which requires the computer as part of the solution, result is that computer is non-essential and not part of the claim
- With description of problem which requires the computer as part of the solution, result is that computer is essential and part of the claim

## Patent Appeal Board Decisions

- CD 1336 ... it is an essential feature of the invention that the “onboard computer 300” is in communication with the computer used by the insurer... *monitoring the operating characteristics* is an essential feature ... which cannot be omitted, or substituted for mental means, without having a material effect on the invention ...
  - Due to remote nature of calculation
- CD 1457 ... the problem ... is to improve the existing manual, paper-driven process with a more convenient and efficient process to identify whether a customer is potentially eligible for a VAT refund. ... the solution ... is an improved payment card system that automatically identifies whether a customer is eligible ...
  - The computer embodiment is essential: without it, the advantages associated with automatic identification based on payment card details at the point of sale system would be lost and the identified problem would not be solved
- CD 1476 ... prior art management systems relied on manual processes to identify templates ... the solution is to automatically select, assign, monitor and publish template sets for new content ...
  - As the solution is to automatically select, a computer is essential

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## Patent Appeal Board Decisions

- CD 1498 ... the problem ... is a need to improve customer service delivered by users of a contact center to customers. ... the solution ... is a single computer application for users of a contact centre providing online ... information, offline ... information, and customizing offline information based on online actions.
  - Computer necessarily determines if online or offline (?)
- CD 1502 ... a need to “ speed the effective transmission rate of information in a mud pulse telemetry system ...” ... the general solution that addresses this problem can be characterized as allocating available bandwidth in a mud pulse telemetry system ...
  - problem and solution are technical, therefore “good indication as directed to statutory subject matter”
- CD 1517 ... we view the problem as the restriction by conventional quotation software of a supplier’s choices to hard-coded calculations. We view the corresponding solution as the concept of quotation software using a relational database ... The solution represents a functional difference resulting from the way the software is programmed and organized as opposed to a difference in the way quotations are calculated or prepared.
  - .. use of user-supplied calculation data (vs hard-coded) thus computer essential

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## Patent Appeal Board Decisions

- CD 1521 ... the problem ... “ a need to simplify the computer-implemented authentication process in online banking transactions using mobile devices while maintaining the required level of security. ... the mobile device is part of the solution. ... the solution ... “ a computer implemented method of performing a single action fund transfer during online banking transactions via a non web-based application on a mobile device ...”
  - Mobile device is essential

## Practice Tips Based on PAB Decisions

- Describe invention in a way where the problem arises due to changes in technology
  - Requires change in technical mode of operation (e.g. offline and online)
  - Problem brought on by change in technology (move to mobile)
- Describe invention in a way where at least one technical element (e.g. a computer) is required for it to operate in a way to achieve the improvement
  - Monitoring
  - Automation

## Choueifaty v. AG Canada

- “... proper test when construing the essential elements ...”
- “... evident on a reading of MOPOP that the Commissioner ... does not intend or direct patent examiners to follow the teachings of *Free World Trust* and *Whirlpool*.”
- *Genecor* is no longer good law
- Problem solution is akin to using the “substance of the invention”
- SCC requires identification grounded in a purposive construction, and not solely on the basis of a literal reading or a determination of the substance of the invention
- In part because it is the job of the examiner to determine validity

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## The Current State of Subject Matter Eligibility in the U.S.

Presented by  
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## How U.S. Law Got to Today?

### *O'Reilly v. Morse*, 56 U.S. 62 (1853)

- The Eighth Claim - any use of electro-magnetism for communicating over a distance.
- The *Morse* Court struggled through various hypotheticals before concluding that the claim was to an abstract idea, and thus invalid, rather than an application of an idea.

“Abstract Idea” is not a recent invention.



## *Alice Corp. Pty, Ltd. v. CLS Bank Int'l.,* 134 S.Ct. 2347 (2014)(9-0)

- “The claims at issue relate to a computerized scheme for mitigating ‘settlement risk.’”
  - “In particular, the claims are designed to facilitate the exchange of financial obligations . . . by using a computer system as a third-party intermediary.”
- The Court applied a “two-step framework.”
  - Whether the claims at issue are directed to a patent-ineligible concept.
  - If so, whether the elements of each claim, both individually and as an ordered combination, transform the nature of the claim into a patent-eligible application.
- The Court first determined that the claims were directed to a “patent-ineligible” concept.
  - Drawn to “the abstract idea of intermediated settlement.”
  - Rejected argument that abstract-idea category is confined to “preexisting, fundamental truth[s].”

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## *Alice (cont’d.)*

- Then turning to step two, “[w]hat else is there in the claims before us?”
  - Examined the elements of each claim individually and “as an ordered combination” for an “inventive concept” that transforms the abstract idea into a patent-eligible application.
  - “There is no dispute that a computer is a tangible system ... or that many computer-implemented claims are formally addressed to patent-eligible subject matter.”
  - But if the inquiry ended there, one could “claim any principle of the physical or social sciences by reciting a computer system configured to implement the relevant concept.”

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## Alice (cont'd.)

- As to the method claim:
  - “Taking the claim elements separately,” the function performed by the computer at each step of the process is “purely conventional.”
  - “[E]ach step does no more than require a generic computer to perform generic computer functions.”
  - “Considered ‘as an ordered combination,’ the computer adds nothing to what is already present when the claims are considered as a whole.
    - “Viewed as a whole, [the] method claims simply recite the concept of intermediated settlement as performed by a generic computer.”

## Alice (cont'd.)

- The method claims (cont'd.):
  - Do not improve the functioning of the computer itself.
  - “Nor do they effect an improvement in any other technology or technical field.”
  - “They amount to ‘nothing significantly more’ than an instruction to apply the abstract idea of intermediated settlement using some unspecified, generic computer.”
    - “[T]hat is not ‘*enough*’ to transform an abstract idea into a patent-eligible invention.”  
(emphasis in original)

## Alice (cont'd.)

- Claims to a computer system/computer-readable medium:
  - *Alice* stipulated that the *Beauregard* claims rise and fall with the method claims.
  - What *Alice* characterized as “specific hardware” configured to perform “specific computerized functions” is “purely functional and generic.”
  - The “system claims are no different than the method claims in substance.”
  - The system claims “recite a handful of generic computer components configured to implement the same idea [as the method claims].”

## Recent Federal Circuit Decisions

## *Genetic Veterinary Sciences, Inc. v. Laboklin GMBH*, 933 F.3d 1302 (2019)

- Genetic Veterinary filed a declaratory judgment action seeking judgment that the asserted claims were patent-ineligible under 35 U.S.C. § 101.
- The patent describes how a professor discovered that the presence of HNPk in Labrador Retrievers resulted from a point mutation in gene SUV39H2.
- The claims were to an in vitro method for genotyping a Labrador Retriever.
- The district court held the asserted claims patent-ineligible under 35 U.S.C. § 101.
- The Federal Circuit affirmed.
- The Federal Circuit agreed the patent was ineligible under §101 because the claims were directed to a natural phenomenon.
- Mere observation of a natural phenomenon is not patent eligible, and the plain language of claim 1 demonstrated that it is directed to nothing more than observing or identifying the natural phenomenon of a mutation in a gene.

## *Genetic Veterinary Sciences (cont'd.)*

- Additionally, the claims did not contain an inventive concept sufficient to transform the claimed natural law into a patent-eligible application under *Alice*.
- The reviewing court noted that nothing in the claim's language suggested the invention of a new *method* for genotyping. Conducting conventional detection in a laboratory did not transform the discovery of a natural phenomenon into patent-eligible subject matter.
- A natural phenomenon, together with only well-understood, conventional activity, is not patent-eligible under § 101.

## *ChargePoint, Inc. v. SemaConnect, Inc.,* 920 F.3d 759 (2019)

- ChargePoint, Inc. sued for infringement of four patents which describe electric vehicle charging stations connected to a network and claim network-controlled charging stations systems, apparatus, and related methods.
- Generally, the stations are connected to the local power grid, electric vehicles connect to the stations by way of an electrical connector, and, in some embodiments, the system can modify the electricity flow based on demand response communications received from a server and/or implement vehicle-to-grid transfer.
- The district court held the patents invalid under 35 U.S.C. § 101.
- The Federal Circuit affirmed.

## *ChargePoint (cont'd.)*

- The Federal Circuit first determined the asserted claims were directed towards a patent-ineligible abstract idea.
- The Federal Circuit looked to the specifications and opined that “it is clear that the problem perceived by the patentee was a lack of a communication network for these charging stations, which limited the ability to efficiently operate them from a business perspective.”
- The Federal Circuit concluded the specifications suggest the “invention . . . 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.”
- The Federal Circuit then turned to the claim language to determine “whether the claims extend to cover a ‘fundamental . . . practice long prevalent in our system . . . .’”
- The court concluded that “the broad claim language would cover any mechanism for implementing network communication on a charging station, preempting the entire industry’s ability to use networked charging station.” This and confirming the claim was directed towards the abstract idea of communication over a network to interact with network-attached devices.

## *ChargePoint (cont'd.)*

- The Federal Circuit then searched for an inventive concept that rendered the claims significantly more than an abstract idea.
  - “i.e., an element or combination of elements sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.”
- However, analyzing the specifications and the claims, the appellate court concluded that the only possible claimed inventive concept was the abstract idea itself.

## *American Axle & Mfg., Inc. v. Neapco Holdings LLC*, No. 2018-1763 (modified July 31, 2020)

- Patent for a method of manufacturing driveline propeller shafts with liners designed to attenuate vibrations transmitted through a shaft assembly.
- AAM agreed methods for determining natural frequencies and damping were well known.
- District court held the claims invalid under § 101.
- *Alice* Step 1 - The claim was an instruction to apply Hooke’s law.
- *Alice* Step 2 – Any additional steps were conventional activity that added nothing significant.

## *American Axle & Mfg., (cont'd.)*

- The Federal Circuit first issued an opinion on October 3, 2019, affirming.
- On July 31, 2020, the panel issued a modified opinion, but the full court declined to hear the case en banc (6 dissents) (7 - majority - required).
- The modified panel opinion affirmed in part and reversed in part (2-1).
  - Claim 22 invalid under § 101; claim 1 not invalid under § 101.
  - Dissent believed all claims passed muster under § 101.
- AAM argued it had invented an improved method of tuning, using computer modeling.
- But “neither the specifics of any novel computer modelling, nor the specifics of any experimental modal analysis are included as limitations” of claim 22.
- “What is missing is any physical structure or steps for achieving the claimed result” in the claim.

## *American Axle & Mfg. (cont'd.)*

- By contrast, claim 1 had an additional limitation of “positioning the at least one liner”
- “We cannot conclude that it is merely directed to Hooke’s law.”
- The dissent accused the majority of
  - Going well beyond § 101’s gatekeeping function
  - And collapsing the *Alice/Mayo* test to a single step

## *Cleveland Clinic Foundation v. True Health Diagnostics*, No. 2018-1218 (April 1, 2019) (non-precedential)

- This case involved patents which disclosed diagnostics tests to determine risk of developing cardiovascular disease based on the discovery that patients with higher coronary artery disease (CAD) have significantly higher levels of leukocyte and blood myeloperoxidase (MPO) levels.
- The patents disclosed methods of measuring patient's blood MPO level, all generally known in the art.
- The claims were directed to the technique of using immunoassay to measure the blood MPO levels of patients with atherosclerotic cardiovascular disease (CVD).
- The claims were challenged as not patent-eligible under § 101.

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## *Cleveland Clinic* (cont'd.)

- Cleveland Clinic argued that the claims were not directed to a natural law since they were directed to the technique of measuring,
  - and that further the correlation between blood MPO levels and CVD is not a natural law because it can only be detected using certain techniques.
- Further, Cleveland Clinic argued that while performing immunoassay on blood samples was known, using that to detect the correlation between MPO levels and CVD supplied an inventive concept sufficient to transform the claims in patent-eligible subject matter.
- The district court held the claims were invalid under § 101 as directed to an ineligible natural law.

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## Cleveland Clinic (cont'd.)

- The Federal Circuit affirmed.
- Cleveland Clinic argued the district court failed to give appropriate deference to the PTO's subject matter eligibility guidance and specifically Example 29-Claim 1.
  - Example 29-Claim 1 is a method of detecting a hypothetical protein by contacting a sample with an antibody and detecting the binding. The PTO guidance states that the claim does not describe any ineligible concept and thus is subject matter eligible.
- But the Federal Circuit ruled courts are **not bound by USPTO guidance**, especially with respect to subject matter eligibility issues.
- Because the claimed testing technique was already known, claiming the technique for detecting instead of the correlation was merely a superficial distinction that did not further make the claim subject matter eligible.
- Just because only certain techniques can be used to observe the correlation does not make the correlation any less of a natural law.
- Further, the claims were found to not contain an additional inventive concept as neither the specification nor the record disclosed any technical impediment to using an immunoassay in a standard way to measure MPO levels in blood.

## USPTO Guidance

- Significantly More (MPEP 2106.05(a))
  - **Improvements to the functioning of a computer** - Whether the claim purports to improve computer capabilities or, instead, invokes computers merely as a tool. *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (2016).
    - A modification of conventional Internet hyperlink protocol to dynamically produce a dual-source hybrid webpage, *DDR Holdings*, 773 F.3d at 1258-59 (2014).
    - Inventive distribution of functionality within a network to filter Internet content, *BASCOM Global Internet v. AT&T Mobility LLC*, 827 F.3d 1341 (2016).
    - A method of rendering a halftone digital image, *Research Corp. Techs. v. Microsoft Corp.*, 627 F.3d 859 (2010).
    - A memory system having programmable operational characteristics configurable based on the type of processor, which can be used with different types of processors without a tradeoff in processor performance, *Visual Memory, LLC v. NVIDIA Corp.*, 867 F.3d 1253 (2017).
    - Technical details as to how to transmit images over a cellular network or append classification information to digital image data, *TLI Communications LLC v. AV Auto. LLC*, 823 F.3d 607 (2016).
    - A particular way of programming or designing software to create menus, *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229 (2016).
    - Specific interface and implementation for navigating complex three-dimensional spreadsheets using techniques unique to computers; *Data Engine Techs., LLC v. Google LLC*, 906 F.3d 999 (2018).

## USPTO Guidance (cont'd.)

- Significantly More (MPEP 2106.05(a)).
  - **Improvements to any other technology or technical field.**
  - Particular computerized method of operating a rubber molding press, *e.g.*, a modification of conventional rubber-molding processes to utilize a thermocouple inside the mold to constantly monitor the temperature and thus reduce under- and over-curing problems common in the art, *Diamond v. Diehr*, 450 U.S. 175.
  - New telephone, server, or combination thereof, *TLI Communications LLC v. AV Auto. LLC*, 823 F.3d 607 (2016).
  - An advance in the process of downloading content for streaming, *Affinity Labs of Tex. v. DirecTV, LLC*, 838 F.3d 1253 (2016).
  - Improved, particular method of digital data compression, *DDR Holdings, LLC. v. Hotels.com, L.P.*, 773 F.3d 1245 (2014).
  - Particular method of incorporating virus screening into the Internet, *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d at 1321-22 (2016).
  - Components or methods, such as measurement devices or techniques, that generate new data, *Electric Power Group, LLC v. Alstom, S.A.*, 830 F.3d 1350 (2016).

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## USPTO Guidance (cont'd.)

- Significantly More (MPEP 2106.05(d)).
  - **Adding a specific limitation other than what is well-understood, routine, conventional activity in the field.**
  - Example - a non-conventional and non-generic arrangement of various computer components for filtering Internet content, as discussed in *BASCOM Global Internet v. AT&T Mobility LLC*, 827 F.3d 1341 (2016).
  - Conventional:
    - Receiving/transmitting data over a network
    - Performing repetitive calculations
    - Electronic record keeping
    - Storing and retrieving information in memory
    - Determining a level of a biomarker in the blood
    - Detecting DNA or enzymes in a sample
    - Immunizing a patient against a disease
    - Recording a customer's order
    - Presenting offers and gathering statistics

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Thank you for your attention

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